

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TREASURE GARDEN, INC.,
Petitioner,

v.

ATLEISURE, LLC,
Patent Owner.

Patent No. 8,104,492

DECLARATION OF DR. RICHARD W. KLOPP, Ph.D., P.E., F.A.S.M.E.

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I. INTRODUCTION

1. My name is Richard W. Klopp, and I reside in Redwood City, CA. I am a Principal Engineer in the Mechanical Engineering Practice at Exponent, Inc. I am over eighteen years of age, and I would otherwise be competent to testify as to the matters set forth herein if I am called upon to do so.

2. I have been retained by Treasure Garden, Inc. (“Petitioner”) in connection with the above-captioned petition for *inter partes* review (“IPR”) of U.S. Patent No. 8,104,492 (the “’492 Patent” or the “the Challenged Patent,” Ex-1001). The ’492 Patent will be cited herein as “Ex. 1001” with additional column, line, and similar references to specific portions. I understand the ’492 Patent is currently assigned to ATLeisure, LLC (“Patent Owner”).

3. I have been asked to provide my opinion as to whether claims 1-7 of the ’492 Patent (which I will refer to collectively as the “Challenged Claims”) would have been anticipated by certain prior art. I have also been asked to provide my opinion as to whether the Challenged Claims would have been obvious to a person of ordinary skill in the art (“POSITA”) at the time of the alleged invention in view of the prior art.

4. In forming my opinions, I rely on my knowledge, training, and experience as a mechanical engineer and on documents and information referenced in this Declaration.

5. My employer, Exponent, is being compensated by Petitioner at my standard hourly consulting rate of \$720 per hour for my time spent on this matter and is being reimbursed for actual expenses. My compensation is not contingent on the substance of my opinions, on the outcome of the IPR, or on the outcome of any related dispute between Petitioner and Patent Owner.

6. Neither Exponent nor I have a conflict of interest with respect to Petitioner or Patent Owner.

A. Background Expertise

7. I am a Principal Engineer based in Exponent's Menlo Park, California, office. I am a trained mechanical engineer with Professional Engineer licenses in California, Texas, Washington, Michigan, and Nevada. I received my undergraduate degree in mechanical engineering from Lehigh University; master's degrees in engineering and applied mathematics from Brown University; and a Ph.D. in engineering from Brown University. I currently mentor the local high school robotics team, teaching them aspects of mechanical engineering design, metal fabrication, and machine shop practice. I am also a Fellow of the American Society of Mechanical Engineers and have been practicing in the field of mechanical

engineering for more than 40 years. I have specific expertise in mechanical engineering and mechanics, including machine design, product design, solid mechanics, failure analysis, fracture mechanics, and experimental mechanics.

8. I have investigated many incidents and disputes involving numerous consumer products such as fabricated frames, cantilevered frames, winders, pulley assemblies, and tents. I have extensive experience analyzing the design of these systems. Indeed, my experience with winders and pulley assemblies extends back to my childhood experience with toys in the early 1960s, including a ride-on wooden derrick (crane) that was a favorite of mine and I still own. Additionally, I have extensive experience with stress analysis, mechanical assembly, manufacturing, and reverse engineering. I have provided written analysis and oral testimony in a wide variety of intellectual property matters, including patent infringement and invalidity analyses, trade secret misappropriation, and design patent and trade dress functionality. Venues have included state and U.S. Federal courts, the International Trade Commission, the Patent Trial and Appeal Board, Canadian courts, and seats of international arbitration. My current CV is being submitted as Ex. 1023.

B. Information Considered

9. My opinions are based on my years of training and experience, as well as my investigation and study of the relevant material. I have reviewed the '492

Patent and considered each document listed below as well as any other references cited in this Declaration.

Exhibit No.	Description
1001	U.S. Patent 8,104,492 (the “’492 Patent”)
1002	Prosecution History for the ’492 Patent
1003	Provisional Application No. 61/050,353
1005	Chinese Utility Model Patent No. CN 201076109Y (“Wang ’109”) (Appl. No. No. ZL 200720183886.3) with Certified English Translation
1006	Chinese Utility Model Patent No. CN 201197439Y (“Wang ’439”) (Appl. No. ZL 200820088054.8) with Certified English Translation
1007	Chinese Utility Model Patent No. CN 201001460Y (“Wang ’460”) (Appl. No. ZL 200720106096.5) with Certified English Translation
1008	U.S. Patent No. 6,014,980 (“Glatz ’980”)
1010	U.S. Patent No. 6,478,037 (“Tung ’037”)
1011	U.S. Patent No. 5,284,171 (“Liu ’171”)
1013	German Patent Application Publication No. DE20014895U1 (“Bertola ’895”) with Certified English Translation
1014	U.S Patent Application Publication No. US 2006/0243311 (“Glatz ’311”)
1016	ATLeisure’s N.D.GA Local Rules 6.1 and 6.2 Disclosures in <i>ATLeisure v. Treasure Garden, Inc.</i> , Case No. 1:24-cv-02270-TWT
1017	Oxford Learner’s Dictionary
1018	Bloomsbury English Dictionary

Exhibit No.	Description
1019	The New Oxford American Dictionary
1020	The American Heritage Dictionary
1022	U.S. Patent No. 4,619,281 (Redl '281)
1023	Klopp C.V.

10. In reaching my opinions, I have considered the viewpoint of a POSITA at the time of the '492 Patent's alleged priority date of May 5, 2008 and the '492 Patent's non-provisional application filing date of May 5, 2009. As explained below, I am familiar with the level of skill of a POSITA regarding the relevant technology at issue as of that time. I consider myself to have been at least a POSITA as of the claimed priority date.

II. LEGAL STANDARDS FOR PATENTABILITY

11. I am not a lawyer. However, I have been informed by counsel of general principles concerning patent law and the analysis of whether a patent claim is valid. I have followed these principles in arriving at my conclusions in this declaration. The sections below set forth my understanding of the legal principles that are relevant to my opinions in this declaration.

12. First, I understand that for a claimed invention to be patentable, among other things, it must be new and not obvious in light of the information known to

exist before the invention was made. I understand that the information that is used to evaluate whether an invention is new and not obvious is generally referred to as “prior art,” and that in the proceeding for which I am submitting this declaration, the prior art considered is limited to patents and printed publications (e.g., books, articles, product manuals, company publications, etc.).

13. I understand that the “prior art” includes patents and printed publications that existed before the earliest priority date (“effective filing date”) of the patent. I also understand that a patent or a published patent application will be prior art if it was filed before the effective filing date, or for a printed publication, if it was publicly available before that date.

14. I understand that in this proceeding, it is Petitioner’s burden to prove that the Challenged Claims were anticipated by, or were obvious in light of, the prior art by a preponderance of the evidence. I understand that “a preponderance of the evidence” is evidence sufficient to show that a fact is more likely true than it is not true.

15. I understand that the claims of a patent define the scope of the inventions that are protected by the patent. I understand that in this proceeding, the claims must be given the meaning that the terms would have had to a POSITA at the time of the ’492 Patent claimed priority date. The claims so interpreted are then to be evaluated in light of the prior art.

16. I understand that one way prior art may render a claimed invention unpatentable and its associated patent claims invalid is when the prior art can be shown to have anticipated the claim or made the claim “obvious” to a POSITA.¹ My understanding of the legal standards for anticipation and obviousness is set forth below.

A. Anticipation

17. I understand that pre-AIA 35 U.S.C. § 102(a), § 102(b), and § 102(e) state:

A person shall be entitled to a patent unless —

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent, or

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States, or

...

¹ I am aware that there are other issues that may render patent claims invalid, but those are beyond the scope of this declaration.

(e) the invention was described in — (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for the purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

18. I understand that, for an invention claimed in a patent to be found patentable, or to be valid, it must be, among other things, novel compared to the prior art. I understand anticipation requires that each and every element of a challenged claim is present in, or otherwise taught by, a single prior art reference.

B. Obviousness

19. I understand that pre-AIA 35 U.S.C. § 103(a) states “a patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to

which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.”

20. I understand that obviousness may be shown by considering more than one item of prior art, and that the following factors should be considered in analyzing obviousness:

- The scope and content of the prior art;
- The differences between the prior art and the claims at issue;
- The level of ordinary skill in the pertinent art; and
- Objective evidence of non-obviousness.

21. I understand that objective evidence (“indicia”) are factors that may bear on the question of obviousness or non-obviousness, and these factors include whether the claimed invention proceeded in a direction contrary to the accepted wisdom in the field, whether there was a long-felt but unresolved need in the field that was satisfied by the claimed invention, whether others had tried but failed to make the claimed invention, whether others copied the claimed invention, whether the claimed invention achieved any unexpected results, whether the claimed invention was praised by others, whether others have taken licenses to use the claimed invention, whether experts or those skilled in the field of the claimed invention expressed surprise or disbelief regarding the claimed invention, and

whether products incorporating the claimed invention have achieved commercial success.

22. In addition, I understand that the obviousness inquiry should avoid relying on hindsight and must adopt the perspective of a POSITA in the relevant art of the patent's effective filing date. I understand that when conducting an obviousness analysis, I should put myself in the position of a POSITA at the time the claimed invention was made. Using this perspective, I should not consider what is known today or what is learned from the teaching of the challenged patent.

23. I also understand that under a proper obviousness analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining prior art elements in the manner claimed. I also understand combining familiar elements according to known methods is likely to be deemed obvious when it yields no more than predictable results. I further understand that the following are other factors that arose from a case called *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727 (2007) may show obviousness:

- a combination that only unites old elements with no change in their respective functions is unpatentable. As a result, the combination of familiar elements according to known methods is likely to be deemed obvious when it yields no more than predictable results.
- a predictable variation of a work in the same or a different field of endeavor is likely to be deemed obvious if a POSITA would be able to implement the variation.

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- an invention is deemed obvious if it uses a known technique to improve a similar device in the same way, unless the actual application of the technique would have been beyond the skill of the POSITA. A key inquiry is whether the improvement is more than the predictable use of prior art elements according to their established functions.
- an invention is deemed obvious if there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent's claims.
- inventions that were “obvious to try:” - chosen from a finite number of identified, predictable solutions, with a reasonable expectation of success - are likely to be deemed obvious.
- known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations would have been predictable to one of ordinary skill in the art.
- an explicit teaching, suggestion, or motivation in the art to combine references, while not a requirement for a finding of obviousness, may be helpful in determining obviousness.

24. Finally, I understand that even if a claimed invention involves more than substitution of one known element for another or the application of a known technique to a piece of prior art ready for improvement, the invention may still be obvious. I also understand that in such circumstances courts may need to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, to determine if the claimed invention is obvious.

III. PERSON OF ORDINARY SKILL IN THE ART

25. I considered several factors to determine the skill level of a POSITA at the time of the '492 Patent's alleged priority date of May 5, 2008 and the '492 Patent's filing date of May 5, 2009, including the types of problems encountered in the art, the solutions to those problems, the pace of innovation in the field, the sophistication of the technology, and the education level of active workers in the field.

26. Based on my knowledge, expertise, and the prior art cited in the '492 Patent, it is my opinion that a POSITA would have had a bachelor's degree in mechanical engineering or physics or a related discipline and at least four years of experience in the design, development, or analysis of mechanical devices, including fabricated frames and winder or pulley assemblies, though additional work experience could substitute for a formal degree, and vice versa.

27. I understand that a POSITA is presumed to know the relevant prior art and is of ordinary creativity, and not an automaton, and is capable of making inferences and combining teachings in the prior art.

IV. THE '492 PATENT

A. Specification and Claims

28. The '492 Patent was issued to Wu Wei Dan on January 31, 2012. The application No. 12/435,640 (the "'640 Non-Provisional Application) that was issued

as the '492 Patent, was filed in the U.S. Patent and Trademark Office (“USPTO”)

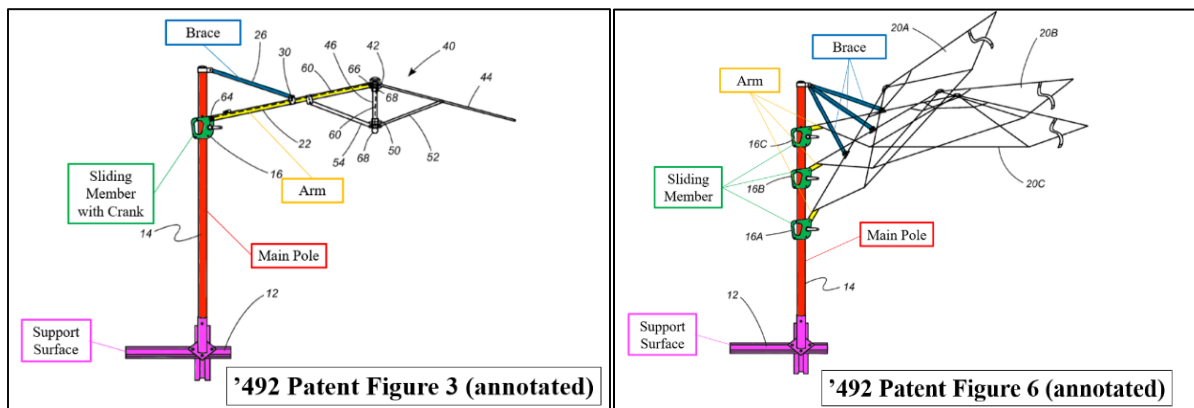
on May 5, 2009 and purports to claim priority to Provisional Application No.

61/050,353 (the “’353 Provisional Application”), which was filed on May 5, 2008.

29. I have reviewed the '492 Patent and its seven claims. The '492 Patent is directed to an “offset” umbrella with an “improved mechanism for raising and lowering the umbrella canopy and for adjusting the angle of the canopy with respect to a vertical support member.” Ex. 1001 at 1:11-16. The '492 Patent admits that adjustable cantilevered umbrellas were known in the prior art. *Id.* at 1:26-32. These umbrellas used “a cantilever arrangement to suspend the canopy to the side of the main pole,” and the angle of the canopy could be “adjusted with respect to the main pole.” *Id.* at 1:28-32.

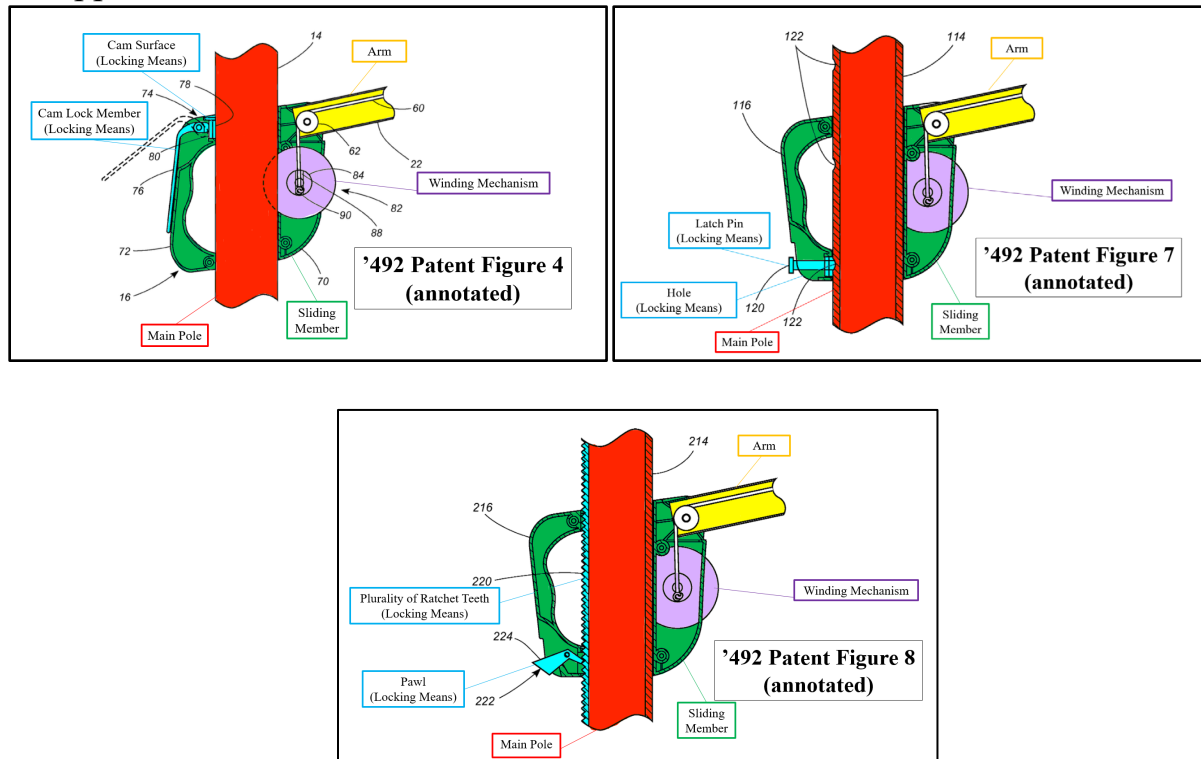
30. The '492 Patent’s purported improvement is a mechanism for adjusting a cantilevered umbrella having a sliding member that moves along the main pole to adjust the angle of the canopy with a winding mechanism mounted to a sliding member for opening and closing the canopy. *Id.* at Figures 3 and 6. To open the canopy, “the user first grasps the crank 92 of the winding mechanism 82 and winds in the line 60. Tension on the line 60 draws ... the opposite end of the line upward, elevating the spreader hub 50. As the spreader hub 50 is raised, the canopy assembly 20 extends.” *Id.* at 3:60-65. Once the canopy assembly “has been fully erected, the user can adjust the angle of the canopy assembly with respect to the main pole 14 by

moving the sliding member 16 up or down the pole until the desired result is achieved.” *Id.* at 3:66-4:2. I have annotated Figures 3 and 6 of the ’492 Patent to demonstrate the foregoing.



31. When the canopy is at the desired angle, the sliding member is secured to the main pole at the specific location. The ’492 discloses three structures that are “locking means” for securing the sliding member to the main pole at a specific location. *Id.* at 3:25-40 and 4:12-31. These structures, show below, include: 1) a cam lock member mechanism with a lever portion that is pivotally mounted in an upper position of a housing of a sliding member and rotates to its extended position to disengage the cam surface; 2) a latch pin and hole mechanism that uses a stop bolt and a plurality of holes in the main pole to adjust the height of the umbrella; and 3) a ratchet teeth and pawl mechanism where the row of teeth are arranged on the main pole and interact with a pawl located on the sliding member. *Id.* I have annotated Figures 4, 7, and 8 of the ’492 Patent to demonstrate the foregoing.

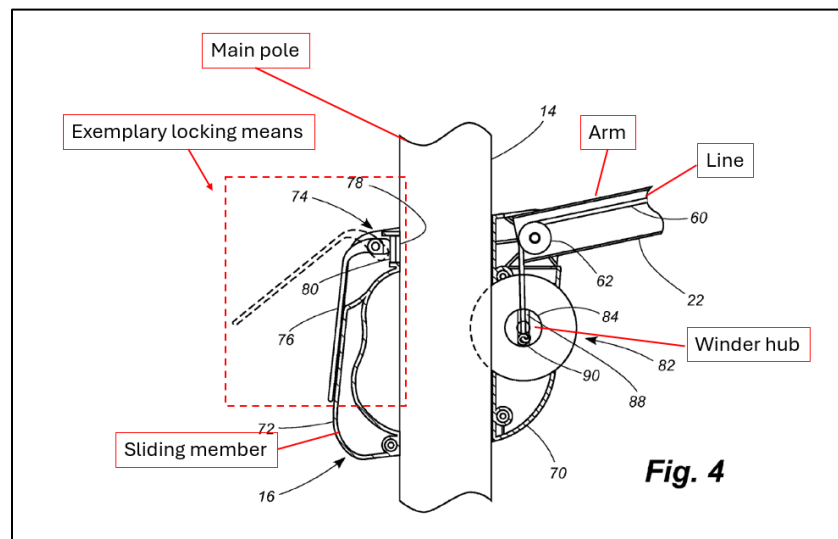
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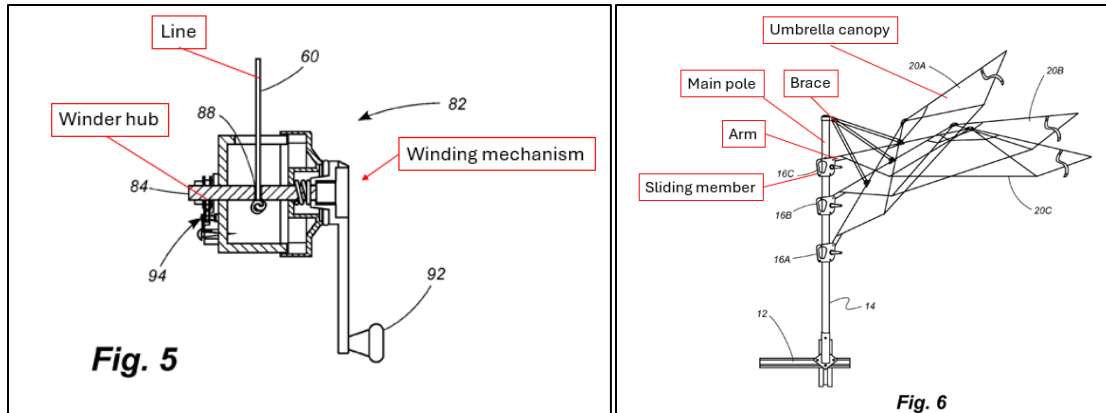


32. The '492 Patent identified problems with prior art cantilevered umbrellas, including that they “utilize a crank mechanism both for raising and lowering the canopy and for adjusting the angle of the canopy. The crank mechanism is mounted to the main pole, and the rope moves along a complex path with many turning points.” *Id.* at 1:33-38. The '492 Patent states that this prior art design “requires more winding force, and the rope can easy [*sic*] bind and wear, adversely affecting the umbrella's operation ...[which make] the operation of the umbrella burdensome and decrease[s] the enjoyment of leisure time.” *Id.* at 1:38:42.

33. To address these issues, the '492 Patent discloses a winding mechanism mounted to a sliding member that allows the user to open and close the umbrella

canopy. The “movement of the sliding member 16 up and down the main pole 14 adjusts the angle of the canopy assembly 20.” *Id.* 3:52-53. To open the canopy, “the user first grasps the crank 92 of the winding mechanism 82 and winds in the line 60. Tension on the line 60 draws ... the opposite end of the line upward, elevating the spreader hub 50. As the spreader hub 50 is raised, the canopy assembly 20 extends.” *Id.* at 3:60-65. Once the canopy assembly “has been fully erected, the user can adjust the angle of the canopy assembly with respect to the main pole 14 by moving the sliding member 16 up or down the pole until the desired result is achieved.” *Id.* at 3:66-4:2. Exemplary annotated Figures 4-6 are shown below.





34. The '492 Patent contains seven claims, all of which are being challenged in the Petition. The Challenged Claims are set forth below.

1. An umbrella comprising:

a main pole having a lower end for support by a support surface and extending generally upward to an upper end;

a sliding member associated with the main pole and selectably moveable thereon between lower and upper locations along the main pole;

locking means for releasably securing the sliding member to the main pole at a selected location along the main pole;

an umbrella canopy having a central region;

an arm associated with the central region and extending radially therefrom to an outer end operatively associated with the sliding member;

a brace having a first end pivotably attached to an upper portion of the pole above the sliding member and a second end pivotably attached to the arm;

a winding mechanism having a winder hub around which a line can be wound, the winder hub being mounted to the sliding member and movable therewith;

a line having a first end that winds around the winder hub, an intermediate portion extending from the winder hub along the arm to the umbrella canopy, and a second end that engages the umbrella canopy;

wherein rotation of the winder hub tensions or relaxes the line depending upon the direction of rotation of the winder hub, and

wherein operation of the winding mechanism to apply tension to the line opens and closes the umbrella canopy in response to movement of the line; and

wherein the angle of the umbrella canopy with respect to the main pole can be controlled by moving the sliding member along the main pole.

2. The umbrella of claim 1, wherein the locking means for releasably securing the sliding member to the main pole comprises a

cam latch member having a cam surface, the cam latch member being rotatable with respect to the sliding member between a first position in which the cam surface causes the sliding member to be clamped against the main pole, and a second position in which the cam surface permits movement of the sliding member with respect to the main pole.

3. The umbrella of claim 1, wherein the locking means for releasably securing the sliding member to the main pole comprises a plurality of teeth formed on the main pole and a cooperating pawl associated with the sliding member and selectively operative to engage a selected one of the teeth to prevent movement of the sliding member with respect to the main pole.

4. The umbrella of claim 1, wherein the locking means for releasably securing the sliding member to the main pole comprises a plurality of holes formed in the main pole and a pin associated with the sliding member and operative to engage a selected one of the holes.

5. The umbrella of claim 1, wherein the sliding member has a handle associated therewith.

6. The umbrella of claim 1, wherein the line extends along at least substantially the entire length of the arm.

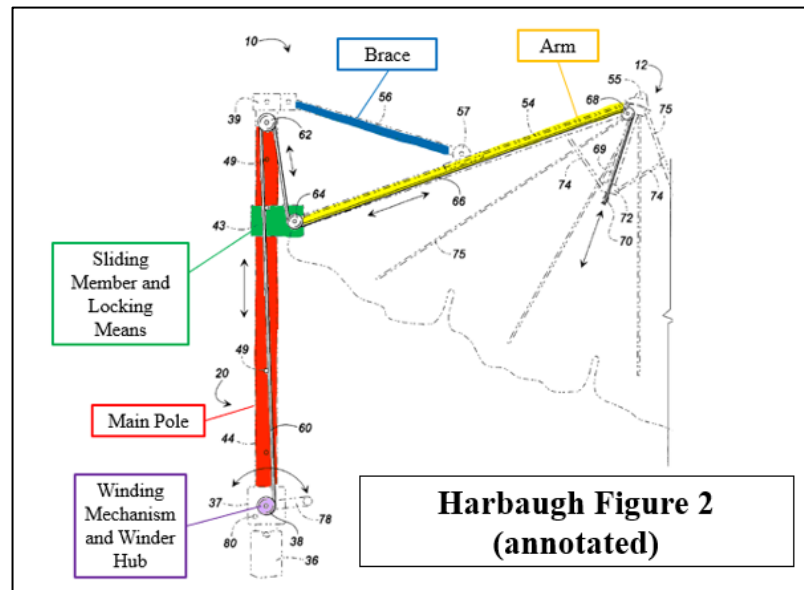
*7. The umbrella of claim 1, further comprising a crank handle
operatively associated with the winder hub, whereby rotating the crank
handle causes the winder hub to rotate.*

B. Prosecution History

35. I understand that the '492 Patent was filed on May 5, 2009. Ex. 1002 at 169-200 (Patent Application). On June 24, 2010, the examiner issued a first non-final office action, rejecting all claims. *Id.* at 138-143 (June 24, 2010 Non-Final Office Action). I understand that the examiner rejected original independent claim 1 and dependent claims 4 and 6 under pre-AIA 35 U.S.C. § 102(b) as anticipated by Harbaugh '882. *Id.* at 139-140 (June 24, 2010 Non-Final Office Action). I understand that the examiner also rejected claims 2, 3, and 5 under § 103(a) as being unpatentable over Harbaugh '882 in view of Tung '037 and Liu '171. *Id.* at 140-142.

36. Original claim 1, which I understand was rejected over Harbaugh '882, included nearly all of the limitations in issued claim 1. Specifically, the examiner found that Harbaugh '882 teaches a main pole (20); a sliding member (43) associated with the main pole; locking means (48/49) for releasably securing the sliding member; an umbrella canopy (15) having a central region (55); an arm (54); a brace (56) associated with the arm; a winding element (including 38, 64 and 62) mounted to the sliding member and movable therewith; and a line (60); wherein operation of the winding element opens and closes the umbrella canopy; and wherein the angle

of the umbrella canopy can be controlled by moving the sliding member. *Id.* at 139-140 (June 24, 2010 Non-Final Office Action). I have annotated Figure 2 of Harbaugh '882 to demonstrate the foregoing.



37. I understand that the examiner explained that the winding element in Harbaugh '882 “is mounted to the sliding member and moveable therewith.” Ex. 1002 at 139-140.

38. I understand that on February 3, 2011, the patentee argued that Harbaugh '882 does not disclose “a sliding member [having] a winding element mounted to the sliding member and movable therewith.” *Id.* at 129. The applicant disagreed with the examiner’s including element 64, which moves with the sliding member, as part of the winding element because element 64 is a pulley. *Id.* at 129-130.

39. I understand that the examiner issued a final rejection on April 12, 2011, again rejecting claims 1, 4, and 6 under § 102(b) over Harbaugh '882. *Id.* at 102-111 (April 12, 2011 Final Office Action). The examiner explained that “Harbaugh ['882] clearly teaches a winding element insofar as this element is recited in the claims.” Further, Harbaugh '882 discloses the winding element mounted on the sliding member because “[t]he elements identified as the winding element, which includes 64, clearly mounted on the sliding member and movable therewith, allow for and provide means for winding and providing applying tension to the line. . .” *Id.* at 107 (April 12, 2011 Final Office Action).

40. The examiner also renewed the rejection of claims 2, 3, and 5 under § 103(a). *Id.* at 105-107. I understand that the examiner found that the three “locking means” in the '492 Patent were known in the prior art. The examiner found that Harbaugh '882 teaches the pin and hole “locking means” in claim 4. Specifically, the locking means in Harbaugh '882 “comprises a plurality of holes (49) formed in the main pole and a pin (48) associated with the sliding member and operative to engage a selected one of the holes.” *Id.* at 140 (June 24, 2010 Non-Final Office Action). The examiner rejected Claim 2 because “to modify the locking means and sliding member of Harbaugh ['882] by using a cam locking means with a handle as taught by Tung” would have been obvious. *Id.* at 140-141 (June 24, 2010 Non-Final Office Action). The examiner also rejected claim 3 because “to modify the locking

means of Harbaugh by using a teeth-and-pawl means as taught by Liu” would have been obvious. *Id.* at 141-142 (June 24, 2010 Non-Final Office Action).

41. I understand that on May 16, 2011, the applicant responded to the final office action. Ex. 1002 at 85-100 (RCE and Response to April 12, 2011 Final Office Action). The applicant amended claim 1 to add a limitation that the winding mechanism has “a winder hub around which a line can be wound, the winder hub being mounted to the sliding member and moveable therewith” and that rotation of the winder hub “tensions or relaxes the line. . .” *Id.* at 93-96 (RCE and Response to April 12, 2011 Final Office Action). The applicant never disputed, in response to either office action, the examiner’s findings that the prior art discloses each of the locking means described in the application. *See* Ex. 1002.

42. On August 23, 2011, the examiner entered an examiner’s amendment and allowed the application. *Id.* at 71-75 (Notice of Allowance).

C. The Challenged Claims

43. The ’492 Patent issued with seven claims. Only claim 1 is independent. I have set forth below claim 1 with limitations labeled for reference and the main elements bolded.

Claim 1	
Preamble	An umbrella comprising:

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1[A]	a main pole having a lower end for support by a support surface and extending generally upward to an upper end;
1[B]	a sliding member associated with the main pole and selectably moveable thereon between lower and upper locations along the main pole;
1[C]	locking means for releasably securing the sliding member to the main pole at a selected location along the main pole;
1[D]	an umbrella canopy having a central region;
1[E]	an arm associated with the central region and extending radially therefrom to an outer end operatively associated with the sliding member;
1[F]	a brace having a first end pivotably attached to an upper portion of the pole above the sliding member and a second end pivotably attached to the arm;
1[G]	a winding mechanism having a winder hub around which a line can be wound, the winder hub being mounted to the sliding member and movable therewith;
1[H]	a line having a first end that winds around the winder hub, an intermediate portion extending from the winder hub along the arm to the umbrella canopy, and a second end that engages the umbrella canopy;

1[I]	wherein rotation of the winder hub tensions or relaxes the line depending upon the direction of rotation of the winder hub, and
1[J]	wherein operation of the winding mechanism to apply tension to the line opens and closes the umbrella canopy in response to movement of the line; and
1[K]	wherein the angle of the umbrella canopy with respect to the main pole can be controlled by moving the sliding member along the main pole.

D. Claim Construction

44. I understand that the Patent Trial and Appeal Board (“PTAB”) uses the *Phillips*² standard for claim construction used in civil courts, which is to say that the claims must be given the meaning the terms would have had to a POSITA at the time of the ’492 Patent’s priority date.

1. The claim term “locking means for releasably securing” corresponds with three structures disclosed in the specification of the ’492 Patent

45. I understand that in *ATLeisure v. Treasure Garden, Inc.*, Case No. 1:24-cv-02270 (the “Underlying Litigation”) and in other prior litigation against other parties, ATLeisure has admitted that the “locking means for releasably securing”

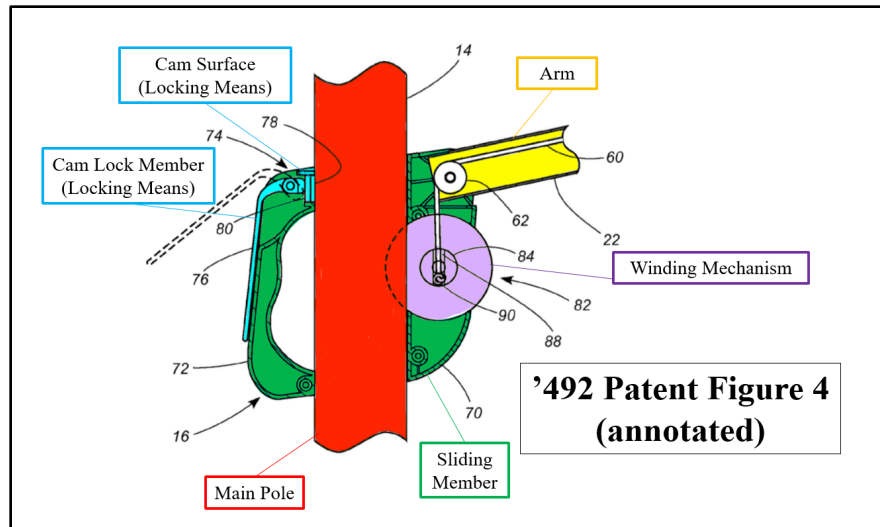
² *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-17 (Fed. Cir. 2015)

claim term is a means-plus-function term governed by 35 U.S.C. § 112 ¶ 6, and courts have agreed. *See e.g. ATLeisure, LLC v. Ace Evert, Inc.*, Case No. 1:12-cv-01260, Dkt. 85 (N.D. Ga. May 20, 2013) (showing claim construction order); *ATLeisure, LLC v. Sunvilla Corp.*, Case No. 1:20-cv-04662, Dkt. 46 (N.D. Ga. July 26, 2021) (showing ATLeisure’s claim construction brief); *ATLeisure, LLC v. Lowe’s Home Centers, LLC*, Case No. 6:22-cv-682-WWB-GJK, Dkt. 39 (M.D. Fla. Dec. 16, 2022) (showing ATLeisure’s claim construction brief); *ATLeisure v. Treasure Garden, Inc.*, Case No. 1:24-cv-02270; Ex. 1016.

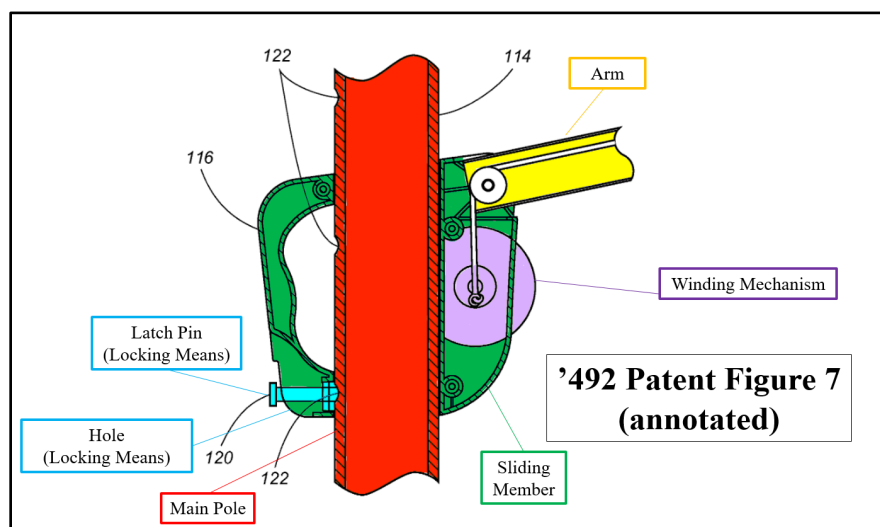
46. I understand that under pre-AIA 35 U.S.C. § 112 ¶ 6, a term in a claim that is “expressed as a means or step for performing a specified function without the recital of structure,” like the “locking means” here, “shall be construed to cover the corresponding structure, material, or acts described in the [patent’s] specification and equivalents thereof.” I understand that when construing the structure of a means-plus-function limitation, the court or Board identifies the structure(s) in the patent specification that performs the claimed function. I understand that in addition to the structures in the specification, the claims are also interpreted as covering equivalents, *i.e.*, undisclosed structures that perform the claimed function in substantially the same way to achieve substantially the same result as the structure in the written description.

47. Here, the “locking means” performs the function of “releasably securing the sliding member to the main pole at a selection location”. Ex. 1001 at Claim 1. As discussed above, the ’492 Patent specification describes three different structures corresponding to the claim term “locking means for releasably securing the sliding member to the main pole at a selected location along the main pole.” See Ex. 1001 at Figures 4, 7, 8 and 3:25-40, 4:12-31, and 4:36-40. Specifically, Figures 4, 7, and 8 of the ’492 Patent disclose these three different structures: 1) a cam lock member mechanism, 2) a latch pin and hole mechanism, and 3) a ratchet teeth and pawl mechanism. Thus, I understand that, as found in prior litigation, § 112 ¶ 6 allows, “ATLeisure’s locking means to cover those three disclosed structures and their equivalents.” *ATLeisure, LLC v. Ace Evert, Inc.*, Case No. 1:12-cv-01260, Dkt. 85 at 15 (N.D. Ga. May 20, 2013).

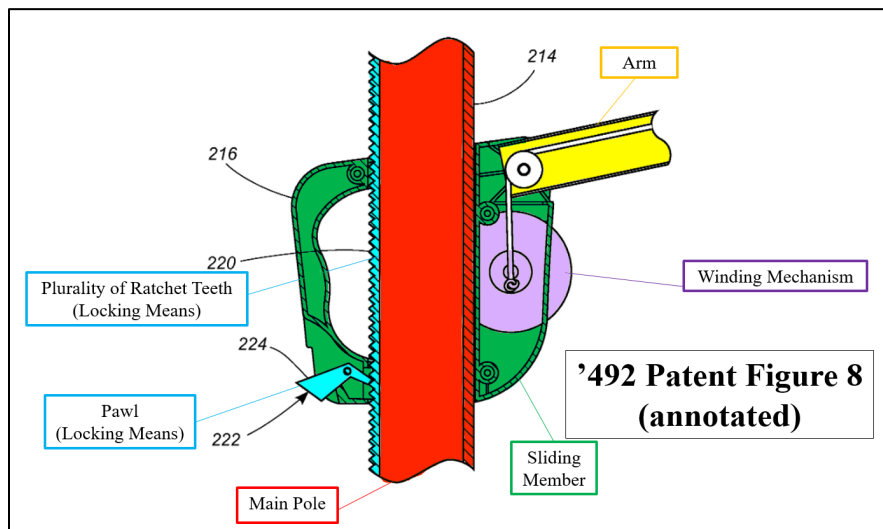
48. The first structure, the cam lock mechanism, is shown in ’492 Patent Figure 4 and described in Ex. 1001 at 3:25-40. This structure has a cam lock member with a lever portion that is pivotally mounted in an upper position of a housing of a sliding member and rotates to its extended position to disengage the cam surface to unclamp the sliding member from the main pole. Ex. 1001 at 3:25-40 and Figure 4; When the cam lock member rotates back, the lever portion overlaps the exterior of the grasping portion of sliding member and the cam lock member clamps the sliding member to the main pole.



49. The second structure, the latch pin and hole mechanism, is shown in Figure 7 of the '92 Patent and described in Ex. 1001 at 4:12-20. This structure has a spring-loaded latch pin (120) mounted to the sliding member. The latch pin engages one of a corresponding series of holes in the main pole. Ex. 1001 at 4:12-20, 6:6-10 (claim 4) and Figure 7.



50. The third structure, the ratchet teeth and pawl structure, is shown in Figure 8 of the '492 Patent and described in Ex. 1001 at 4:21-31. This structure has a plurality of ratchet teeth along the rear surface of the main pole. *Id.* at 4:21-31, 5:19-6:5 (claim 3), and Figure 8. A pawl (222) pivotally mounted to the sliding mechanism engages a cooperating one of the ratchet teeth (220) to lock the sliding member in position. *Id.*



2. A POSITA would have understood “mounted to” as meaning “secured to and supported by”

51. Claim 1 recites “the winder hub being **mounted to** the sliding member and movable therewith.” Ex. 1001 at 4:64-65 (emphasis added). A POSITA would understand this term means “secured to and supported by,” consistent with its ordinary meaning. *See* Ex. 1017 at pt 1; Ex. 1018 at 1230; and Ex. 1019 at 1107.

3. A POSITA would have understood “pivotably attached to” as meaning “attached so as to rotate around a central point”

52. I understand claim 1 recites “a brace having a first end **pivotably attached** to an upper portion of the pole above the sliding member and a second end **pivotably attached** to the arm.” Ex. 1001 at 4:60-62 (emphasis added). A POSITA would understand this term to mean “attached so as to rotate around a central point,” consistent with its ordinary meaning. *See* 1017 at pt 2; Ex. 1018 at 1431; Ex. 1019 at 1295; Ex. 1020 at 1339;.

E. Priority Date of the ’492 Patent and the ’353 Provisional Application

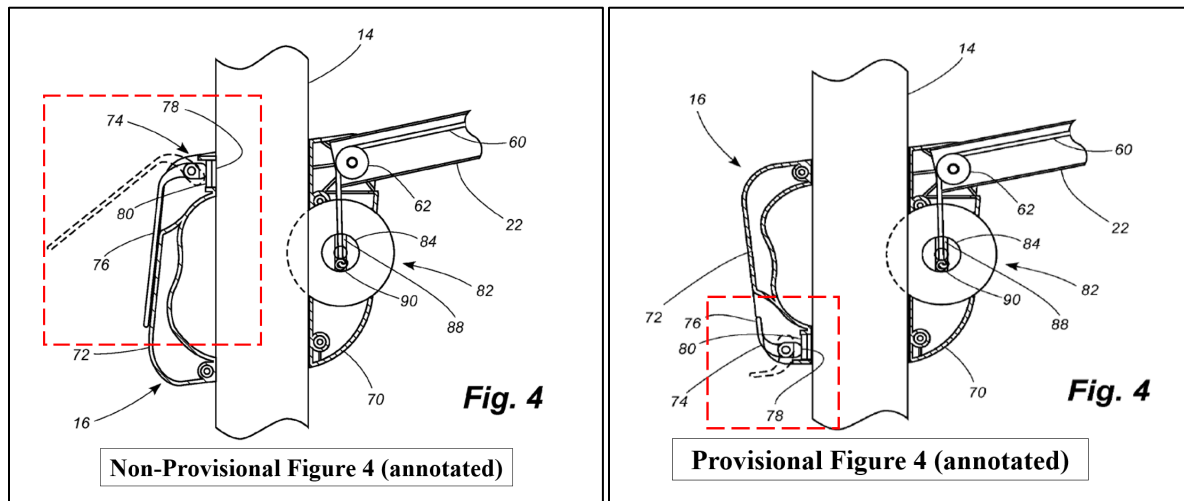
53. I understand that the ’492 Patent issued on January 31, 2012 from the ’640 Non-Provisional Application filed on May 5, 2009. I understand the ’492 Patent claims priority to the ’353 Provisional Application filed on May 5, 2008. *See* Ex. 1001 at 1 (Related U.S. Application Data). I understand that “because the PTO does not examine priority claims unless necessary, the Board has no basis to presume” that all claims are entitled to the provisional filing date. I understand that a patent is only entitled to claim the benefit of the filing date of its provisional application if the disclosure of the provisional provides support for the issued claims in compliance with 35 U.S.C. § 112 ¶ 1. I understand that a claim is not entitled to the priority date of an earlier application unless that earlier application sufficiently describes the full scope of the later claimed subject matter sufficiently to “meet the requirements of 35 U.S.C. § 112, first paragraph, as to that claimed subject matter.”

54. Here, in the '640 Non-Provisional Application, the applicant added new structure and deleted existing structure corresponding to the limitation requiring a “locking means for releasably securing the sliding member” in claim 1 of the '492 Patent, the sole independent claim.

55. Specifically, the new matter describing “locking means” that was not in the '353 Provisional Application as compared to the deleted matter includes:

- A new Figure 4, showing a different design of a cam-based locking mechanism which includes at least a different latch orientation, latch handle size, latch storing cavity, latch location, and sliding member shape (see annotated below), with deletion of the original Figure 4. *Cf.* Ex. 1001 at Figure 4 *with* Ex. 1003 at Figure 4. The new Figure 4 shows a different cam lock structure with a much large lever portion in a different orientation, located at the top of the sliding member 16, and elongated to such an extent that the lever portion rests on an outside surface of the sliding member 16 rather than in a storing cavity located at the bottom portion of the sliding member. The new figure also shows that the lever portion 76 is “slightly narrower than the housing 70” (Ex. 1001 at 3:31) and is illustrated as extending over a substantial portion of the exterior of the grasping portion of a handle formed in the housing 70. Ex. 1001 at Figure 4; Ex. 1003 at 12 ('353 Provisional). A

POSITA would recognize associated significant differences in user effort and kinds of hand manipulations required to actuate the respective mechanisms.



- Substantial changes in the specification of the '492 Patent at 3:25-40 from the '353 Provisional Application at [0025], such as changing the language from “lower” to “upper,” “up” to “down,” “down position” to “up position”, and “latch” to “lock,” and the addition of the sentence “[w]hen viewed from the end, the lever portion 76 is slightly narrower than the housing 70.” *Cf.* Ex. 1001 at 3:25-40 *with* Ex. 1003 at [0025]. This language comports with the changes that the Applicant made to Figure 4.

Referring now to FIG. 4, the sliding member 16 includes a housing 70, the rear portion 72 of which is formed in the shape of a handle that may be easily grasped by a user. A cam lock member 74 is pivotally mounted in an upper portion of the housing 70. The cam lock member 74 comprises a lever portion 76 and a cam surface 78. When viewed from the end, the lever portion 76 is slightly narrower than the housing 70. When the cam lock member 74 is in its “down” or “stored” position, the cam surface 78 bears against a spring loaded button 80, which in turn clamps against the main pole 14 to secure the sliding member 16 against the pole. When the lever portion 76 of the cam lock member 74 is in its up position, shown in the dashed line, the cam surface 78 is rotated free of the button 80. The spring then causes the button 80 to retract, and the sliding member 16 can move freely up and down the main pole 14.

’492 Patent at 3:25-40

[0025] Referring now to FIG. 4, the sliding member 16 includes a housing 70, the rear portion 72 of which is formed in the shape of a handle that may be easily grasped by a user. A cam lock member 74 is pivotally mounted in a lower portion of the housing 70. The cam lock member 74 comprises a lever portion 76 and a cam surface 78. When the cam latch member 74 is in its “up” or “stored” position, the cam surface 78 bears against a spring loaded button 80, which in turn clamps against the main pole 14 to secure the sliding member 16 against the pole. When the cam latch member 74 is in its down position, shown in the dashed line, the cam surface 78 is rotated free of the button 80. The spring then causes the button to retract, and the sliding member 16 can move freely up and down the pole 14.

’353 Provisional Application at [0025]

- The addition of new text in the ’492 Patent at 4:36-41 stating “[i]n the embodiment of FIGS. 1-6 the handle of the lever is described as being pivoted at its upper end. However, it will be appreciated that the latch mechanism 74 can be mounted at the lower end of the slide 16, with the handle 76 being pivoted at its lower end.” Ex. 1001 at 4:36-40. A POSITA would understand that this description is only of the same elongate “lever portion 76” as shown in the ’492 Patent being mounted at the lower end of the sliding member 16, and not of the cam lock member 74 being shortened as disclosed in FIG. 4 of the ’353 Provisional Application. For example, the handle 76 of Figure 4 in the ’353 Provisional Application is shorter and oriented in the opposite direction, and the sliding member 16 of Figure 4 in the ’353 Provisional Application has a different shape — namely, a cavity to store the handle 76 — rather than blending onto the handle profile.

56. There are benefits of the applicant's changes to the cam lock structure. Specifically, the new structure disclosed in the '492 Patent, but not in the '353 provisional application, allows one-handed operation with improved leverage. For example, four fingers can be inserted into the grasping portion and the thumb or palm of the same hand can simultaneously apply a downward force to the lever portion 76 to engage the locking means while the same hand maintains the desired elevation of the sliding member 16. As the weight of the umbrella tends to cause the sliding member to move downward, the index and middle finger of one hand of the operator may rest in the upper concavity of the grasping portion to hold the elevation of the sliding member 16. The thumb or palm of the same hand can squeeze the lever portion 76 downwards toward the housing 70 where it comes to rest overlapping an exterior of the grasping portion within the width of the housing, being slightly narrower.

57. The differences between the provisional FIG. 4 and the non-provisional FIG. 4 are acknowledged in the description, which states “the handle of the lever is described as being pivoted at its upper end. However, it will be appreciated that the latch mechanism 74 can be mounted at the lower end of the slide 16, with the handle 76 being pivoted at its lower end.” Ex. 1001 at 4:37-40. Thus, the non-provisional disclosure describes these variants as distinct from each other, with the “pivoted at the upper end” variant being first introduced as of the non-provisional filing date.

58. By adding new matter to non-provisional application, the applicant introduced a new variant of the structure corresponding to the claim term “locking means,” and therefore changed the scope of this claim term. I understand that, under means-plus-function claim construction, “locking means” is limited to the structure and equivalents disclosed in the specification. Thus, I understand the priority date of at least claims 1 and 5-7 of the ’492 Patent, which include the cam mechanism structure corresponding to the “locking means” limitation, is May 5, 2009 (*i.e.* the filing date of the ’640 Non-Provisional Application), and prior art before May 5, 2009 may anticipate or render obvious at least claims 1 and 5-7.

V. OVERVIEW OF PRIOR ART

A. Chinese Utility Model Patent No. CN 201076109Y (“Wang ’109”) (Ex. 1005)

59. Wang ’109 was filed on September 30, 2007 and issued in China on June 25, 2008. *See* Ex. 1005 at 12. I am informed that Wang ’109 qualifies as prior art to the ’492 Patent under pre-AIA 35 U.S.C. § 102(a) as it was issued and published prior to the ’492 Patent’s actual filing date of May 5, 2009. The applicant for the ’492 Patent did not disclose Wang ’109 in an Information Disclosure Statement, and the examiner did not review Wang ’109 during prosecution of the ’492 Patent. *See* Ex. 1002.

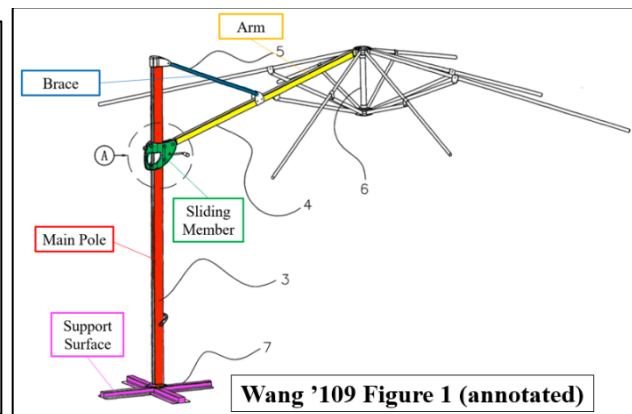
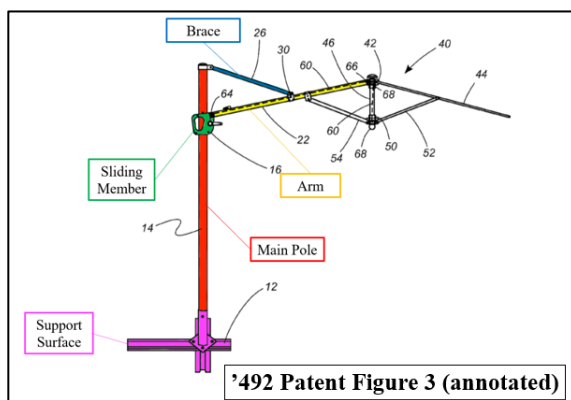
60. Wang '109 teaches an offset “straight pole foldable hanging parasol” which is in the same field of invention as the “adjustable offset umbrella” disclosed in the '492 Patent. Ex. 1005 at 12; Ex. 1001 at Title.

61. Wang '109 discloses a device which is nearly identical to the umbrella of the '492 Patent, with at least a main pole (vertical pole 3); a support surface (base 7); a sliding member (positioning mechanism) with a locking means (locking block 23; tooth heads of the row of teeth 24; button 21; torsion spring 27; crank arm 25; spring 22; steel wire 26) and a winding mechanism (crank handle 35; crank shaft 33) having a winder hub (rope reel wheel 32) around which a line (parasol rope 36) is wound; an arm (diagonal rod 4); and a brace (diagonal pulling rod 5) that allows a user to manipulate an umbrella canopy to provide shade. Ex. 1005 at 18-20 (Description). Figure 1 and 3 of Wang '109 show embodiments that are similar to the Figures 3 and 8 of the '492 Patent. *Cf* Ex. 1005 at Figures 1 and 2 *with* Ex. 1001 at Figures 3 and 4 (see annotated below).

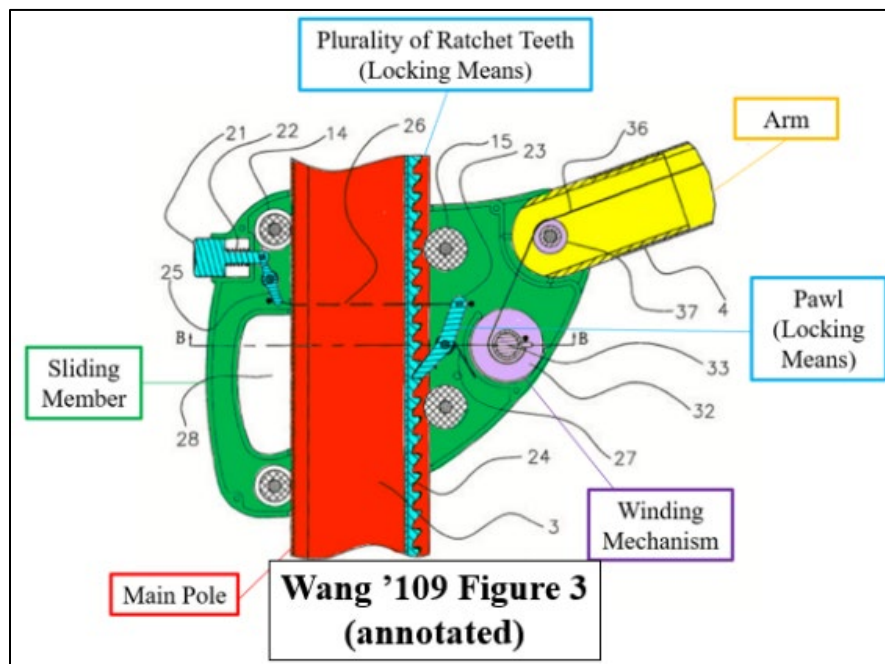
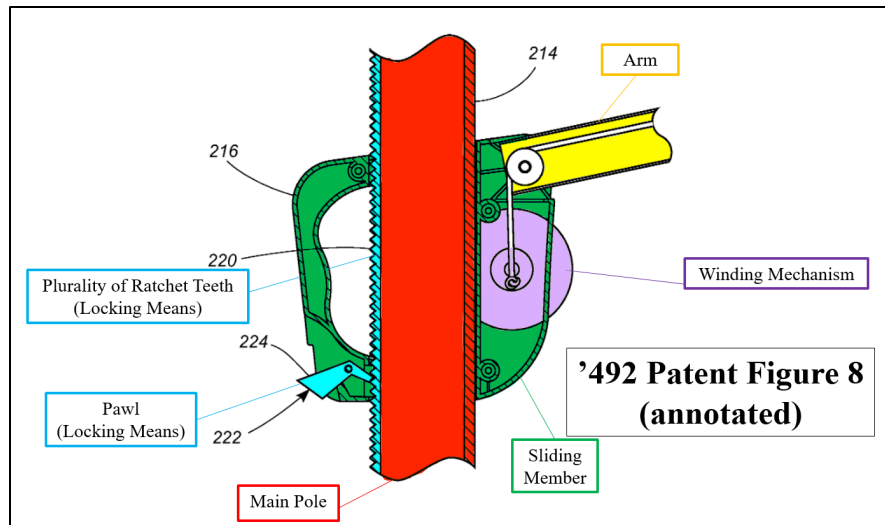
62. Wang '109 discloses a winder hub and crank (rope reel wheel 32) attached to the sliding member (positioning mechanism). Rotation of the winder hub (rope reel wheel 32) applies tension to a line running to the center of the canopy and opens and closes the canopy, just as in the '492 Patent. Ex. 1005 at 19-20. Wang '109 explains that when the rope reel wheel 32 is cranked, it “drives the parasol rope 36 to tighten or relax, and the parasol frame 6 opens or closes.” Ex. 1005 at 20. Further,

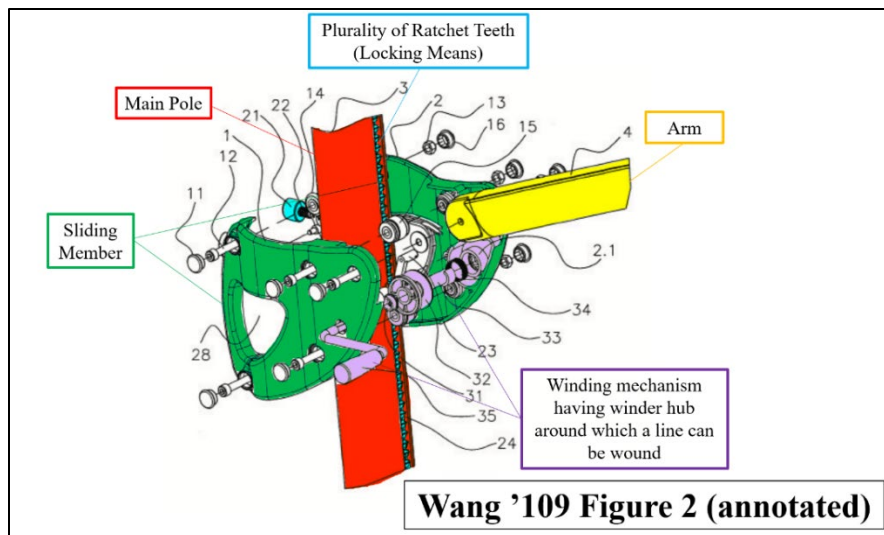
when the sliding member of Wang '109 (positioning mechanism) is slid along the main pole, it adjusts the angle of canopy. Specifically, Wang '109 explains: “hold the handle hole 28 and push the positioning mechanism upward ... stop pushing upward, under the gravity of the parasol frame 6, the diagonal rod 4 drive the positioning mechanism to move downward.” Ex. 1005 at 19.

63. Wang '109 discloses a similar locking means structure claimed in the '492 Patent. Specifically, as shown below, Wang '109 discloses a ratchet teeth and pawl structure that is similar to and corresponds to the locking means shown in Figure 8 of the '492 Patent. *Compare* Ex. 1005 at Figure 3 *with* Ex. 1001 at Figure 8 (see annotated figures below).



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Klopp Declaration





64. Wang '109 describes, as an objective of the described invention, a motivation to address the problem that other lines in prior art devices become “often stuck or broken” during operation and “hence the reliability is poor.” Ex. 1005 at 16 (Background Art). In addition, Wang '109 also states the prior art has “complex structure[s], high production cost[s], and [are] inconvenient [to] use.” *Id.*

B. Chinese Utility Model Patent No. CN 201197439Y (“Wang '439”) (Ex. 1006)

65. Wang '439 was filed on May 30, 2008 and issued in China on February 25, 2009. *See* Ex. 1006 at 13. I am informed that Wang '439 qualifies as prior art to the '492 Patent under pre-AIA 35 U.S.C. § 102(a) as it was patented (published) prior to the '492 Patent's filing date of May 5, 2009. The applicant for the '492 Patent did not disclose Wang '439 in an Information Disclosure Statement, and the examiner did not review Wang '439 during prosecution of the '492 Patent. *See* Ex. 1002.

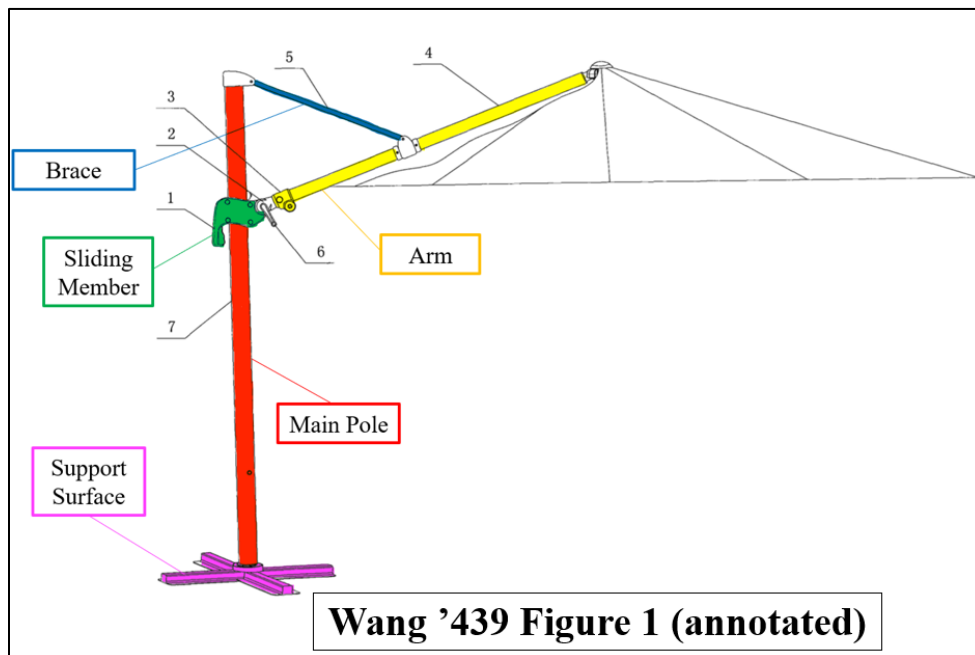
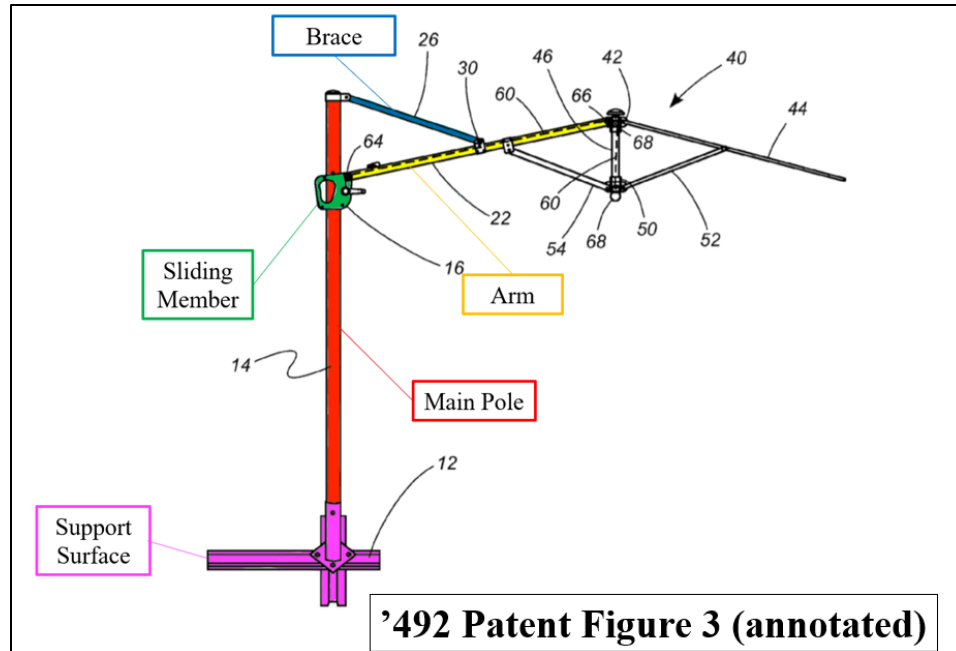
66. Wang '439 discloses an offset “sunshade parasol cranking device” which is in the same field of invention as the “adjustable offset umbrella” disclosed in the '492 Patent. Ex. 1006 at 13 and FIG. 1; Ex. 1001 at Title.

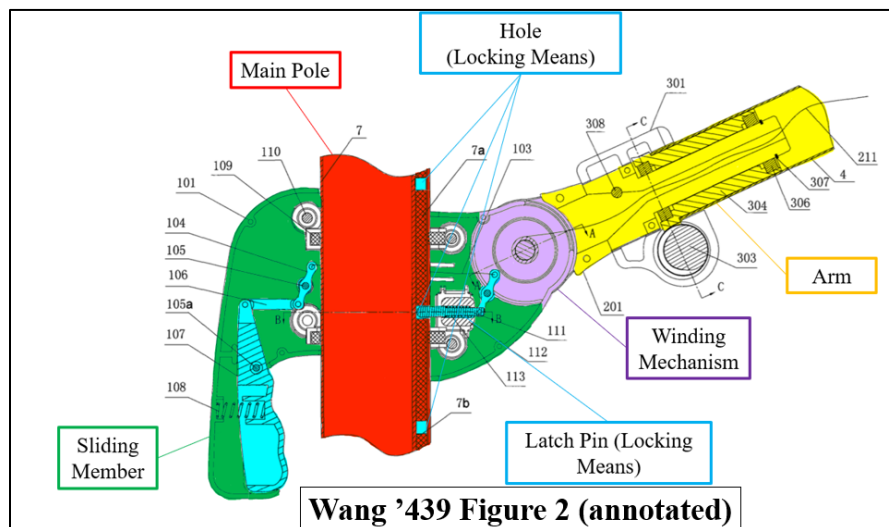
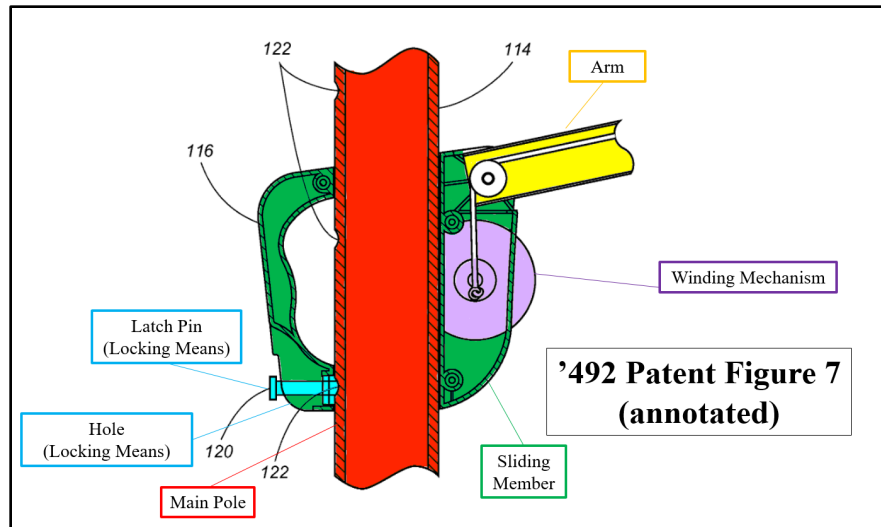
67. Wang '439 teaches a device with at least a main pole (pole 7); sliding member (handle mechanism 1) with a locking means (elastic positioning pin 111) and having a winder hub attached to the sliding member (rope winding wheel 209) around which a line (parasol rope 211); an arm (outer tube 4); and a brace (diagonal rod 5) that allows a user to manipulate an umbrella canopy to provide shade. Ex. 1006 at 17-22 (Description). Figures 1 and 2 of Wang '439 show embodiments that are similar to Figures 3 and 7 of the '492 Patent. *Cf* Ex. 1006 at Figures 1 and 2 *with* Ex. 1001 at Figures 3 and 7 (see annotated below).

68. Wang '439 discloses a winder hub and crank (rope winding wheel 209) attached to the sliding member (handle mechanism 1). Rotation of the winder hub (rope winding wheel 209) applies tension to a line running to the center of the canopy and opens and closes the canopy, just as in the '492 Patent. Ex. 1006 at 21. Wang '439 explains one can crank the “rope winding wheel 209 [] provided with a parasol rope 211” to control “the opening and closing of the parasol surface.” Ex. 1006 at 21. Further, when the sliding member of Wang '439 (handle mechanism 1) is slid along the main pole, it adjusts the angle of canopy. Specifically, Wang '439 explains: “The

handle mechanism 1 can slide up and down via the convex points 114 and the corresponding grooves provided on the pole 7.” Ex. 1006 at 20-21.

69. Wang ’439 discloses a similar locking means structure claimed in the ’492 Patent. Specifically, as shown below, Wang ’439 discloses a latch pin locking structure that is similar to and corresponds to the latch pin locking means structure shown in Figure 7 of the ’492 Patent. *Compare* Ex. 1006 at Figure 2 *with* Ex. 1001 at Figure 7 (see annotated figures below).





70. Wang '439 describes, as an objective of the described invention, a motivation to address the problem that other adjustable canopies are “inconvenient for consumers to use, but also have certain defects such as cumbersome structure, complex assembly and high production cost[s].” Ex. 1006 at 17 (Background Art).

C. Chinese Utility Model Patent No. CN 201001460Y (“Wang ’460”) (Ex. 1007)

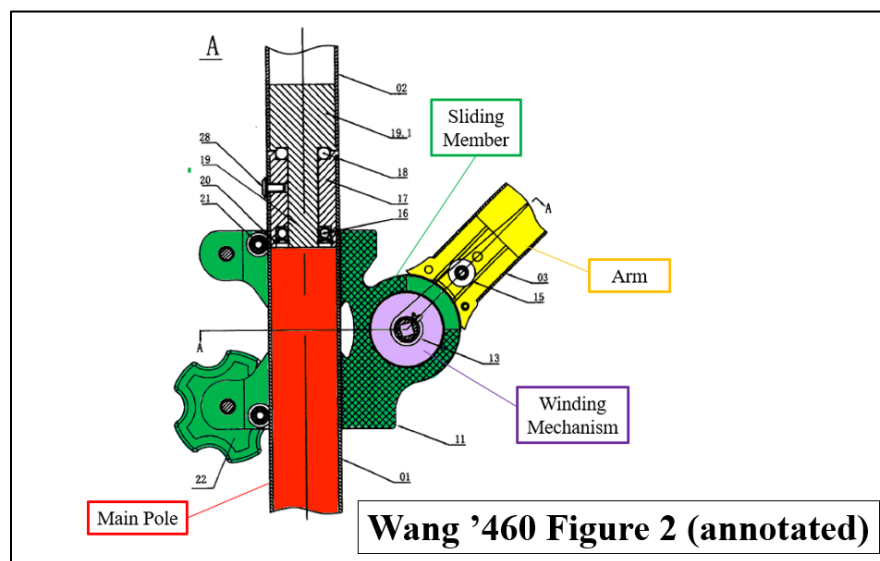
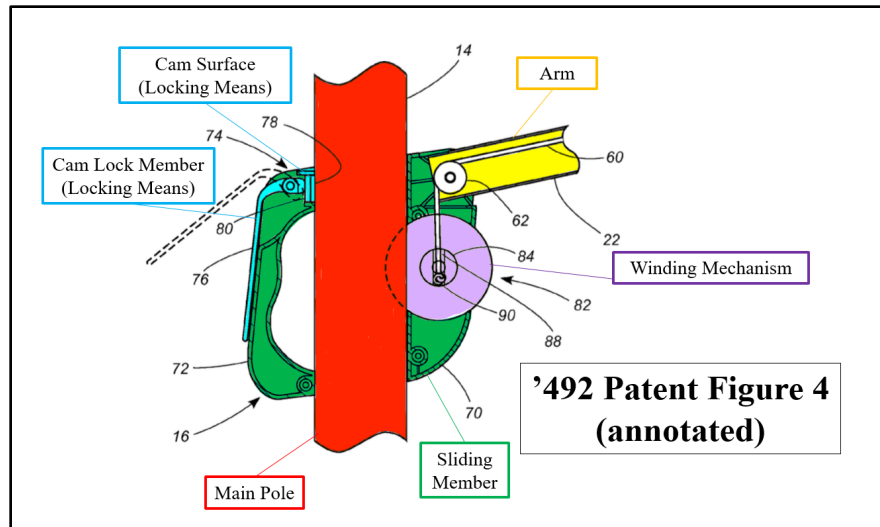
71. Wang ’460 was filed on February 1, 2007 and issued in China on January 9, 2008. *See* Ex. 1006. I am informed Wang ’460 is therefore prior art under pre-AIA 35 U.S.C. § 102(a). Wang ’460 was not cited or considered by the Patent Office during examination of the ’492 Patent but was considered in IPR2021-00430. *See* Ex. 1002.

72. Wang ’460 discloses an offset “hanging parasol” or cantilevered umbrella which is in the same field of invention as the “adjustable offset umbrella” disclosed in the ’492 Patent. Ex. 1007 at 10; Ex. 1001 at Title.

73. Wang ’460 teaches a device with at least a main pole (parasol pole 1); a support surface (parasol base 111); sliding member (sliding sleeve 11) with a locking means (bolt-locking hoop structure) and having a winder hub (rope reel 26) around which a line (pull rope 13); an arm (suspension rod 03); and a brace (pull rod 02) that allows a user to manipulate an umbrella canopy to provide shade. *See* Ex. 1007 at 14-18. The winder hub (rope reel 26) is mounted to casings 141, 142 connected to the sliding sleeve 11 of Wang ’460. *Id.* Figure 1 and 3 of Wang ’460 show embodiments that are similar to Figures 3 and 4 of the ’492 Patent in that both employ securing the sliding member with a compressive force and friction. *Cf* Ex. 1007 at Figures 1 and 3 *with* Ex. 1001 at Figures 3 and 4 (see annotated below).

Wang '460 discloses a cantilevered umbrella with a sliding member (“sliding sleeve 11”) that “slide[s] smoothly with the parasol pole” to adjust the canopy angle. Ex. 1007 at 17. The Wang '460 umbrella also has a winder hub (rope wheel 26) and crank mounted to the sliding sleeve 11. *Id.* at 12 (Claim 1) and 17. *Id.* at Figure 1 and 2 (annotated below).





74. A pull rope (13) is fixed to a reel (26) of the rope winder and allows a user to open and close the canopy by winding the line around the winder hub. *Id.* at 12 (Claim 1). Wang '460 discloses a locking means on “parasol pole 01...with a hoop-type sliding sleeve 11 locked by a bolt. *Id.* at 17.

75. While Wang '460 does not disclose the identical structure corresponding to the “locking means” in the '492 Patent, those structures were well-known and disclosed in prior art.

76. Because Wang '460 has a locking device (i.e., bolt-locking hoop structure) to affix the sliding member at a specific position along the main pole, it would have been obvious to a POSITA to make a simple substitution of one known element for another replacing the structure used along the main pole with one of the structures corresponding to “locking means” in the '492 Patent. Ex. 1007 at 17.

77. Wang '460 also states that other umbrella designs are “complicated, and the opening and closing of the parasol cover is quite inconvenient” and “unstable when the parasol cover is opened...” Ex. 1007 at 14.

D. U.S. Patent No. 6,014,980 (“Glatz '980”) (Ex. 1008)

78. Glatz '980 issued on January 18, 2000. *See* Ex. 1008. I am informed that Glatz '980 is therefore prior art under pre-AIA 35 U.S.C. §§ 102(a), 102(b), and 102(e). Glatz '980 was not cited or considered by the Patent Office during examination of the '492 Patent. *See* Ex. 1002.

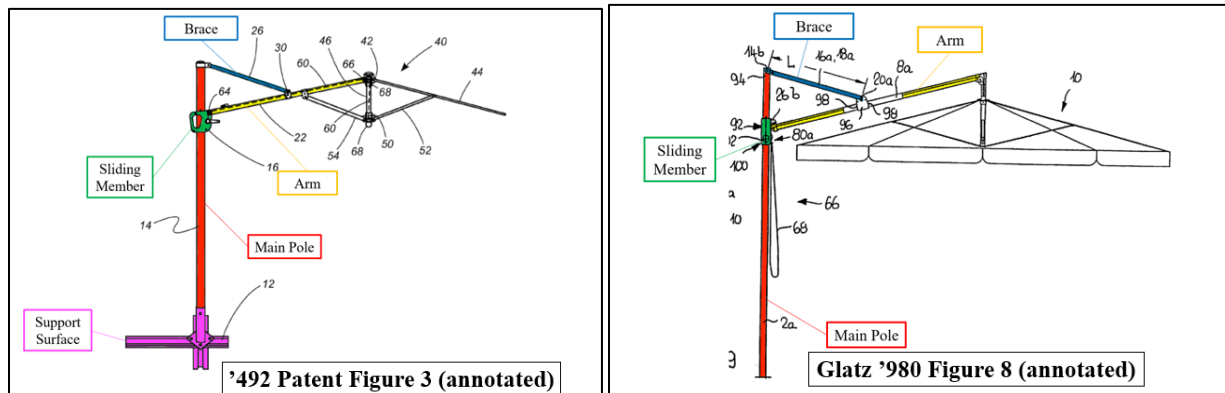
79. Glatz '980 discloses an offset “free-arm canopy” which is in the same field of invention as the “adjustable offset umbrella” disclosed in the '492 Patent. Ex. 1008 at Title; Ex. 1001 at Title.

80. Glatz '980 teaches a device with at least a main pole (mast 2a); sliding member (slide 92) with a locking means (e.g., first detent device 100; clamping screw 102); a line (pulling mechanism/device 68); an arm (jib 8a); and a brace (connecting strut 16a, 18a) that allows a user to manipulate an umbrella canopy to provide shade. *See* Ex. 1008 at 4:21-7:43. A POSITA would understand that the main pole of the device must be attached to a support surface in order for the device to stand upright. Figure 8 of Glatz '980 shows an embodiment that is similar to Figure 3 of the '492 Patent. *Cf* Ex. 1008 at Figure 8 *with* Ex. 1001 at Figure 3 (see annotated below). Glatz also notes that a “securing device (80a) for fastening the pulling mechanism is positioned on the slide (92) so that the canopy can be inclined in the open state.” *Id.* at 6:23-26. In connection with another embodiment, a “securing device” is described as a “clamping device” and is illustrated as a simple cleat. *See id.*, at 5:47 and FIG. 3. The line runs from the securing device (80a) mounted to the sliding member (slide 92) and along the arm (jib 8a) to the canopy where tensioning and releasing the line (pulling mechanism/device 68) opens and closes the canopy. Ex. 1008 at 5:26-49 and Figure 8.

81. Although Glatz '980 uses a different device for securing the line that opens the canopy, the use of a winder hub was well known known in the prior art, including in Wang '460. Replacing the securing device (i.e., the cleat) in Glatz '980

with a winder hub to maintain the tension in the line is a simple substitution of one known element for another and would have been obvious to a POSITA.

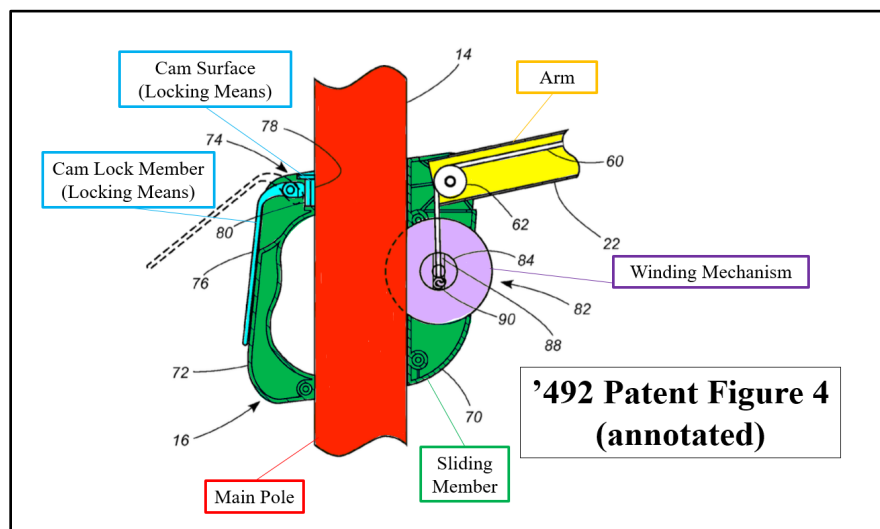
82. Because Glatz '980 has a locking device to affix a sliding member at a specific position along the main pole, it would have been obvious to a POSITA to make a simple substitution of one known element for another replacing the structure used to affix the sliding member along the main pole with one of the structures corresponding to “locking means” in the '492 Patent. Ex. 1008 at 3:30-37.

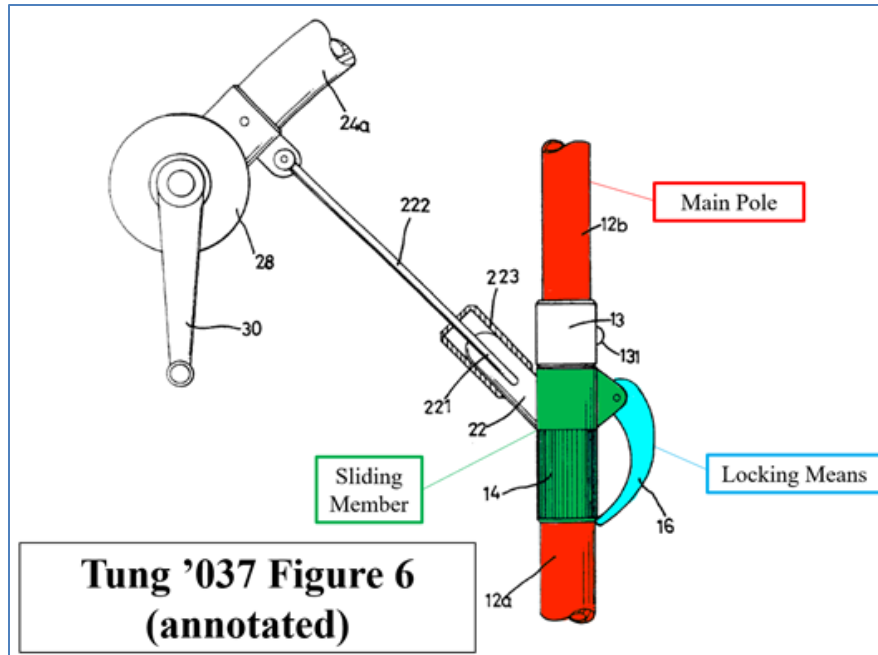


83. Glatz '980 also notes that free arm canopies were well known at the time of its filing and that prior art had drawbacks related to umbrella placement and manipulation (e.g., height adjustment) and locking mechanisms. Ex. 1008 at 1:9-57. For example, Glatz '980 states there was a need to have a safe and reliable locking means. *Id.* at 1:51-57.

E. U.S. Patent No. 6,478,037 (“Tung ’037”) (Ex. 1010)

84. Tung ’037 issued in the United States on November 12, 2002. *See* Ex. 1010. I am informed that Tung ’037 is therefore prior art under pre-AIA 35 U.S.C. §§ 102(a), 102(b), and 102(e). Tung ’037 teaches a “foldable sunshade with a tiltable canopy” that uses a similar cam latch member locking means as disclosed in the ’492 Patent. *See id.* at Title, 3:36-46, 4:56-63. *Cf.* Ex. 1010 at Figure 6 with Ex. 1001 at Figure 4 (see annotated below).



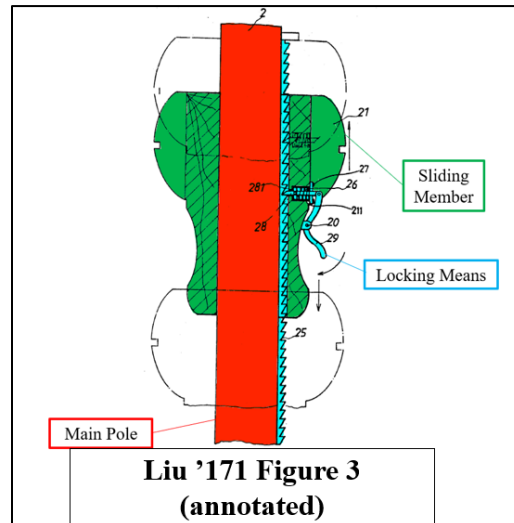


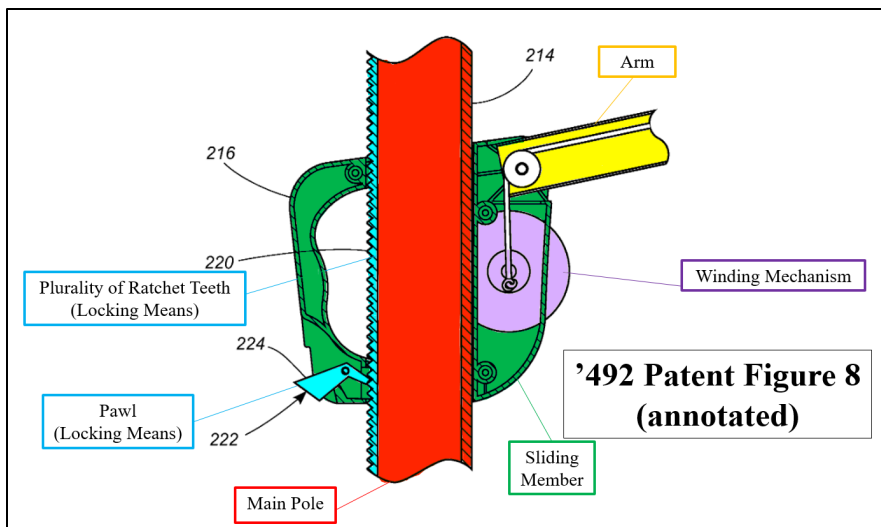
85. Tung '037 is in the same field of invention as the “adjustable offset umbrella” disclosed in the '492 Patent. During the prosecution of the '492 Patent, the examiner identified Tung '037 as prior art that taught the cam latch member as recited in a dependent claim 2. *See* Ex. 1002 at 140-141 (June 24, 2010 Non-Final Rejection), 105-106 (April 12, 2011 Final Rejection). I understand that the applicant never disputed, in response to either office action, the examiner’s findings that the prior art disclosed a cam latch locking mechanism as described in the application. *See id.* at 125-133 (Response to June 24, 2010 Office Action) and 92-100 (Response to April 12, 2011 Final Rejection). Thus, Tung '037 is indeed prior art to the '492 Patent.

F. U.S. Patent No. 5,284,171 (“Liu ’171”) (Ex. 1011)

86. Liu ’171 issued in the United States on February 8, 1994. *See* Ex. 1011.

I am informed that Liu ’171 is therefore prior art under pre-AIA 35 U.S.C. §§ 102(a), 102(b), and 102(e). Liu ’171 teaches a “sunshade opening and supporting device” that uses a similar teeth and pawl locking means as disclosed in the ’492 Patent. *See id* at Title, 2:61-4:8; *Compare* Ex. 1011 at Figure 3 *with* Ex. 1001 at Figure 8 (see annotated below).





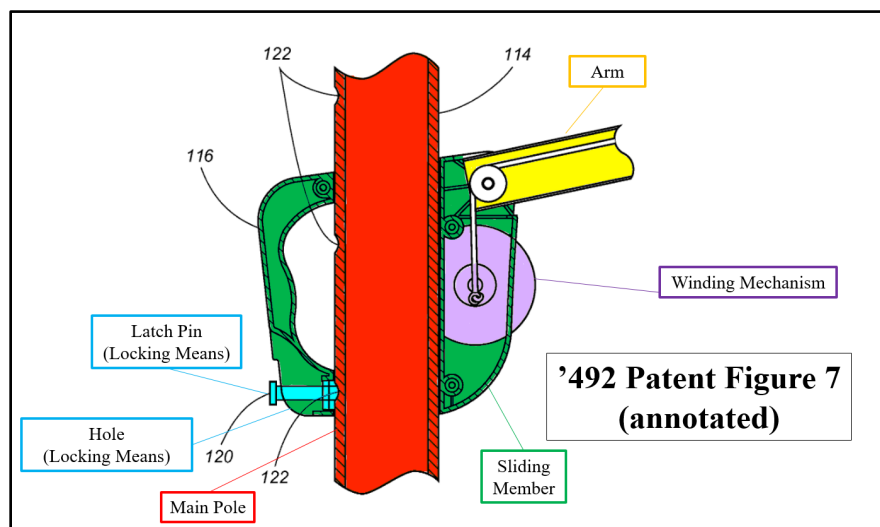
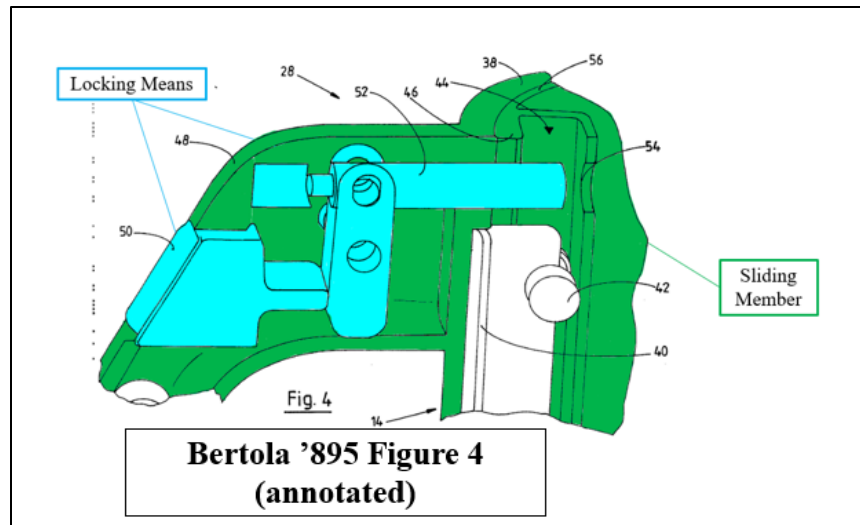
87. Liu '171 is in the same field of invention as the “adjustable offset umbrella” disclosed in the '492 Patent. During the prosecution of the '492 Patent, the examiner identified Liu '171 as prior art that taught the teeth and pawl locking means. *See* Ex. 1002 at 141-142 (June 24, 2010 Non-Final Rejection), 106-107 (April 12, 2011 Final Rejection). I understand that the applicant never disputed, in response to either office action, the examiner’s findings that the prior art disclosed a locking means as described in the application. *See id.* at 125-133 (Response to June 24, 2010 Office Action) and 92-100 (Response to April 12, 2011 Final Rejection). Thus, Liu '171 is prior art to the '492 Patent.

G. German Patent Application Publication No. DE20014895U1 (“Bertola '895”) (Ex. 1013)

Bertola '895 was registered on November 16, 2000. *See* Ex. 1013. I am informed that Bertola '895 is therefore prior art under pre-AIA 35 U.S.C. §§

102(a) and 102(b). Bertola '895 is in the same field of invention as the “adjustable offset umbrella” disclosed in the '492 Patent. Bertola '895 was not cited or considered by the Patent Office during examination of the '492 Patent but was considered in IPR2021-00430. Bertola '895 discloses an adjustable cantilevered umbrella device that uses a spring-loaded pin and hole locking means as disclosed in the '492 Patent. *See id* at 30 (reciting a “spring pretension” loaded pin 52 and hole 54 for “fixation of the slider 28 on the mast 14...”). *Cf.* Ex. 1013 at Figure 4 *with* Ex. 1001 at Figure 7 (see annotated below).

88. As shown below, “a button 50 is arranged in the handle 48 and is used to operate a latch 52 of the outer tube 56, which latch engages in a hole 54 of the outer tube 56 for fixation of the slider 28 on the mast 14.” Ex.1013 at 30.



89. Bertola '895 further explains that it is “advantageous to pretension the latch 52 using a pretensioning means such that the latch autonomously transitions into the locked or supported position. By means of the button 50, the latch 52 can then transition into the unlocked position against the spring pretension, whereupon the slider 28 can then be adjusted upward, thus ensuring seamless and straightforward sliding of the slider 28 on the mast 14.” Ex. 1013 at 30.

90. Bertola '895 describes a need to create an umbrella device that is not “difficult” or “impractical to handle” that allows easy and “fixable” height adjustment. *Id.* at 25 (Description).

VI. CLAIMS 1-7 OF THE '492 PATENT ARE UNPATENTABLE

A. Ground 1: Claims 1 and 5-7 of the '492 Patent are Anticipated over Wang '109

91. Based on my review and analysis, Wang '109 renders claim 1 and 5-7 as anticipated under pre-AIA 35 U.S.C. § 102.

1. Claim 1

92. Based on my review and analysis, Wang '109 renders claim 1 as anticipated under pre-AIA 35 U.S.C. § 102.

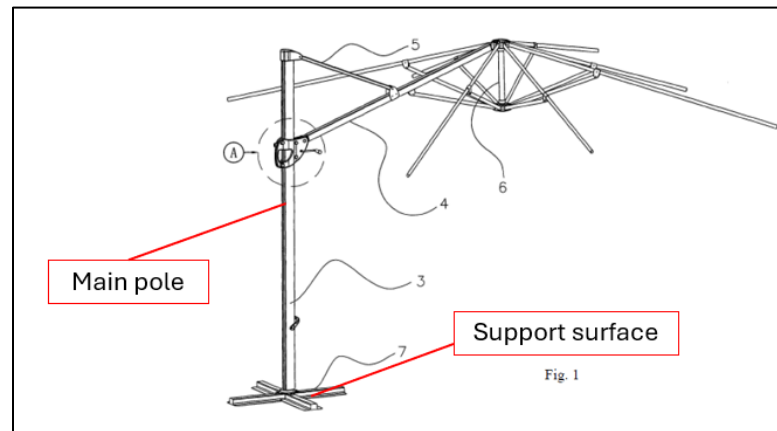
a. Preamble: “An umbrella comprising”

93. Wang '109 discloses an umbrella. Ex. 1005 at 12. Wang '109 generally discloses a parasol device in the Title, Abstract, Claims, Technical Field, Background of the Art, Summary, and Description. *Id.* at 12-20

b. Claim 1.a: “a main pole having a lower end for support by a support surface and extending generally upward to an upper end”

94. Wang '109 discloses a main pole (vertical pole 3) having a lower end for support by a support surface (base 7) and extending generally upward to an upper end, a “top end of the vertical pole 3.” Ex. 1005 at 17 and Figure 1. As shown in Figure 1 (annotated shown below), “the bottom part of the vertical pole 3 of the

straight pole foldable hanging parasol is fixed to the base 7” and the device has a “top end of the vertical pole 3.” Ex. 1005 at 16, 18, and 21 (Figure 1). *See id.* at 12 (Abstract) and 14 (claim 1).



c. Claim 1.b: “a sliding member associated with the main pole and selectably moveable thereon between lower and upper locations along the main pole”

95. Wang ’109 discloses a sliding member (positioning mechanism) associated with the main pole (vertical pole 3). As shown in Figures 1, 2, and 3 (see Ex. 1005 at 21-23), Wang ’109 states that a “positioning mechanism is sleeved on the vertical pole.” Ex. 1005 at 17. Wang ’109 also discloses that the sliding member (“positioning mechanism”) is selectably moveable between lower and upper locations along the main pole (vertical pole 3). *Id.* at 19. Wang ’109 describes the operation of the device as follows:

Working mechanism: hold the handle hole 28 and push the positioning mechanism upward, the locking block 23 moves upward along the teeth of the row of teeth 24, and the inner end of the diagonal rod 4 moves upward to make the parasol frame 6 tilt downward; stop pushing

Klopp Declaration

upward, under the gravity of the parasol frame 6, the diagonal rod 4 drive the positioning mechanism to move downward; since the locking block 23 is engaged downward against the teeth of the row of teeth 24, the diagonal rod 4 is positioned. Press the button 21 by the hand, so the locking block 23 is turned by the crank arm 25, and thus the locking block 23 and the row of teeth 24 are disengaged. At this time, the diagonal rod 4 can be controlled to move downward to make the parasol frame 6 tilt upward; then release the button 21, the locking block 23 and the row of teeth 24 are reengaged, and the diagonal rod 4 is positioned again.

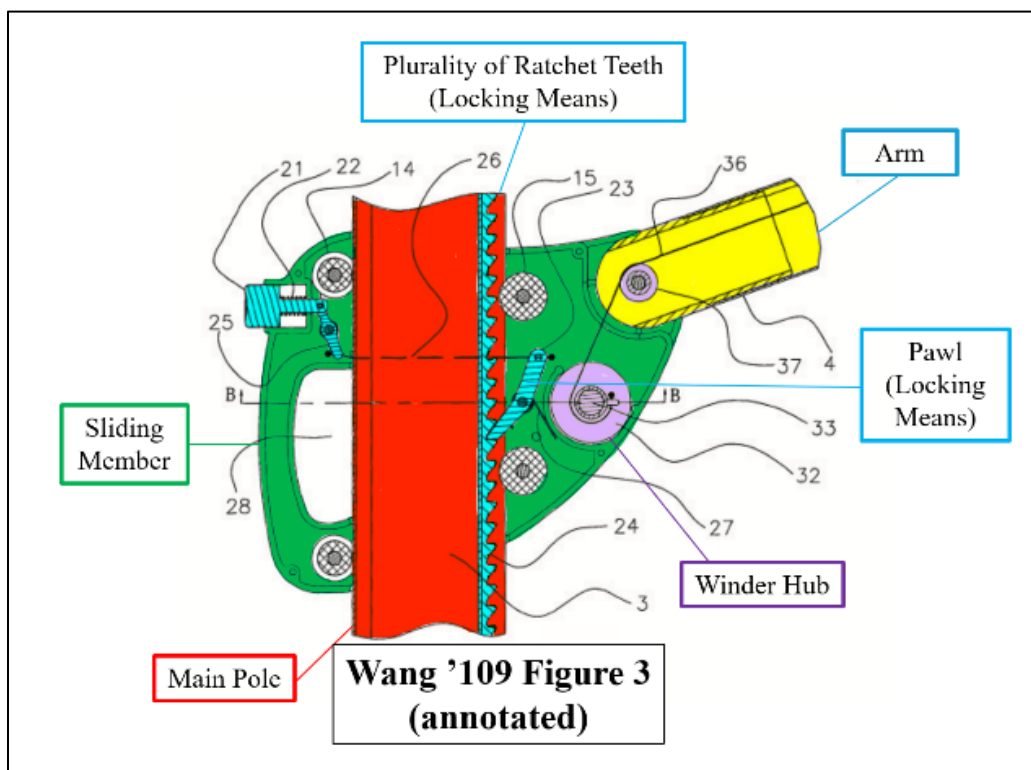
Id. at 19. Wang '109 explains that one can “push the positioning mechanism upward,” “[t]he positioning position ... can be decided at will,” and “is easy to use.”

Id. See id. at 19, 13 (Abstract) and 14 (claim 1). Wang '109 further discloses the positioning mechanism housing is created with two shells 1 and 2 and contains a “locking block 23 that engages with a row of teeth 24 to prevent the mechanism from moving, rollers, a crank arm, and other structures.” *Id.* at 18.

d. Claim 1.c: “locking means for releasably securing the sliding member to the main pole at a selected location along the main pole”

96. Wang '109 discloses a locking means that uses a ratchet teeth and pawl locking mechanism that uses at least a locking block 23, tooth heads of the row of teeth 24, button 21, torsion spring 27, and crank arm 25 for releasably securing the sliding member (positioning mechanism) to the main pole (vertical pole 3) at a selected location along the main pole (vertical pole 3). Ex. 1005 at 17-19. Wang '109 discloses a ratchet teeth and pawl locking structure that is the same as, or equivalent

to, the ratchet teeth and pawl structure in the '492 Patent. Figures 2 and 3 (Ex. 1005 at 22-23) illustrate the ratchet teeth and pawl mechanism. *See* Ex. 1005 at 12 (Abstract), 14 (claims 1 and 2), and 18-19.



97. For example, Wang '109 explains that “a row of teeth is fixedly provided in the recess, an elastic locking block [23] engaged with the row of teeth is installed in the positioning mechanism...” *Id.* at 17. Wang '109 describes that its sliding member (i.e., the positioning mechanism) “is enclosed by two shells, the locking block is a lever structure, and a support shaft thereof is installed between the shells, a torsion spring is sleeved over a middle part of the support shaft, one end of

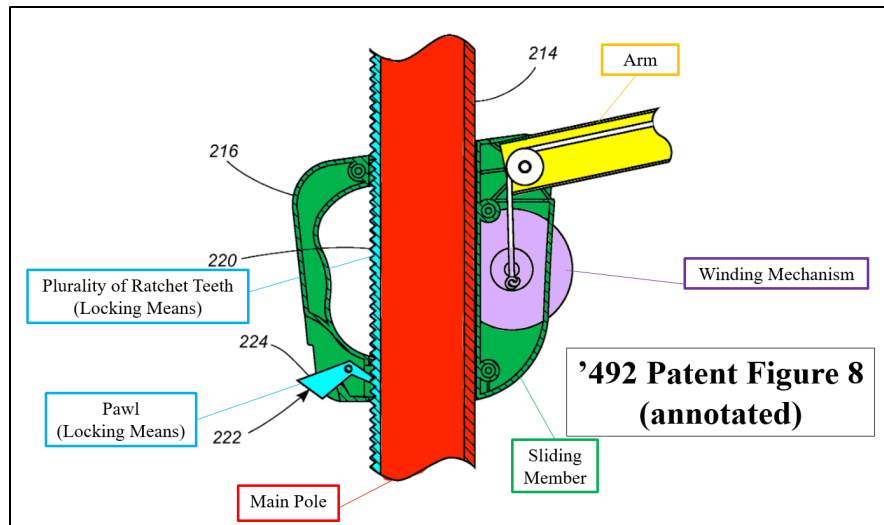
the locking block can be engaged with the row of teeth....” *Id.* Wang ’109 also discloses the use of a button that disengages the locking block (23) from the teeth.

Id.

98. Similarly, the ’492 Patent also discloses a similar ratchet teeth and pawl locking means. The ’492 Patent states:

...a plurality of ratchet teeth 220 are formed along the rear surface of the main pole 214. A pawl 222 pivotally mounted to the sliding mechanism 216 engages a cooperating one of the ratchet teeth 220 to lock the sliding member 216 in position. To move the sliding member 216 from one location on the main pole 214 to another, the user raises a lever portion 224 on the pawl 222 to disengage the pawl from the ratchet teeth 220, moves the sliding member 216 to a new desired location, and releases the spring-loaded pawl to re-engage the ratchet teeth.

Ex. 1001 at 4:21-31. Figure 8, which is the corresponding structure to the “locking means” as discussed above and shown below.

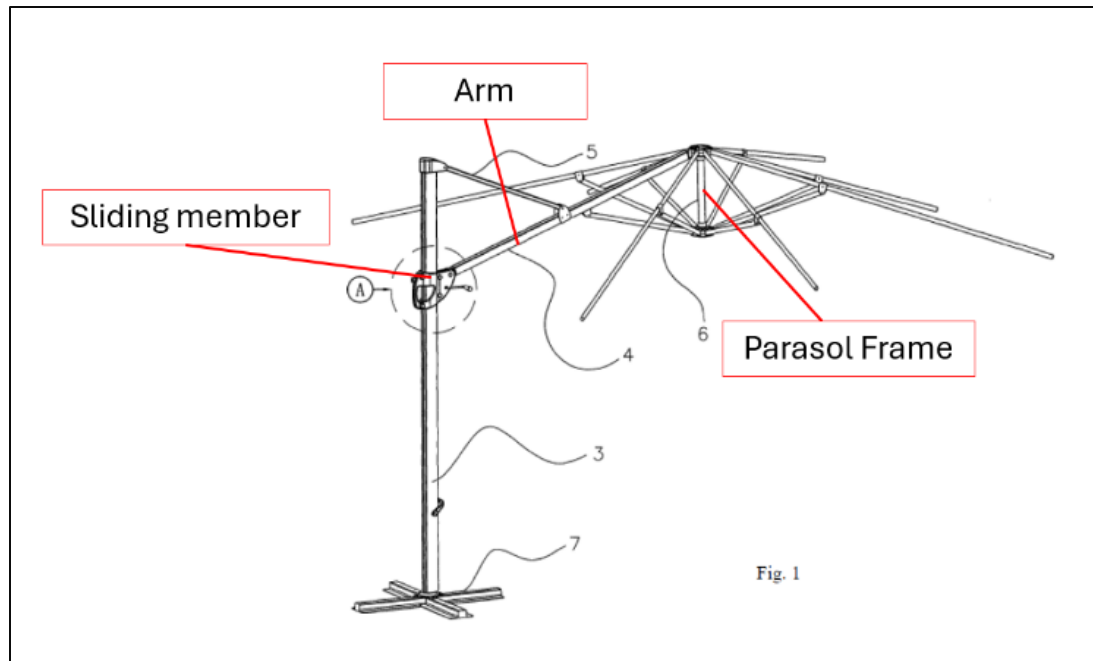


e. Claim 1.d: “an umbrella canopy having a central region”

99. Wang '109 discloses an umbrella canopy (parasol) having a central region. Wang '109 shows a frame of the canopy with the canopy fabric removed, similar to the depiction of Figure 3 of the '492 Patent. Further, Wang '109 describes using the device with the canopy to provide shade, which a POSITA would understand requires a canopy fabric. As described in Wang '109, “the parasol can be positioned by releasing the hand so as to achieve the best sunshade effect....” Ex. 1005 at 17. A POSITA would understand that an umbrella canopy, including both a canopy support structure and a canopy fabric/expandable shade element, would be needed to allow this device to function (*i.e.*, provide shade). A POSITA would also understand that the umbrella canopy would have a central region, *e.g.*, where the outer end of the diagonal rod 4 is hinged to the parasol frame 6.

f. Claim 1.e: “an arm associated with the central region and extending radially therefrom to an outer end operatively associated with the sliding member”

100. Wang ’109 discloses an arm (diagonal rod 4) associated with the central region of the umbrella canopy and extending radially therefrom to an outer end (inner end of the diagonal rod) operatively associated with the sliding member (positioning mechanism). As shown in Figure 1 (annotated below), Wang ’109 explains that “an outer end of a diagonal rod is hinged to a parasol frame, and an inner end thereof is hinged to a middle part of the vertical pole... an inner end of the diagonal rod is axially connected to a positioning mechanism....” Ex. 1005 at 16-17. *See id.* at 12 (Abstract), 14 (claim 1), 17-19, 21-23 (Figures 1-3). Thus, the diagonal rod/arm is associated with the parasol frame at a central region as shown below. Wang ’109 further explains that “an inner end of the diagonal pulling rod is axially connected to a positioning mechanism.” Ex. 1005 at 16. Thus, the diagonal rod/arm extends radially from the central region to an outer end associated with the positioning mechanism or sliding member as shown below.

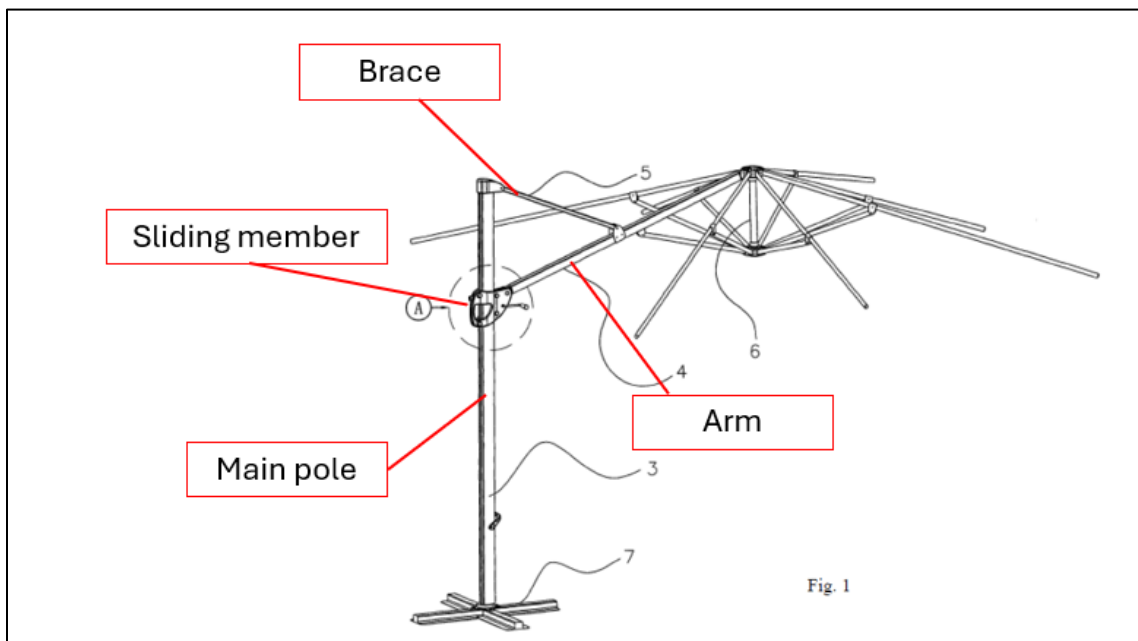


101. A POSITA would understand that an umbrella canopy, including a fabric or other structure spanning the ribs, would be needed to allow this device to provide shade and would also understand that the umbrella canopy would have a central region.

- g. **Claim 1.f: “a brace having a first end pivotably attached to an upper portion of the pole above the sliding member and a second end pivotably attached to the arm”**

102. Wang '109 discloses a brace (diagonal pulling rod 5) having a first end pivotably attached to an upper portion of the pole (vertical pole 3) above the sliding member (positioning mechanism) and a second end pivotably attached to the arm (diagonal rod 4). As shown in Figure 1 (see annotated below), Wang '109 explains that “an inner end of the diagonal pulling rod (5) is axially connected to a top end of

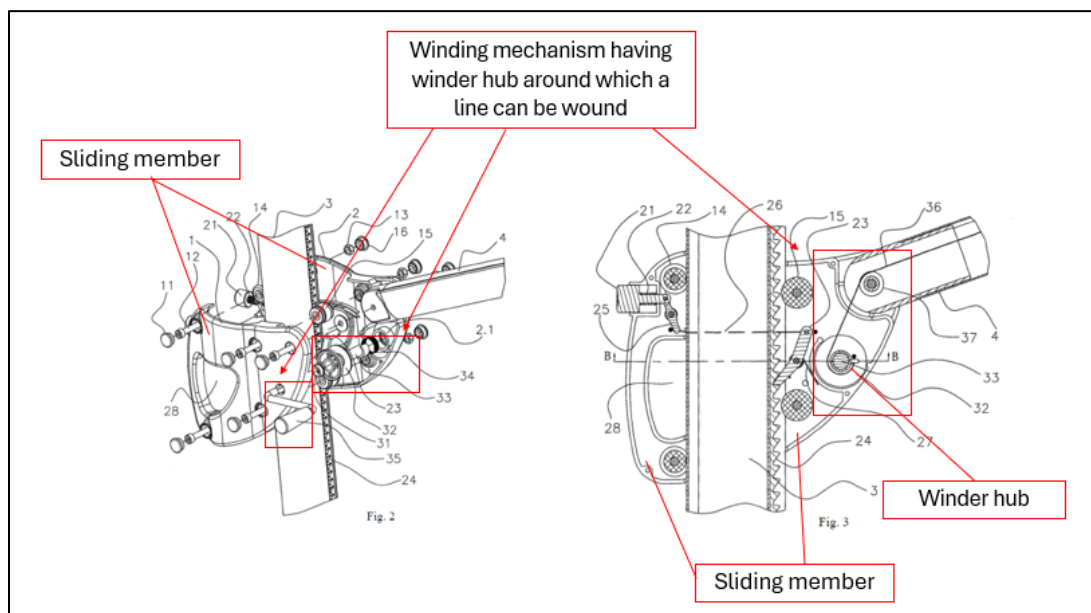
the vertical pole (3) [above the positioning mechanism], and an outer end thereof is axially connected to a middle part of the diagonal rod (4)...” Ex. 1005 at 14 and 21 (Figure 1). *See id.* at 2 (Abstract), 16-19, Figures 1-3.

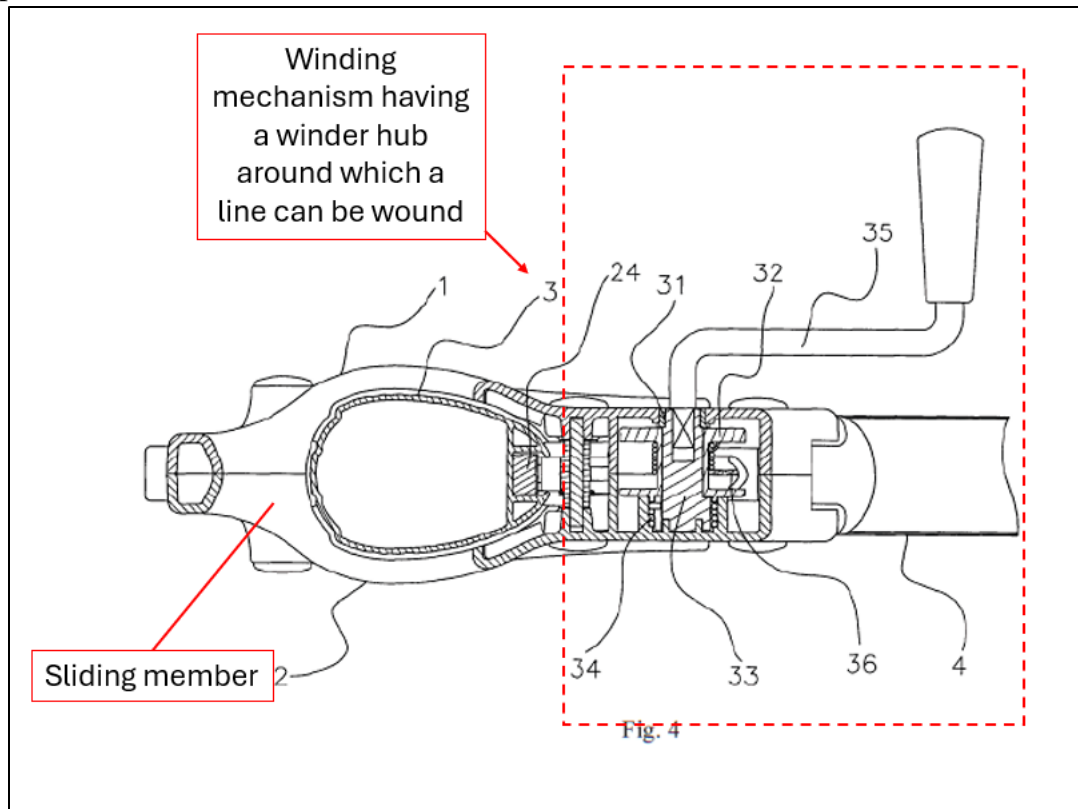


- h. Claim 1.g: “a winding mechanism having a winder hub around which a line can be wound, the winder hub being mounted to the sliding member and movable therewith”**

103. Wang ’109 discloses a winding mechanism (crank handle 35; crank shaft 33) having a winder hub (rope reel wheel 32) around which a line (parasol rope 36) can be wound, the winder hub (rope reel wheel 32) being mounted to the sliding member (positioning mechanism) and movable therewith. For example, annotated Figures 2, 3, and 4 show “a rope reel for controlling the opening and closing of the parasol frame” located in the shell of the positioning mechanism. Ex. 1005 at 14-15 (claim 4) and 17-20. *See id.* at Figures 2-4. The “rope reel wheel of

the rope reel is fixed with a parasol rope” and the rotation of the crank shaft and crank handle “drives the rope reel wheel” causing the parasol rope to manipulate the umbrella. Ex. 1005 at 14-15 (claim 5) and 17-20, 22-24 (Figures 2-4). Figure 4 (annotated below) shows the crank handle 35, crank shaft 33, and winder hub (rope reel wheel 32) is mounted to the sliding member (positioning mechanism) and movable therewith.

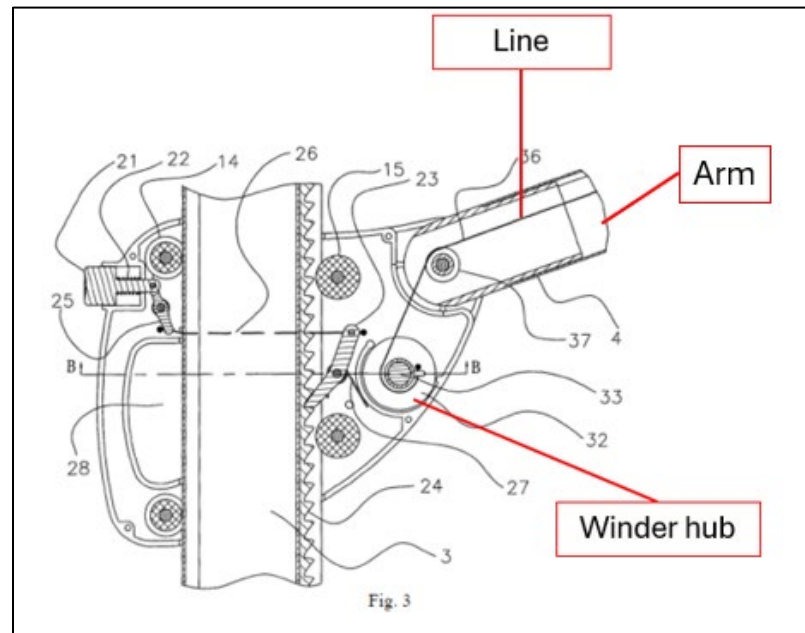




- i. **Claim 1.h: “a line having a first end that winds around the winder hub, an intermediate portion extending from the winder hub along the arm to the umbrella canopy, and a second end that engages the umbrella canopy”**

104. Wang '109 discloses a line (parasol rope 36) having a first end that winds around the winder hub (rope reel wheel 32), an intermediate portion extending from the winder hub (rope reel wheel 32) along the arm (diagonal rod 4) to the umbrella canopy, and a second end that engages the umbrella canopy. As shown in Figure 3 (see annotated below), the “rope reel is fixed with a parasol rope” which “penetrates into the diagonal rod and is connected to the parasol frame” and is used to open and close the umbrella. Ex. 1005 at 17. *See id.* at 14-15 (claims 5-6), 19-20,

and 21-24 (Figures 1-4). A POSITA would understand an intermediate portion of the line extends from the winder hub (rope reel wheel 32) along the arm (diagonal rod 4) to the umbrella canopy, and a second end that engages the umbrella canopy.



105. A POSITA would understand that an umbrella canopy fabric would be coupled to the parasol frame to be foldable but providing shade when not folded.

j. Claim 1.i: “wherein rotation of the winder hub tensions or relaxes the line depending upon the direction of rotation of the winder hub”

106. Wang ’109 discloses wherein rotation of the winder hub (rope reel wheel 32) tensions or relaxes the line (parasol rope 36) depending upon the direction of rotation of the winder hub (rope reel wheel 32). Wang ’109 explains that “[w]hen the crank handle 35 is turned clockwise or counterclockwise, the crank shaft 33 drives the torsion spring 34 to twist, the diameter of the torsion spring 34 becomes

smaller and thus can rotate freely in the tube wall 2.1, thereby driving the rope reel wheel 32 to rotate, the rope reel wheel 32 drives the parasol rope 36 to tighten or relax....” Ex. 1005 at 20. *See id.* at 14-15 (claim 5), 17, 21-24 (Figures 1-4).

k. Claim 1.j: “wherein operation of the winding mechanism to apply tension to the line opens and closes the umbrella canopy in response to movement of the line”

107. Wang ’109 discloses wherein operation of the winding mechanism (crank handle 35; crank shaft 33) to apply tension to the line (parasol rope 36) opens and closes the umbrella canopy in response to movement of the line (parasol rope 36). Indeed, Wang ’109 states “[w]hen the crank handle 35 is turned clockwise or counterclockwise, the crank shaft 33 drives the torsion spring 34 to twist, the diameter of the torsion spring 34 becomes smaller and thus can rotate freely in the tube wall 2.1, thereby driving the rope reel wheel 32 to rotate, the rope reel wheel 32 drives the parasol rope 36 to tighten or relax, and the parasol frame 6 opens or closes.” Ex. 1005 at 20. *See id.* at 14-15 (claim 5), 17, 21-24 (Figures 1-4).

l. Claim 1.k: “wherein the angle of the umbrella canopy with respect to the main pole can be controlled by moving the sliding member along the main pole”

108. Wang ’109 discloses that the angle of the umbrella canopy with respect to the main pole (vertical pole 3) can be controlled by moving the sliding member (positioning mechanism) along the main pole (vertical pole 3). For example, Wang ’109 teaches that when one “push[es] the positioning mechanism upward ...the inner

end of the diagonal rod 4 moves upward to make the parasol frame 6 tilt downward”

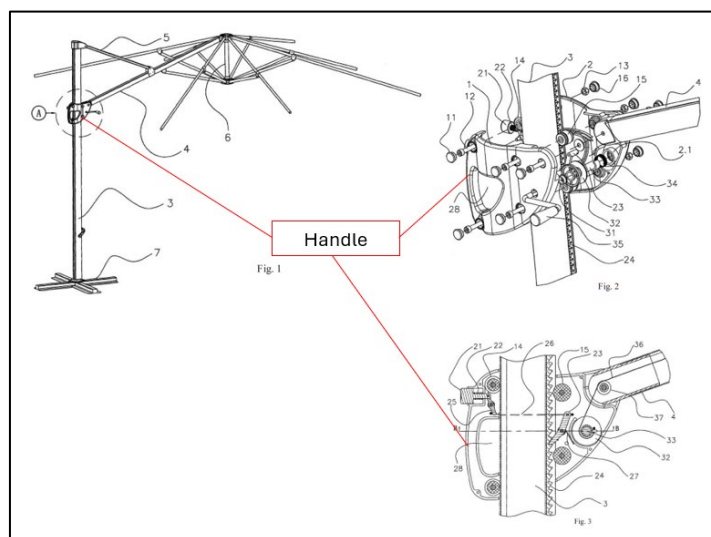
and “the diagonal rod 4 can be controlled to move downward to make the parasol

frame 6 tilt upward.” Ex. 1005 at 19. *See id.* at 18 and 21-23 (Figures 1-3).

109. Accordingly, Wang ’109 anticipates claim 1 under pre-AIA 35 U.S.C. § 102.

2. Claim 5: “[t]he umbrella of claim 1, wherein the sliding member has a handle associated therewith.”

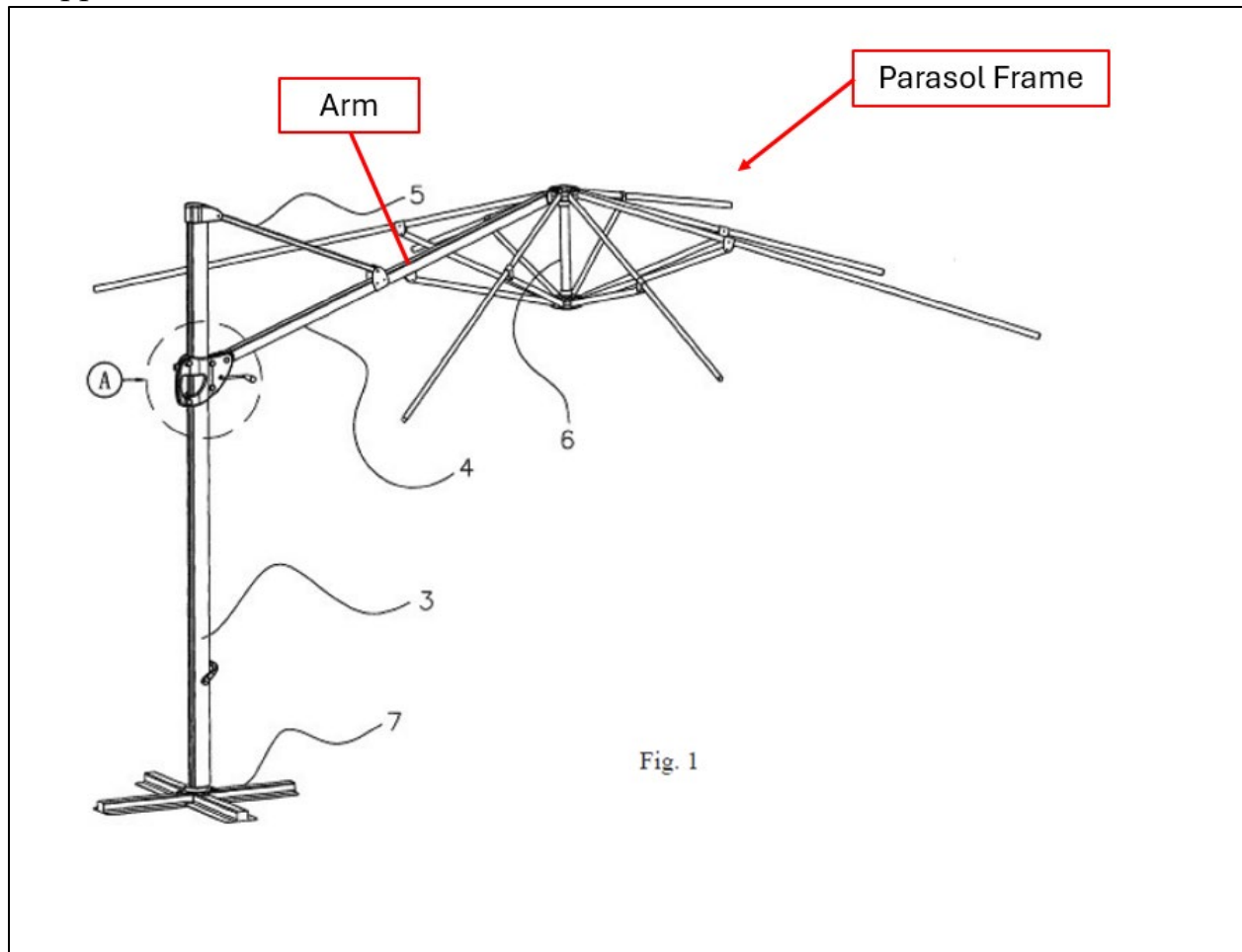
110. As shown below in Figures 1-3, Wang ’109 discloses wherein the sliding member (positioning mechanism) has a handle (handle hole 28) associated therewith. At least Figures 1-3 of Wang ’109 (see the annotated below) disclose a handle hole on the positioning mechanism. Indeed, Wang ’109 also teaches that a handle hole 28 is formed on the shell of the positioning mechanism. Ex. 1005 at 17, 19, 21-23 (Figures 1-3). *See id.* at 14 (claim 3).



111. Thus, Wang '109 anticipates claim 5 under pre-AIA 35 U.S.C. § 102.

3. Claim 6: “[t]he umbrella of claim 1, wherein the line extends along at least substantially the entire length of the arm.”

112. Wang '109 discloses wherein the line (parasol rope 36) extends along at least substantially the entire length of the arm (diagonal rod 4). Wang '109 discloses that the parasol rope 36 extends from the rope wheel in the positioning mechanism through the diagonal rod 4 and is “connected to the parasol frame.” Ex. 1005 at 17. *See id.* at Figures 1 and 3. As can be seen in Figure 1, the parasol frame of Wang '109 is at the end of the arm, opposite to the end adjacent to the rope wheel, and thus the line extends at least substantially the entire length of the arm. Ex. 1005 at Figure 1.



113. Thus, Wang '109 anticipates claim 6 under pre-AIA 35 U.S.C. § 102.

4. **Claim 7: “[t]he umbrella of claim 1, further comprising a crank handle operatively associated with the winder hub, whereby rotating the crank handle causes the winder hub to rotate.”**

114. Wang '109 discloses a crank handle (crank handle 35) operatively associated with the winder hub (rope reel wheel 32), whereby rotating the crank handle (crank handle 35) causes the winder hub (rope reel wheel 32) to rotate. For example, Wang '109 teaches that turning the “crank handle 35 ... clockwise or counterclockwise ... driv[es] the rope reel wheel 32 to rotate.” Ex. 1005 at 20.

115. Thus, Wang '109 renders claim 7 as anticipated under pre-AIA 35 U.S.C. § 102.

B. Ground 2: Claims 1 and 5-7 of the '492 Patent are Anticipated over Wang '439

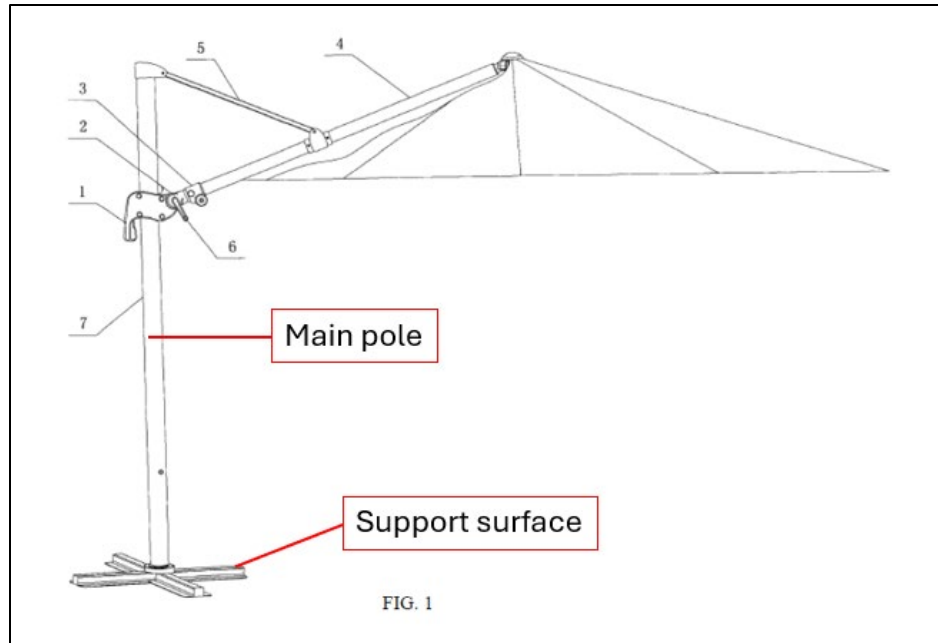
116. Based on my review and analysis, Wang '439 renders claim 1 and 5-7 as anticipated under pre-AIA 35 U.S.C. § 102.

1. Claim 1

117. Based on my review and analysis, Wang '439 renders claim 1 as anticipated under pre-AIA 35 U.S.C. § 102.

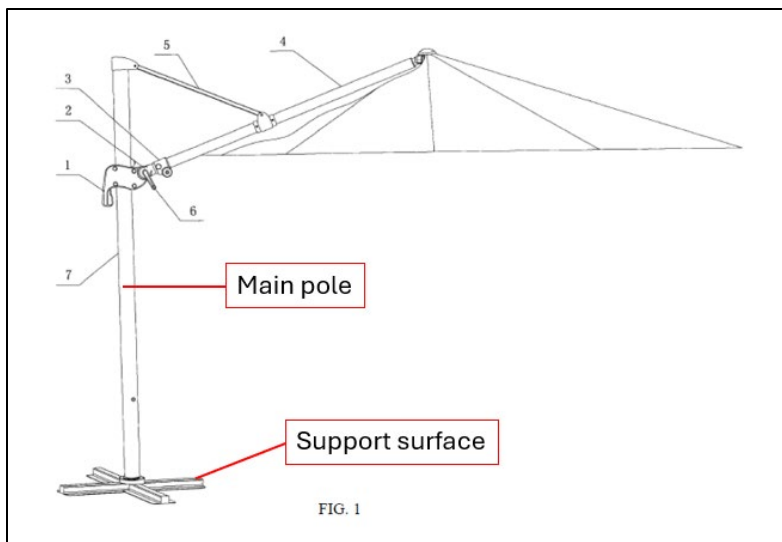
a. Preamble: “An umbrella comprising”

118. Wang '439 discloses an umbrella. Ex. 1006 at 13-22 and Figure 1. Wang '439 generally discloses a “Sunshade Parasol Cranking Device” in its title, abstract, claims, and description. *See* Ex. 1006 at 13-22 and 23 (Figure 1). Figure 1 is annotated below.



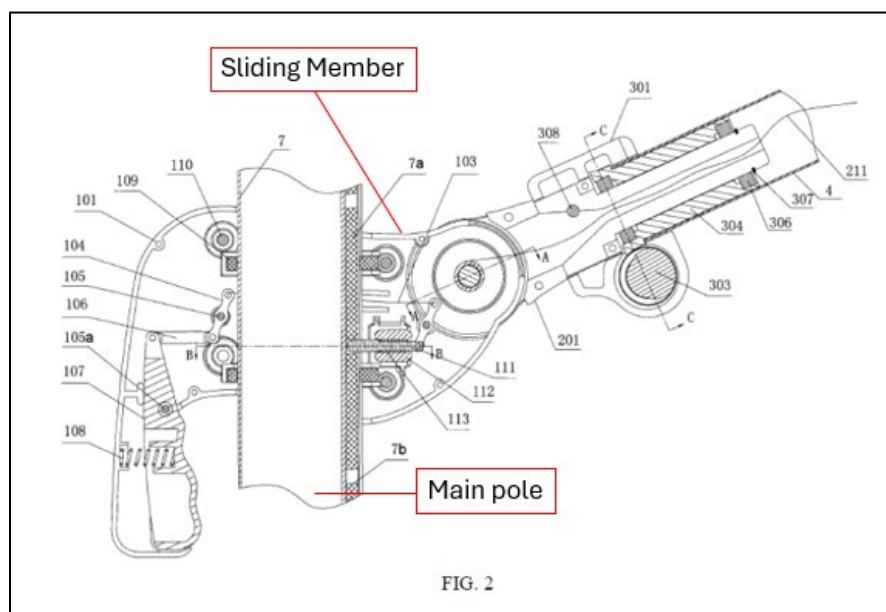
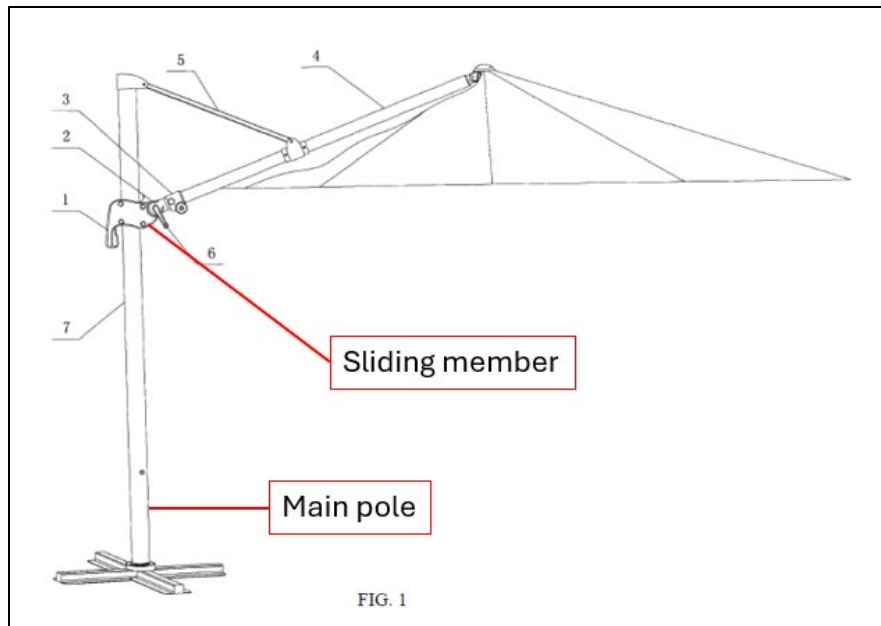
b. Claim 1.a: “a main pole having a lower end for support by a support surface and extending generally upward to an upper end”

119. Wang '439 discloses a main pole (pole 7) having a lower end for support by a support surface and extending generally upward to an upper end. As shown in Figure 1 (annotated below), the Wang '439 umbrella has a main pole (pole 7) having a lower end for support by a support surface and extending generally upward to an upper end. Ex. 1006 at 20 and 23 (Figure 1). *See id.* at 14, 15 (claim 1 and 3), 19-22, and 23 (Figure 1). Annotated Figure 1 is shown below.



c. Claim 1.b: “a sliding member associated with the main pole and selectably moveable thereon between lower and upper locations along the main pole”

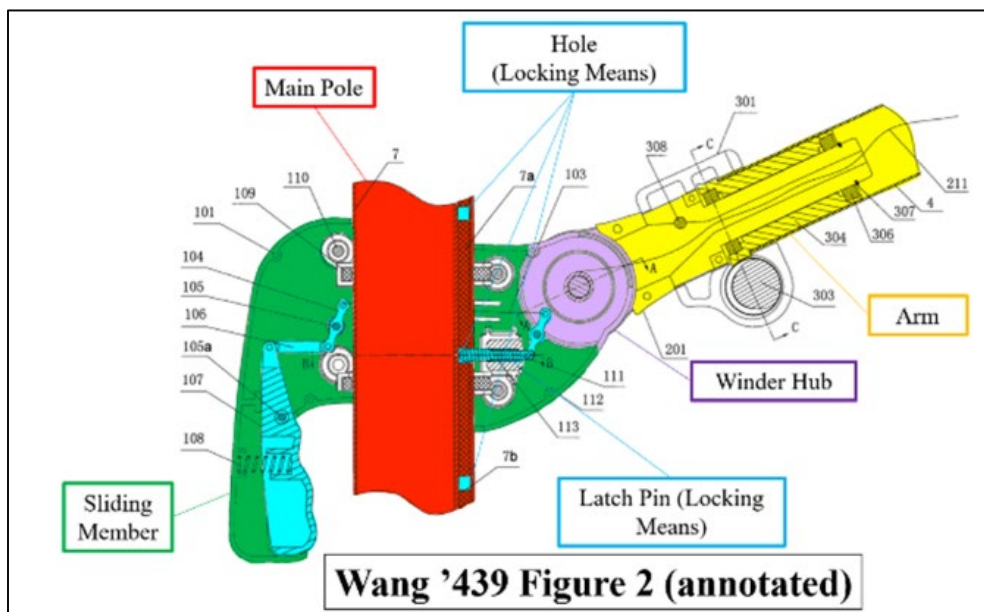
120. Wang '439 discloses a sliding member (handle mechanism 1) associated with the main pole (pole 7) and selectably moveable thereon between lower and upper locations along the main pole (pole 7). As shown in Figures 1 and 2 (annotated below), Wang '439 explains that a “handle mechanism 1 is sleeved on a pole 7.” Ex. 1006 at 15, 18, 20, and 23-24 (Figures 1 and 2). *See id.* at 15-16 (claims 1, 3-5, and 7), 17, 19. Wang '439 explains that “the handle mechanism 1 can slide up and down via convex points 114 and the corresponding grooves provided on the pole 7” and that “the handle mechanism 1 can slide on the pole 7.” *Id.* at 20-21. Thus, “[t]he handle mechanism is used to slide on the pole of the sunshade parasol to control the left and right tilting of the parasol.” *Id.* at 19.



- d. **Claim 1.c: “locking means for releasably securing the sliding member to the main pole at a selected location along the main pole”**

121. Wang '439 discloses a locking means for releasably securing the sliding member to the main pole that has the same or equivalent structure as the pin and hole

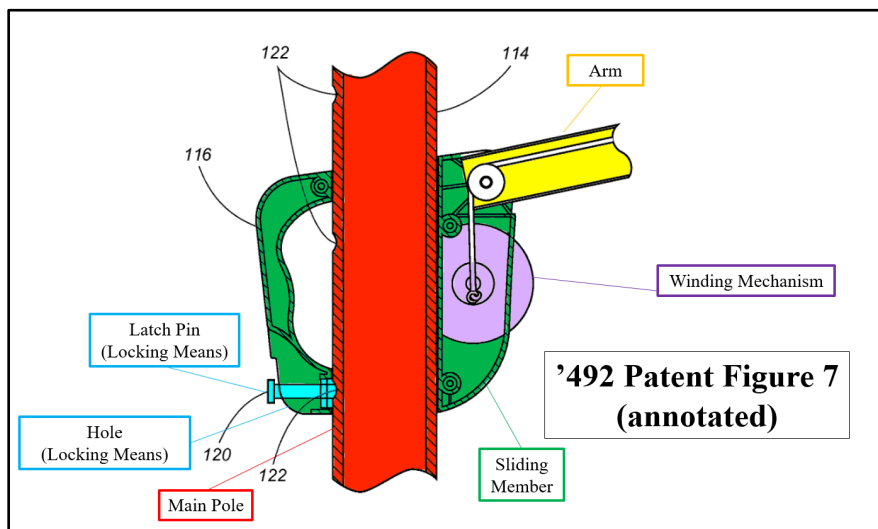
locking structure claimed in the '492 Patent. As shown in Figure 2 (annotated below), Wang '439 discloses “[a]n elastic positioning pin 111 is installed in the handle mechanism 1 and is inserted into a positioning hole 7b provided on the pole 7.” Ex. 1006 at 20 and 24 (Figure 2). “[T]he handle switch 107 is linked with the elastic positioning pin 111” so that “[a] user can press the handle switch 107, the elastic positioning pin 111 is then pulled out of the positioning hole 7b by means of the linkage of the transmission pin 106, the front and rear transmission lever members 104 and the connection rope 103, so the handle mechanism 1 can slide on the pole 7, and the elastic positioning pin 111 is inserted into another positioning hole 7b for positioning with the positioning pin spring 113.” *Id.* at 20-21; *See id.* at 13-14 (Abstract), 15-16 (claims 1, 2 and 5), 18 (Summary), and 19.



122. The '492 Patent also discloses a similar latch pin and hole structure that corresponds to a “locking means.” '492 Patent at 6 (Figure 7) and 4:12-21; 6:6-10 (claim 4). The '492 Patent states:

“This embodiment employs a spring-loaded latch pin 120 mounted to the sliding member 116 that engages one of a corresponding series of holes 122 in the main pole 114. To move the sliding member 116 from one location on the main pole 114 to another, the user extracts the latch pin 120 until it disengages the hole, slides the sliding number (sic) upward or downward to a desired new location, and engages the latch pin with a new series of holes.”

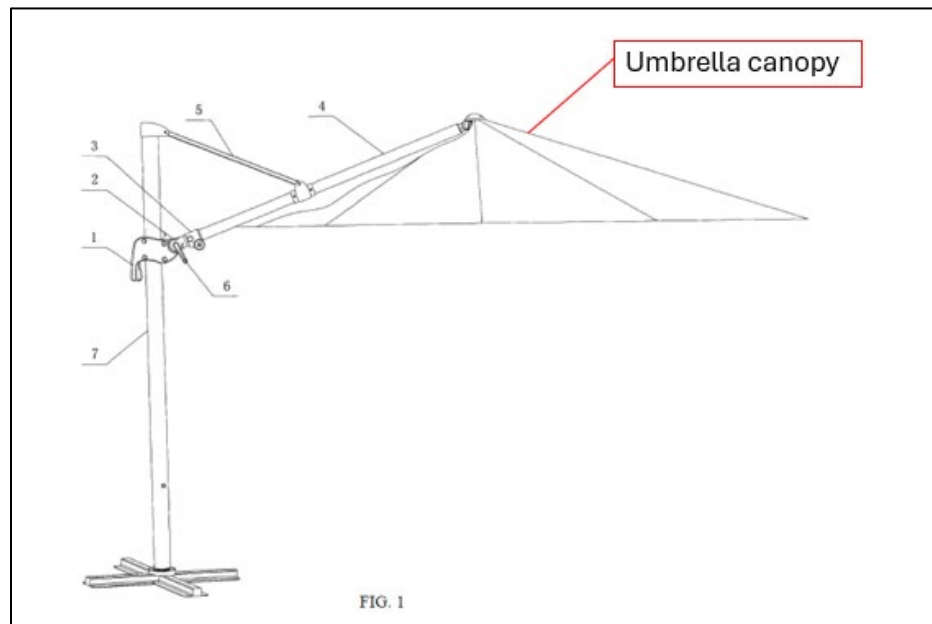
Id. at 4:13-21. An image of the '492 Patent's pin and hole locking mechanism shown in Figure 7 is shown below.



e. Claim 1.d: “an umbrella canopy having a central region”

123. Wang '439 discloses an umbrella canopy (umbrella surface) having a central region. As shown in Figure 1 (annotated below), “a sun-shading hanging umbrella [with a central region] can be adjusted in any angle in the front and back

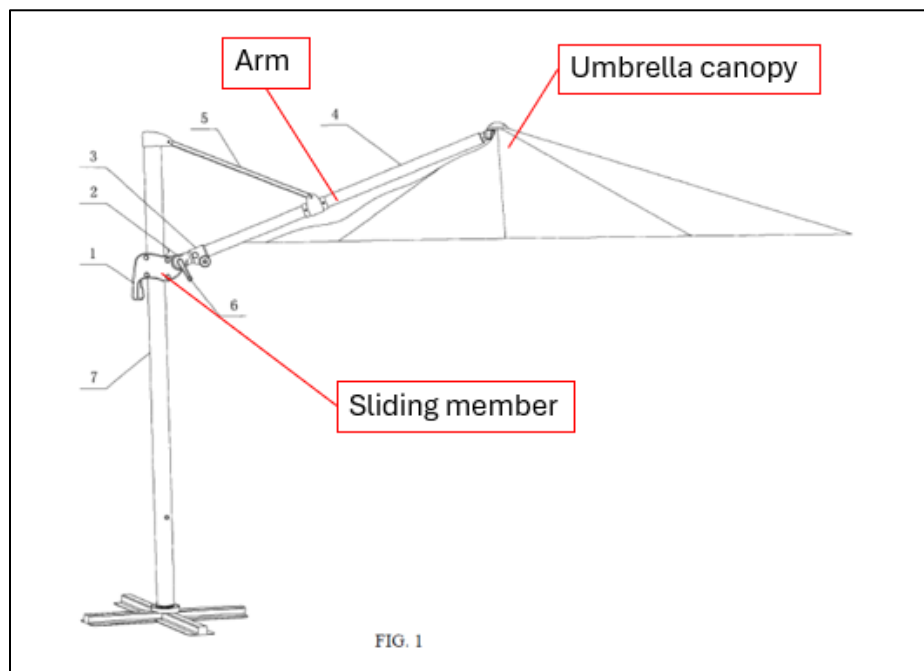
as well as left and right directions to select the appropriate sun-shading angle and improve the shadin[g] effect.” Ex. 1006 at 19 and 23 (Figure 1). *See id* at 15 (claim 1). A POSITA would recognize that the central region is at or about the apex of the umbrella canopy.



f. Claim 1.e: an arm associated with the central region and extending radially therefrom to an outer end operatively associated with the sliding member

124. Wang '439 discloses an arm (outer tube 4) associated with the central region and extending radially therefrom to an outer end operatively associated with the sliding member (handle mechanism 1). As shown in Figure 1 (annotated below), Wang '439 explains that “the handle mechanism 1 is sleeved on a pole 7, and an outer end of the device is connected to an outer tube 4.” Ex. 1006 at 20 and 23 (Figure 1). Wang '439 further discloses that the outer tube 4 (arm) is fixed to the

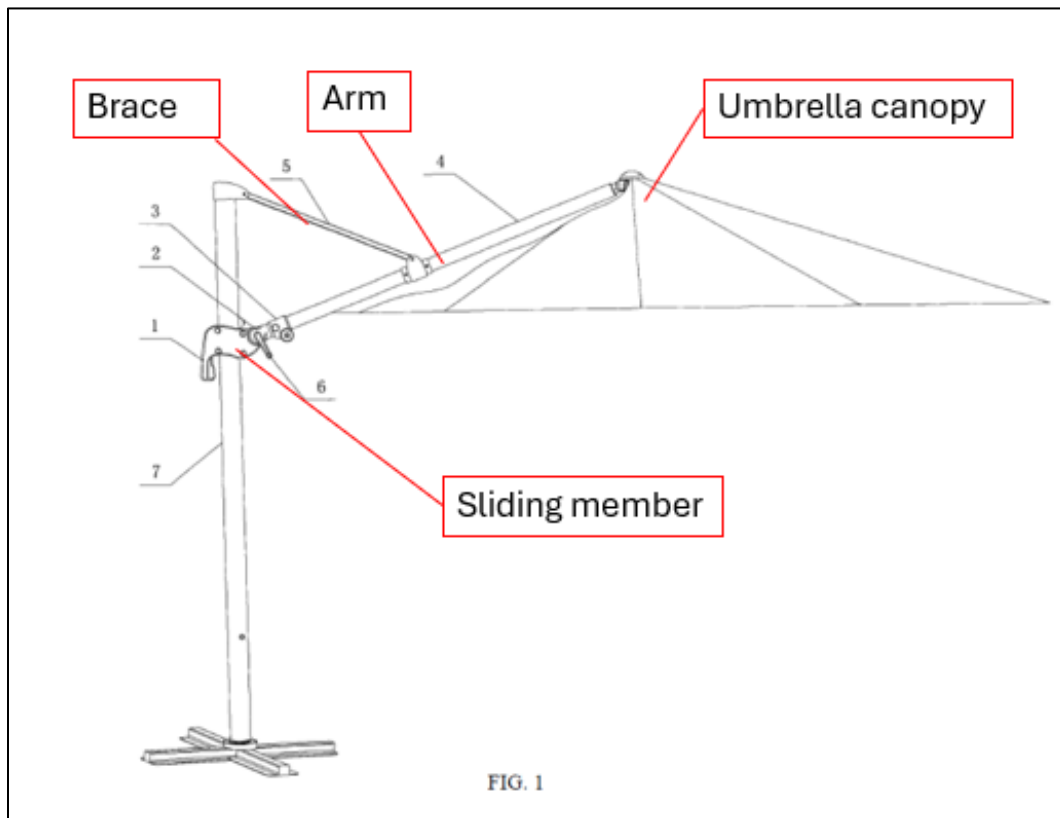
central region of the umbrella canopy and the “[t]he outer tube 4 [] rotates accordingly to freely adjust the parasol within a range of 180 degrees relative to the horizontal level, adjusting the front and rear tilting angles of the parasol.” *Id.* at 22. Thus, Wang ’439 confirms that the arm is operatively associated with the sliding member.



- g. Claim 1.f: a brace having a first end pivotably attached to an upper portion of the pole above the sliding member and a second end pivotably attached to the arm**

125. Wang ’439 discloses a brace (diagonal rod 5) having a first end pivotably attached to an upper portion of the pole (pole 7) above the sliding member (handle mechanism 1) and a second end pivotably attached to the arm (outer tube 4). As shown in Figure 1 (annotated below), the diagonal rod 5 is pivotably connected

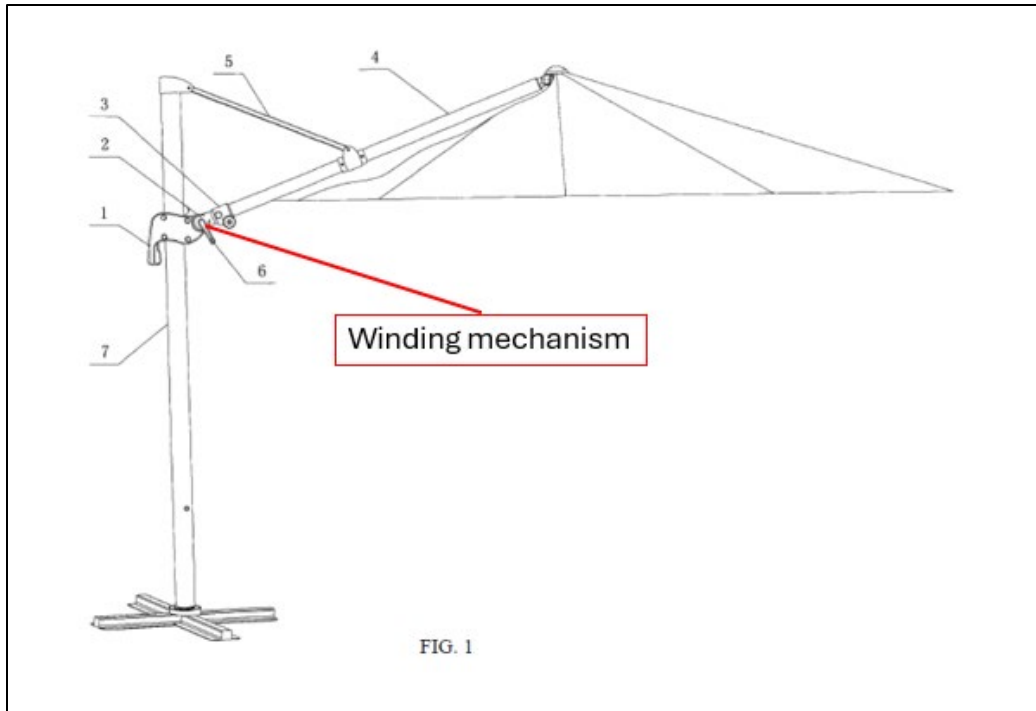
to the top of pole 7 and pivotably connected to the arm (outer tube 4) through “the movabl[e] connection between the diagonal rod 5 and the outer tube 4, [through which] the left and right tilting angles of the parasol can be adjusted.” Ex. 1006 at 22 and 23 (Figure 1).

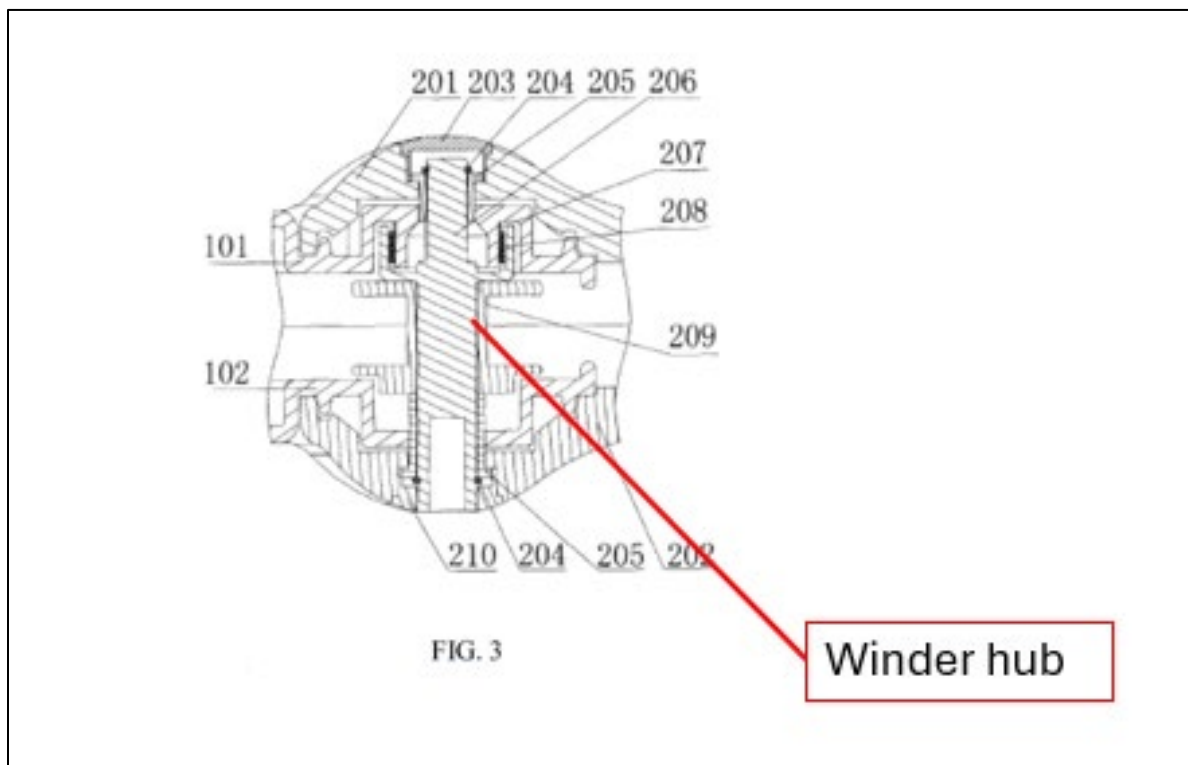
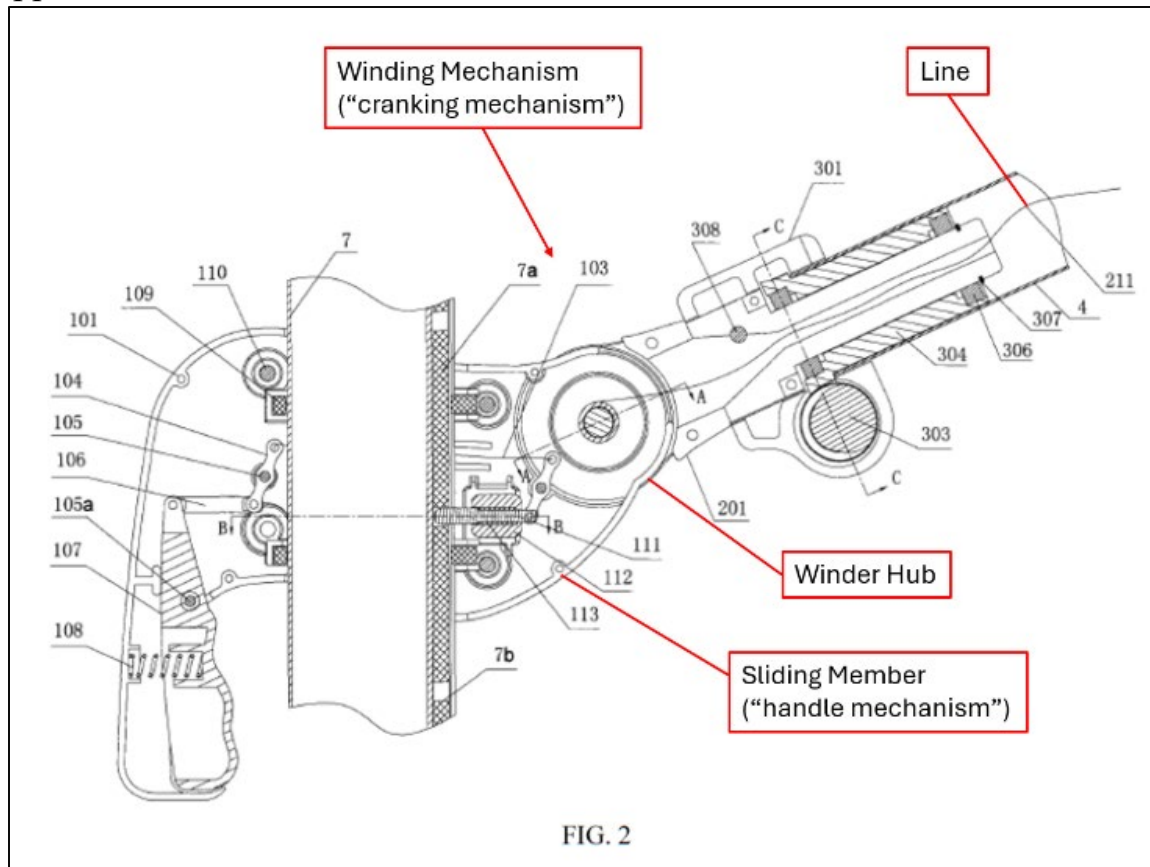


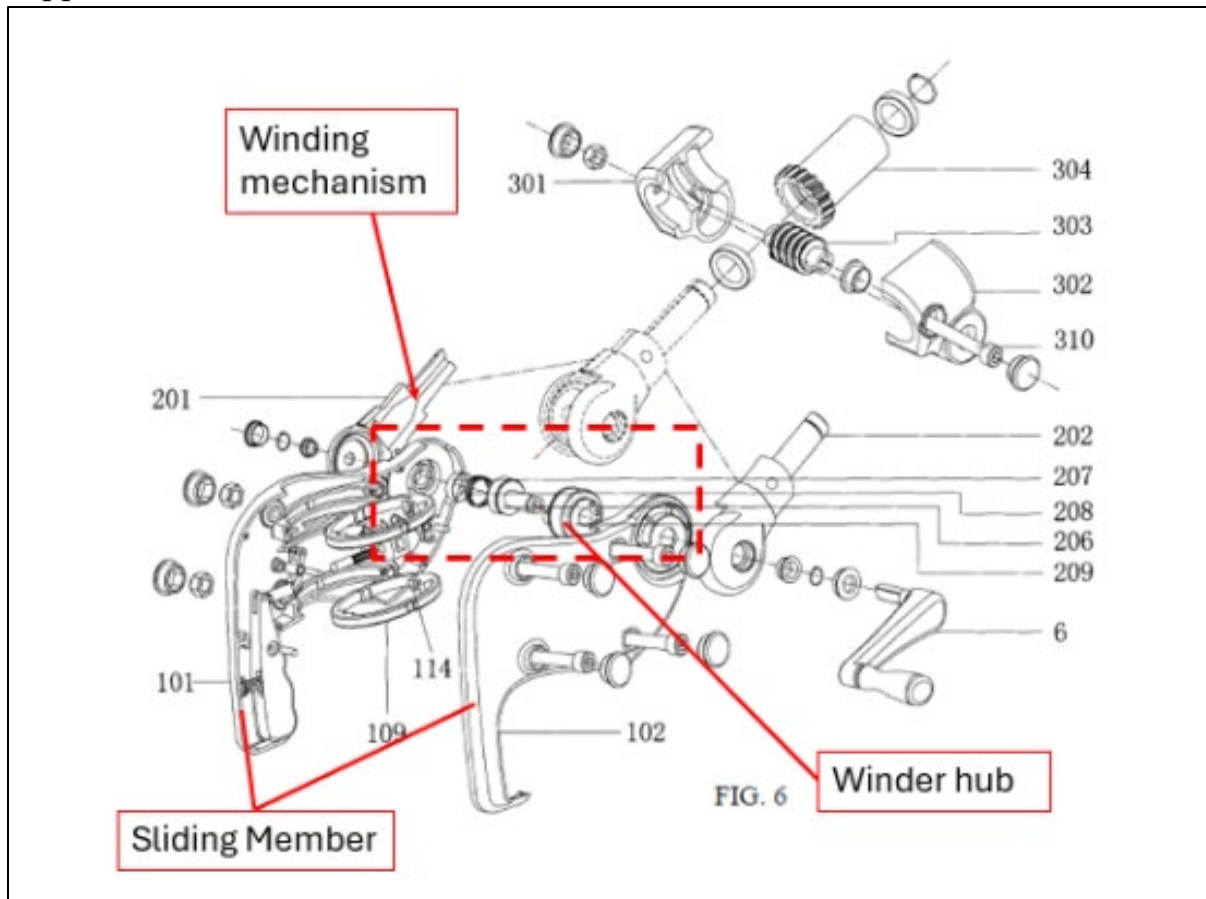
- h. Claim 1.g: a winding mechanism having a winder hub around which a line can be wound, the winder hub being mounted to the sliding member and movable therewith**

126. Wang '439 discloses a winding mechanism (cranking mechanism 2) having a winder hub (rope winding wheel 209) around which a line (parasol rope 211) can be wound. The winder hub (rope winding wheel 209) is also mounted to the sliding member (handle mechanism 1) and moveable therewith. As shown in

annotated Figures 1-3, Wang '439 explains that “the cranking mechanism comprising a cranking shaft and a rope winding wheel is arranged at a front end of the handle mechanism, a parasol rope for controlling the opening and closing of the parasol surface is wound around the rope winding wheel.” Ex. 1006 at 13-14. *See id.* at 15 (claim 1) and 18. Further, Wang '439 explains that “a parasol rope for controlling the opening and closing of the parasol surface is wrapped around the rope winding wheel.” Ex. 1006 at 13-14. The “cranking shaft 206 and the rope winding wheel 209 sleeved therewith can rotate, such that the parasol rope 211 is taken in or sent out to control the opening and closing of the parasol surface.” *Id.* at 21. Figure 2 also indicates that “an outer end of the [handle mechanism] is connected to [the] outer tube 4” and the outer tube 4 is slid into the outer end of the handle mechanism. *Id.* at 20. *See id.* at 24 (Figure 2). As shown in the annotated figures below, the rope winding wheel 209 (the winder hub) is mounted to the handle mechanism 1 (sliding member). *See id.* at 26 (Figure 6).







- i. **Claim 1.h: a line having a first end that winds around the winder hub, an intermediate portion extending from the winder hub along the arm to the umbrella canopy, and a second end that engages the umbrella canopy**

127. Wang '439 discloses a line (parasol rope 211) having a first end that winds around the winder hub (rope winding wheel 209), an intermediate portion extending from the winder hub (rope winding wheel 209) along the arm (outer tube 4). Wang '439 further discloses the line extending to the umbrella canopy, and a second end that engages the umbrella canopy as shown in the annotated figures below. As shown in Figures 1 and 2, “[t]he rope winding wheel 209 is provided with

a parasol rope 211 for controlling the opening and closing of the parasol surface”

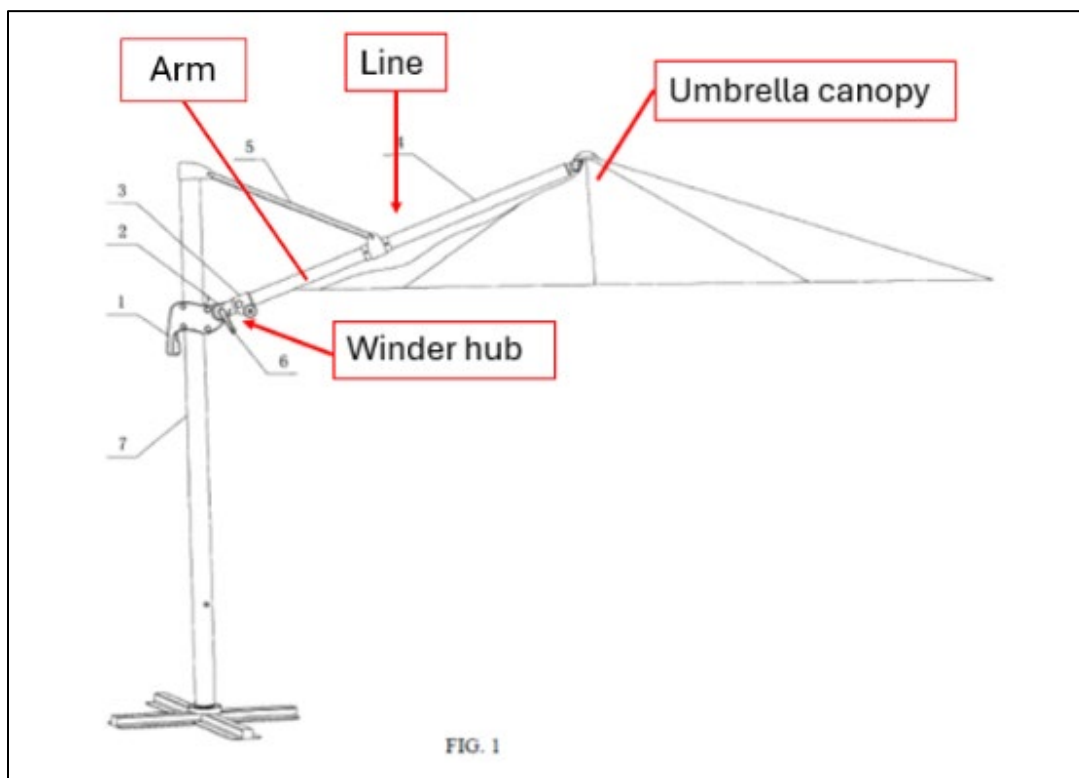
such that “the parasol rope 211 is taken in or sent out to control the opening and

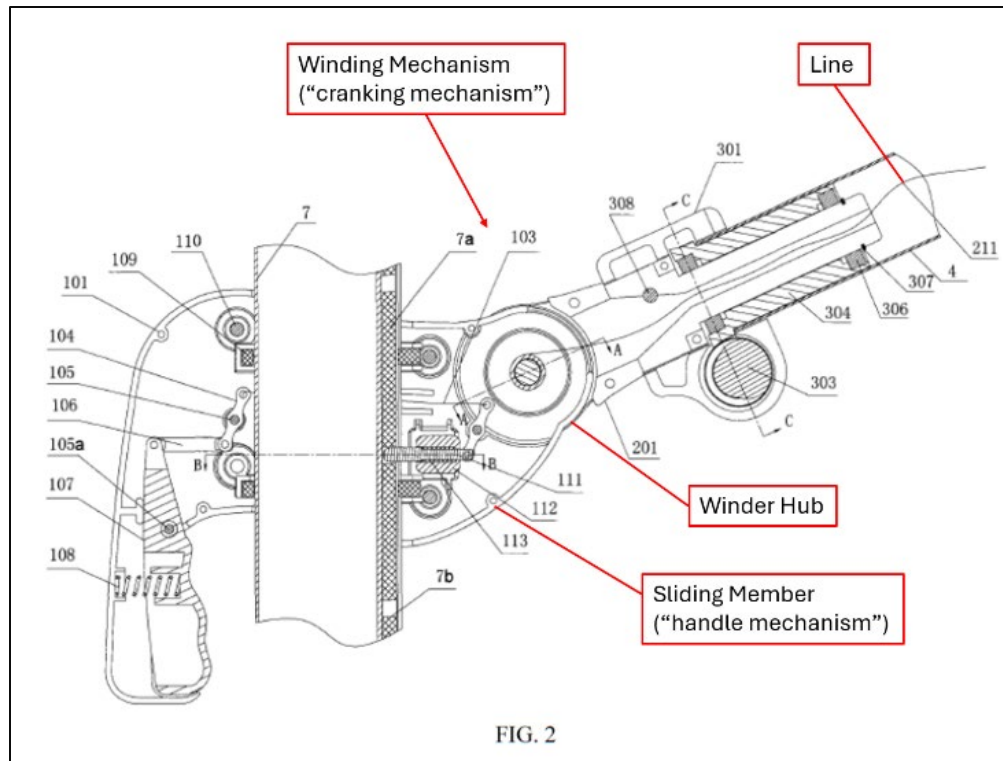
closing of the parasol surface” when the cranking shaft rotates. Ex. 1006 at 21 and

23-24. A POSITA would know that to control the opening and closing of the parasol

surface, the rope 211 must be engaged with the canopy (e.g., an array of struts

covered by shading element) to open and close the canopy.





j. Claim 1.i: wherein rotation of the winder hub tensions or relaxes the line depending upon the direction of rotation of the winder hub

128. Wang '439 discloses wherein rotation of the winder hub (rope winding wheel 209) tensions or relaxes the line (parasol rope 211) depending upon the direction of rotation of the winder hub (rope winding wheel 209). For example, Wang '439 explains that “[t]he cranking shaft 206 and the rope winding wheel 209 sleeved therewith can rotate, such that the parasol rope 211 is taken in or sent out to control the opening and closing of the parasol surface.” Ex. 1006 at 21; *See id.* at 13-14 (Abstract), 15 (claim 1).

k. Claim 1.j: “wherein operation of the winding mechanism to apply tension to the line opens and closes the umbrella canopy in response to movement of the line”

129. Wang ’439 discloses that operation of the winding mechanism (cranking mechanism 2) to apply tension to the line (parasol rope 211) opens and closes the umbrella canopy (parasol surface) in response to movement of the line (parasol rope 211). For example, Wang ’439 explains that “[t]he sunshade parasol cranking device ... controls the opening and closing of the parasol surface with the cranking mechanism” and “[t]he cranking shaft 206 and the rope winding wheel 209 sleeved therewith can rotate, such that the parasol rope 211 is taken in or sent out to control the opening and closing of the parasol surface.” Ex. 1006 at 14 (Abstract) and 21; *See id.* at 15 (claim 1) and 17-18 (Summary). A POSITA would understand that a rope (line) as disclosed in Wang ’439 inherently is a structure that functions under tension.

l. Claim 1.k: “wherein the angle of the umbrella canopy with respect to the main pole can be controlled by moving the sliding member along the main pole”

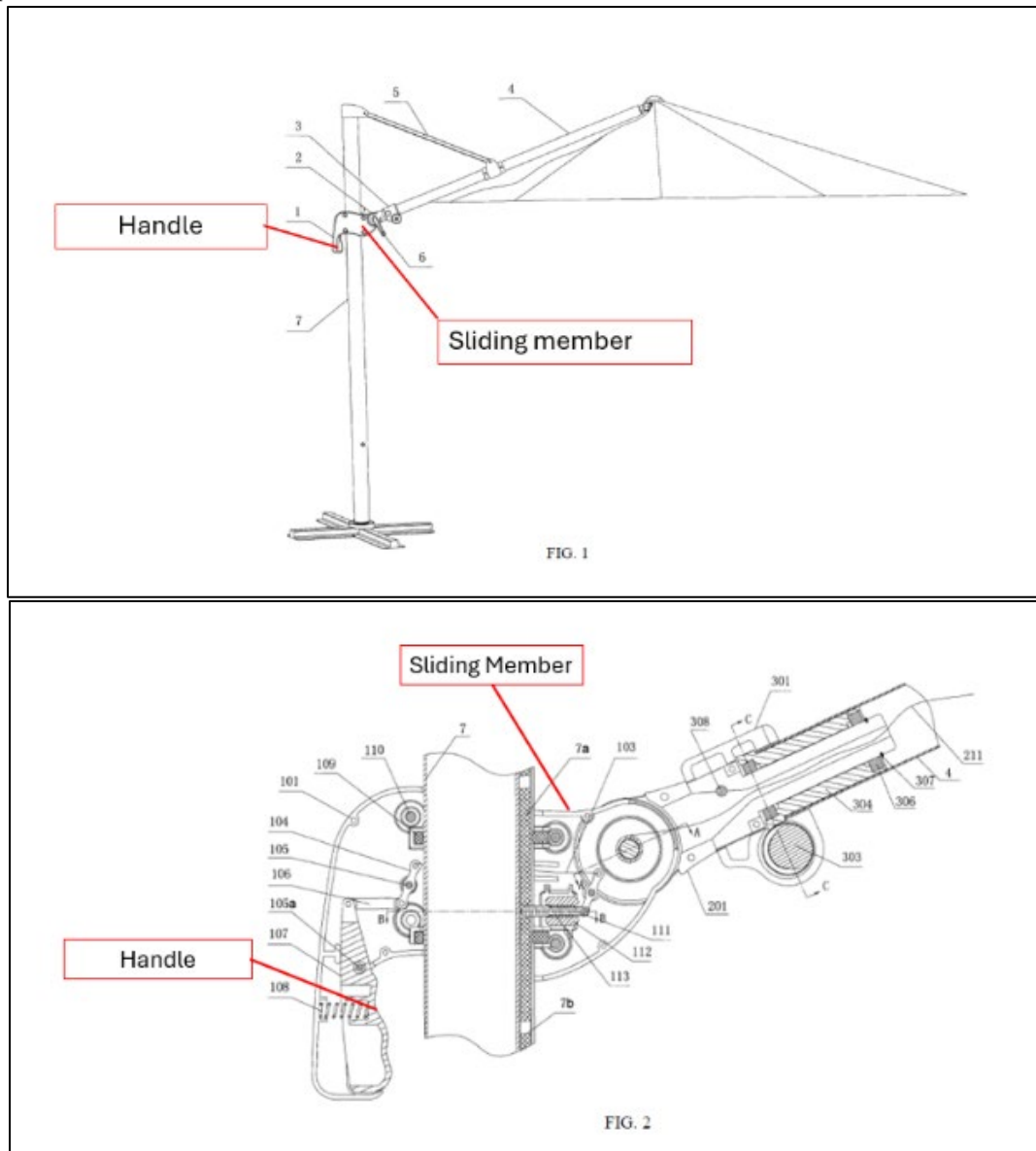
130. Wang ’439 discloses wherein the angle of the umbrella canopy (parasol surface) with respect to the main pole (pole 7) can be controlled by moving the sliding member (handle mechanism 1) along the main pole (pole 7). For example, Wang ’439 discloses that the canopy “can be adjusted to any angle in the front and back, left and right direction, so as to select the appropriate sunshade angle and

improve the shadin[g] effect.” Ex. 1006 at 19, 15 (claim 1). Wang ’439 explains that “[t]he handle mechanism is used to slide on the pole of the sunshade parasol to control the left and right tilting of the parasol.” *Id.* at 19. The left-right angling is achieved by engaging a selected one of “positioning holes 7b [that] are arranged at a certain distance on a plastic strip 7a connected to one side of the pole 7.” *Id.* at 20.

131. Accordingly, Wang ’439 renders claim 1 as anticipated under pre-AIA 35 U.S.C. § 102.

2. Claim 5: “[t]he umbrella of claim 1, wherein the sliding member has a handle associated therewith.”

132. Wang ’439 discloses wherein the sliding member (handle mechanism 1) has a handle associated therewith. As shown in Figures 1 and 2 (annotated below), Wang ’439 discloses that a “handle mechanism is used to slide on the pole of the sunshade parasol to control the left and right tilting of the parasol.” Ex. 1006 at 19 and 23-24 (Figures 1 and 2). *See id.* at 13-14, 15 (claim 1), 17-18, and 20-21.



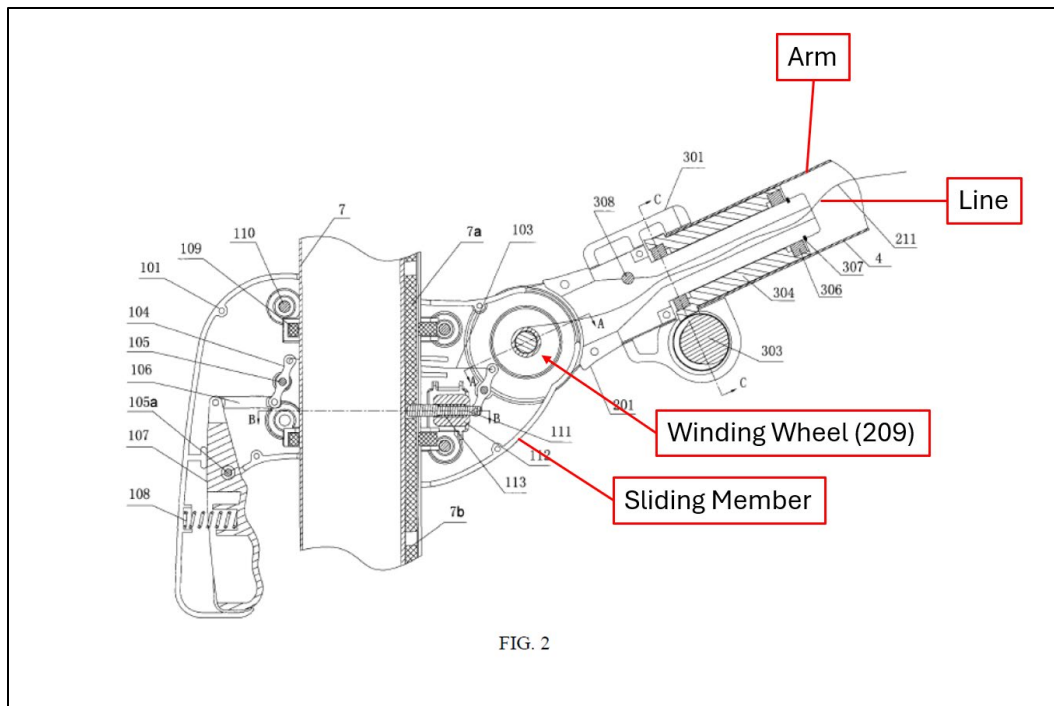
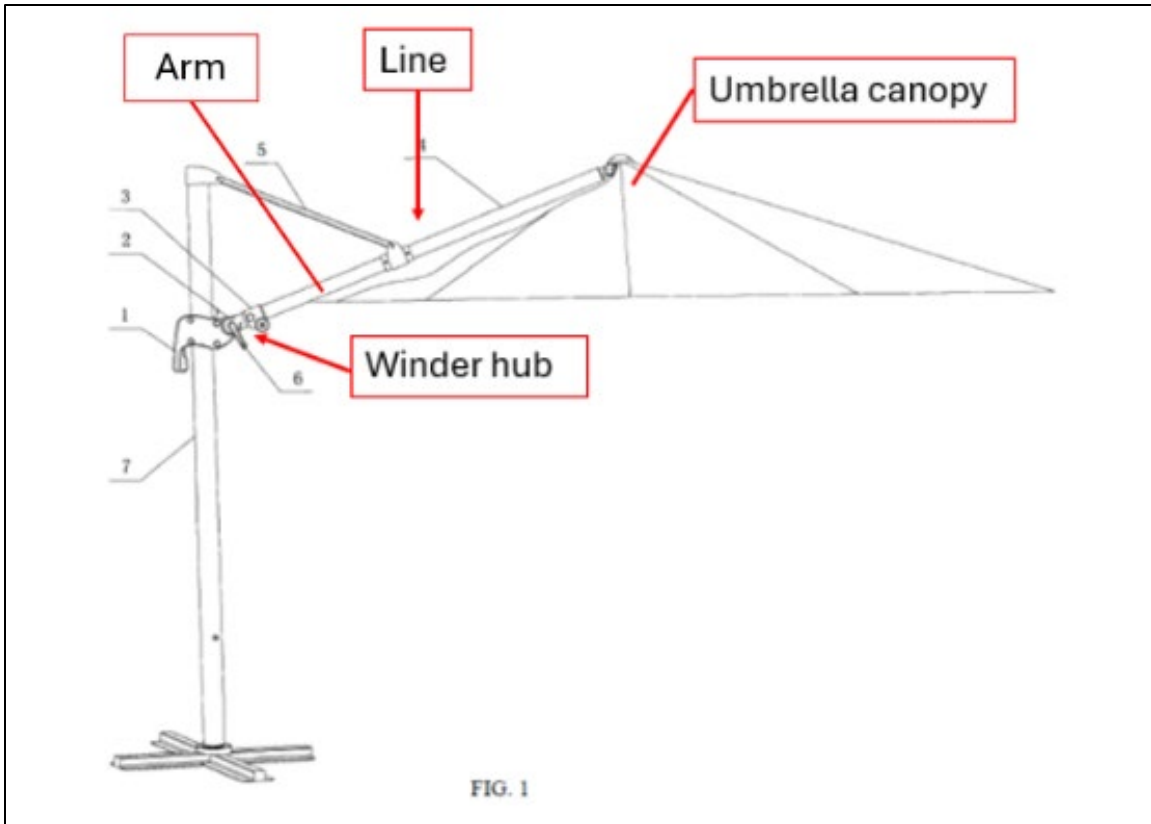
133. Thus, Wang '439 renders claim 5 as anticipated under pre-AIA 35 U.S.C. § 102.

3. Claim 6: “[t]he umbrella of claim 1, wherein the line extends along at least substantially the entire length of the arm.”

134. Wang '439 discloses wherein the line (parasol rope 211) extends along at least substantially the entire length of the arm (outer tube 4). As shown in

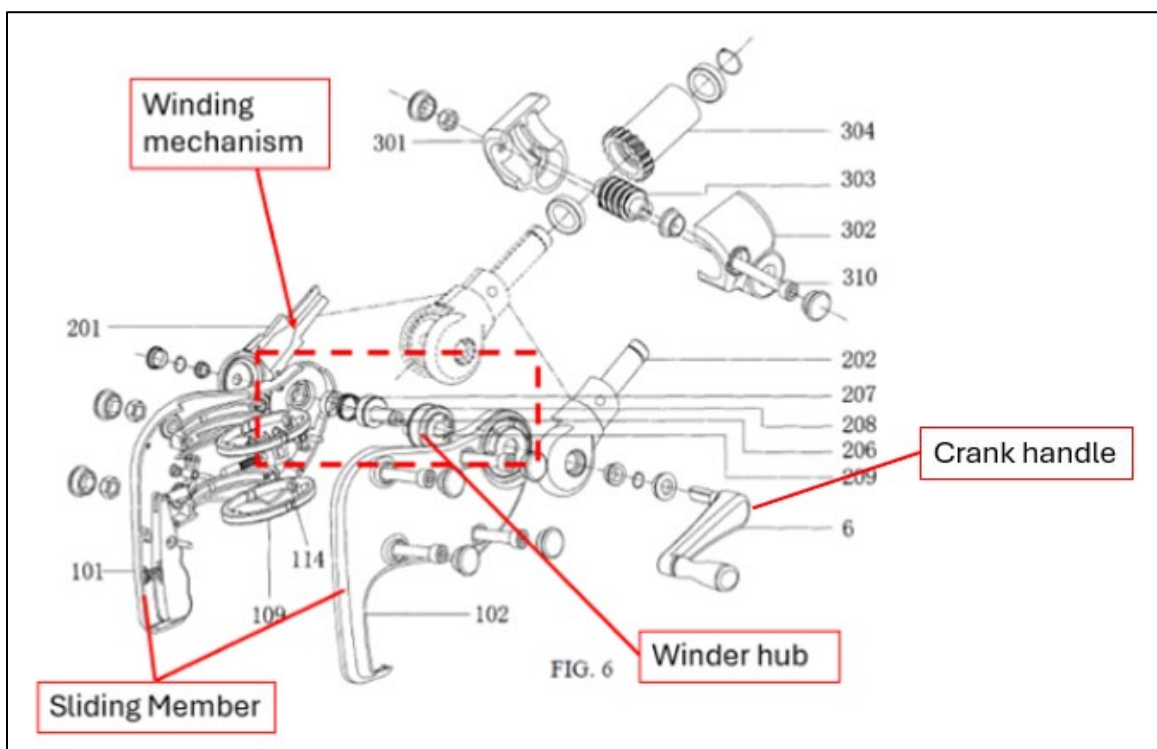
annotated Figure 1 and 2 below, Wang '439 explains that “[t]he rope winding wheel 209 is provided with a parasol rope 211 for controlling the opening and closing of the parasol surface” and “[t]he cranking shaft 206 and the rope winding wheel 209 sleeved therewith can rotate, such that the parasol rope 211 is taken in or sent out to control the opening and closing of the parasol surface.” Ex. 1006 at 21 and 23-24 (Figures 1 and 2). *See id.* at 13-14 (Abstract), 15 (claim 1). A POSITA would understand that, because the rope 211 is the element that transfers the load from the winding of the winding wheel 209 to the parasol canopy structure for the purpose of opening and closing and because the parasol canopy structure is at the opposite end of the arm (outer tube 4), the rope 211 must extend substantially the entire length of the arm (outer tube 4) to apply that load as shown below. *See id.* at 13 (abstract) and 15 (claim 1).

135. Thus, Wang '439 renders claim 6 as anticipated under pre-AIA 35 U.S.C. § 102.



4. **Claim 7: “[t]he umbrella of claim 1, further comprising a crank handle operatively associated with the winder hub, whereby rotating the crank handle causes the winder hub to rotate.”**

136. The Wang ’439 umbrella has a crank handle associated with the winder hub. Specifically, Wang ’439 explains that “[o]ne end of the cranking shaft 206 is provided with a connection hole for connecting with the cranking handle 6, and the cranking handle 6 is inserted into the connection hole for rotation.” Ex. 1006 at 21.



137. Further, rotating the cranking shaft causes the winder hub to rotate. Wang ’439 explains that “[t]he cranking shaft 206 and the rope winding wheel 209 sleeved therewith can rotate, such that the parasol rope 211 is taken in or sent out to control the opening and closing of the parasol surface.” Ex. 1006 at 21 and 26 (Figure 6). See Ex. 1006 at 16 (claim 9).

138. Thus, Wang '439 renders claim 7 as anticipated under pre-AIA 35 U.S.C. § 102..

C. Ground 3: The Challenged Claims of the '492 Patent are Obvious over Glatz '980 in view of Bertola '895, Wang '460, Tung '037, or Liu '171

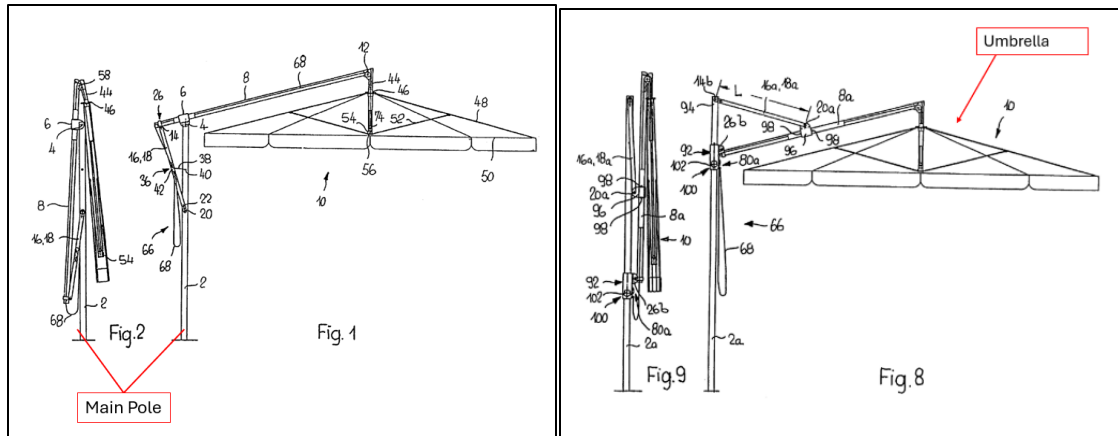
139. Glatz '980 in view of Bertola '895 and further in view of Wang '460 render claims 1, 4, and 5-7 as obvious under pre-AIA 35 U.S.C. § 103. Glatz '980 in view of Bertola '895 and further in view of Wang '460 and further in view of Tung '037 renders claim 2 as obvious under pre-AIA 35 U.S.C. § 103. Glatz '980 in view of Bertola '895 and further in view of Wang '460 and further in view of Liu '171 renders claim 3 as obvious under pre-AIA 35 U.S.C. § 103.

1. Claim 1

140. Based on my review and analysis, Glatz '980 in view of Wang '460 or in further view of Bertola '895 renders claim 1 as obvious under pre-AIA 35 U.S.C. § 103.

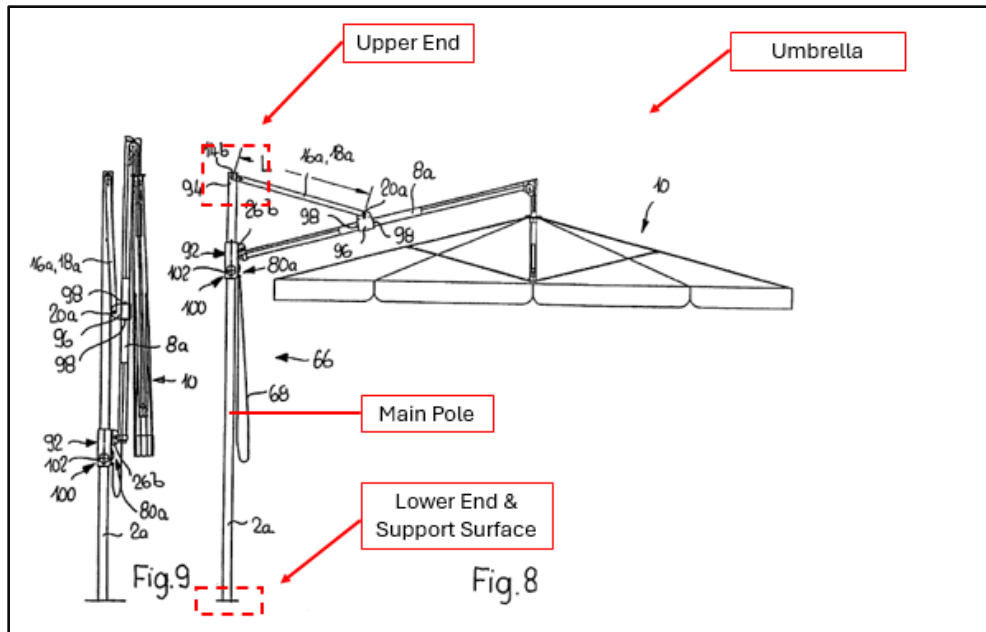
a. Preamble: “An umbrella comprising”

141. Glatz '980 generally discloses a free-arm canopy umbrella as shown below in Figures 1, 2, 8, and 9. Ex. 1008 at Title, Figure 1, 2, 8 (see annotated below), 9. *See id.* at 1:4-6, 1:59-2:57, 5:64-65, 8:60-12:5 (claims).



- b. **Claim 1.a: “a main pole having a lower end for support by a support surface and extending generally upward to an upper end”**

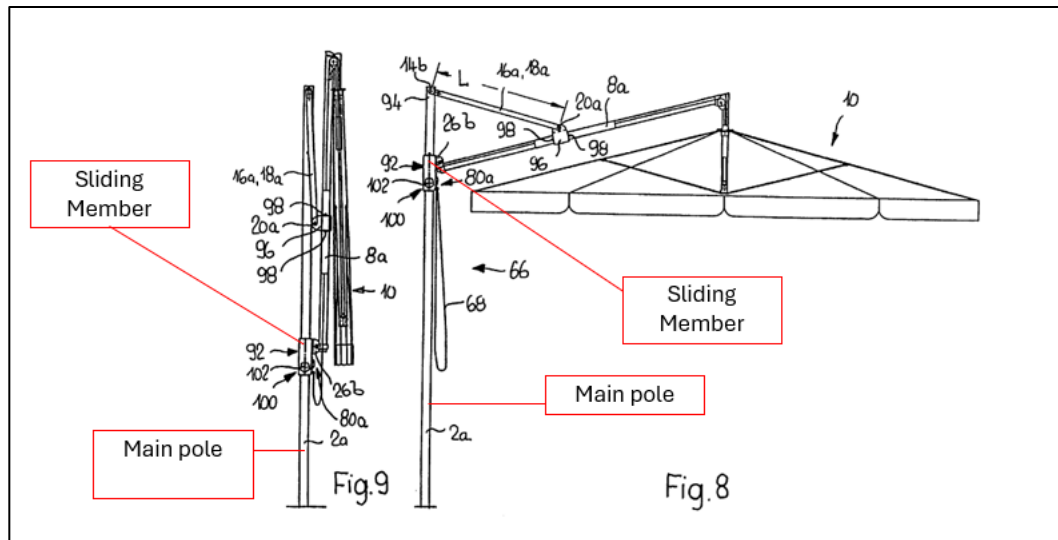
142. Glatz '980 discloses a main pole (mast 2a) having a lower end for support by a support surface and extending generally upward to an upper end (upper end 94). Ex. 1008 at Figures 8 and 9 (annotated below).



143. A POSITA would understand the umbrella disclosed in Glatz '980 must be mounted to some kind of support surface structure (e.g., a stand) for the device to remain upright. In Glatz '980, such a support is illustrated by a short horizontal line at the bottom of the mast 2a.

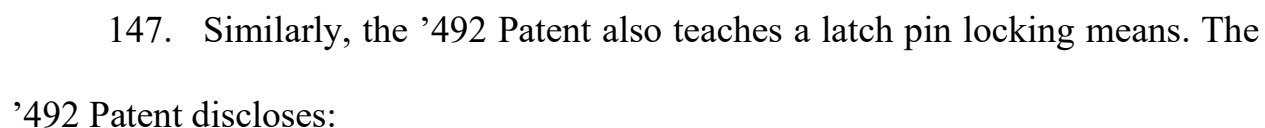
c. Claim 1.b: “a sliding member associated with the main pole and selectably moveable thereon between lower and upper locations along the main pole”

144. Glatz '980 discloses a sliding member (slide 92) associated with the main pole (mast 2a) and selectably moveable thereon between lower and upper locations along the main pole (mast 2a). Glatz '980 describes “a slide (92) which is designed to move along the mast” and which “can be fixed into position at various heights on the mast (2a).” Ex. 1008 at 5:64-6:16 and Figures 8 and 9 (see annotated below). *See id.* at 3:27-30, 8:60-9:7 (claim 1) and 9:28-36 (claim 18).



d. Claim 1.c: “locking means for releasably securing the sliding member to the main pole at a selected location along the main pole”

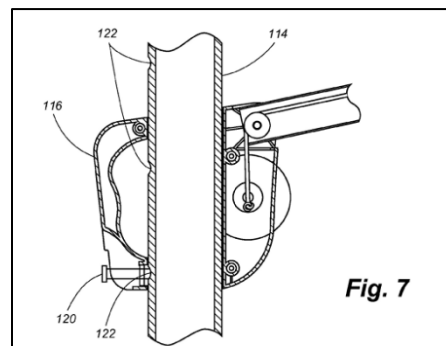
145. The Glatz '980 umbrella has a locking means or locking device (first detent device 100; stopping bolt) for releasably securing the sliding member (slide 92) to the main pole (mast 2a) at a selected location along the main pole (mast 2a). Ex. 1008 at 3:31-38, Figures 8 and 9 (see annotated below), 8:60-9:7 (claim 1), 9:28-36 (claim 18). Glatz '980 teaches that “[t]he slide (92) which can be moved along the mast (2a) ...has been provided with a first detent device (100) ... by means of which the slide (92) can be fixed into position at various heights on the mast (2a).” Ex. 1008 at 6:12-16.



Klopp Declaration

This embodiment employs a spring-loaded latch pin 120 mounted to the sliding member 116 that engages one of a corresponding series of holes 122 in the main pole 114. To move the sliding member 116 from one location on the main pole 114 to another, the user extracts the latch pin 120 until it disengages the hole, slides the sliding number upward or downward to a desired new location, and engages the latch pin with a new one of the series of holes 122.

Ex. 1001 at 4:12-20. An image of the '492 Patent's latch pin locking means is shown below. The foregoing disclosure and the following image are the same as or equivalent to the conventional meaning of a detent.



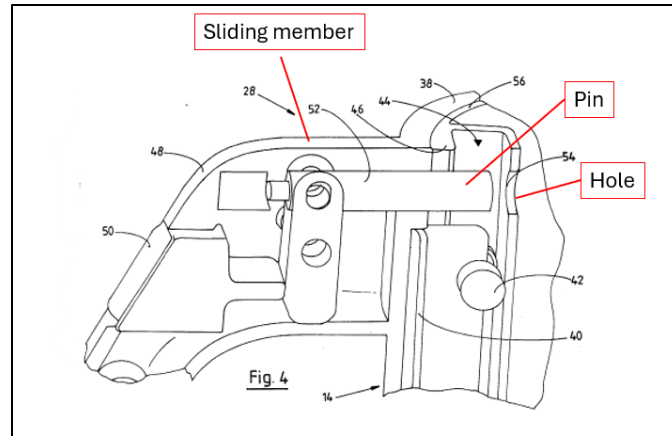
148. Thus, Glatz '980 describes a locking device structure that has a stop bolt that engages holes at different heights along the main pole just like the structure shown in FIG. 7 of the '492 Patent and referred to as a “latch pin 120” and “holes 122” in the '492 Patent.

149. To the extent Glatz '980 does not disclose this limitation, a POSITA would understand to use a spring-loaded stop bolt in connection with the detent device located on the slide 92 of Glatz '980. The use of a spring-loaded stop bolt would address the drawbacks of prior art locking mechanisms and adjustment

mechanisms to make the device easier to handle by providing automatic re-engagement due to the spring and more positive locking. Ex. 1008 at 1:9-57. Moreover, spring-loaded stop bolts were common and well known in the art prior to the priority date of the '492 Patent. *See e.g.*, Ex. 1013 at 30.

***i.* In the alternative, Glatz '980 in view of Bertola '895 renders Claim 1.c obvious**

150. In the alternative, if the Board finds that Glatz '980 does not disclose the latch pin and hole structure of the '492 Patent or an equivalent structure, Bertola '895 discloses this. As shown below in Figure 4, Bertola '895 discloses a latch 52 and a hole 54 where the latch and hole are on the same side as the user interface (hand grasping portion, handle). Bertola '895 discloses a button 50 that is used to operate a spring-loaded pin (latch 52) under “spring pretension” that engages with a hole (hole 54) “for fixation of the slider 28 on the mast 14.” Ex. 1013 at 30. A POSITA would understand that Bertola '895, like Glatz '980, must contain a plurality of detent openings because Bertola '895 teaches a height adjustable device and a plurality of holes must be necessary to allow a user to choose the height of the umbrella. *See id.* at 28-29 and 16 (Figure 1). Exemplary annotated Figure 4 is shown below. *See id.* at 19.



(a) Motivation to combine Glatz '980 with Bertola '895

151. A POSITA would have understood that a simple substitution of the “spring pretensioned” locking pin and hole locking mechanism on the sliding member of Bertola '895 for the “stop bolt which can engage into various detent openings along the mast” of Glatz '980 would yield predictable results of automatic engagement of the pin with the hole to improve adjustable collapsable umbrella products and to secure the umbrella into place without requiring the user to push the pin into the hole. Indeed, Glatz '980 and Bertola '895 both relate to collapsable umbrella products and are thus in the same industry. Bertola '895 discloses a need to create a device which is easier to store and adjust (e.g., height). Ex. 1013 at 27-29. Glatz '980 also states there was a need to have a safe and reliable locking means. For example, Glatz '980 states:

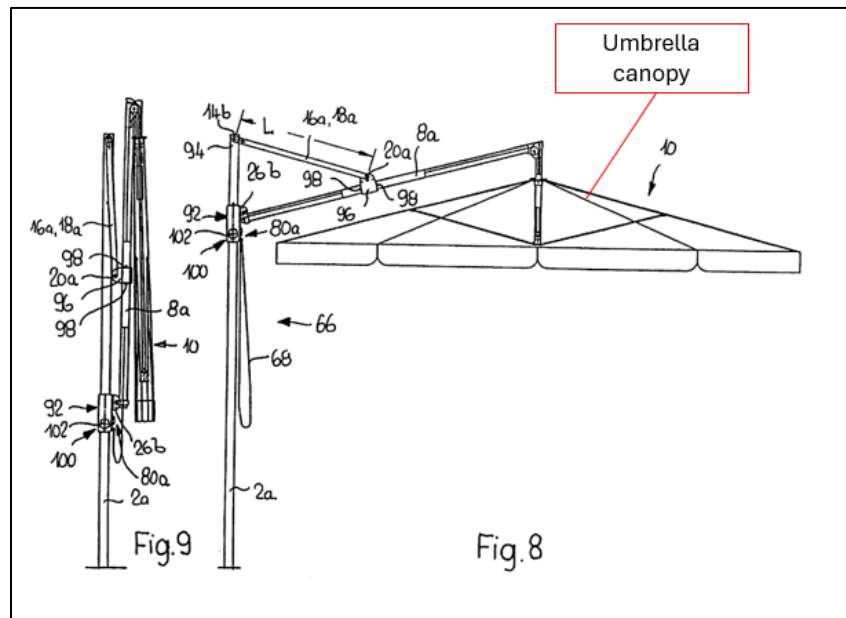
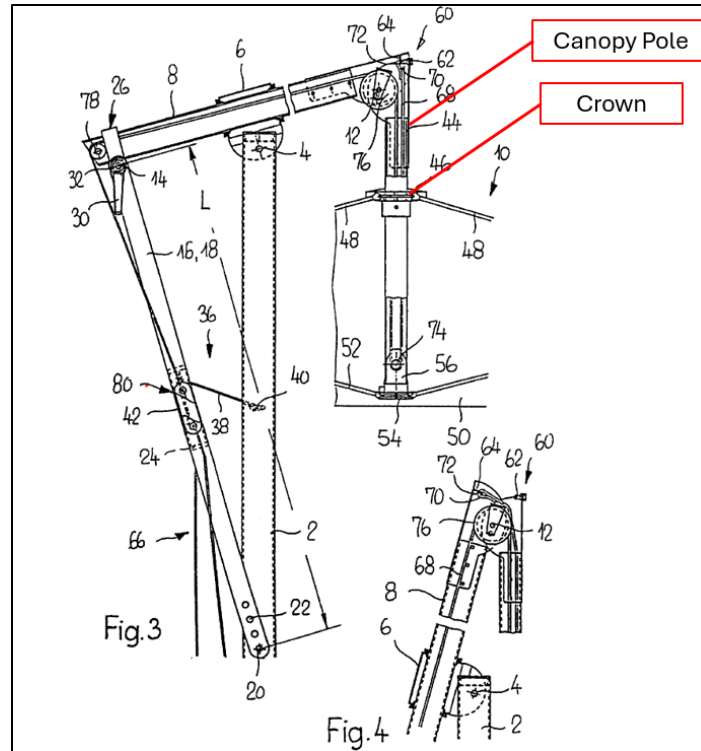
The disadvantage here is that when loosening the setscrew, the jib is free to move, thus creating the risk of the canopy folding or turning down unintentionally and the operator becoming injured. Such a free-

arm canopy is difficult to handle and completely unsuitable for larger free-arm canopies.

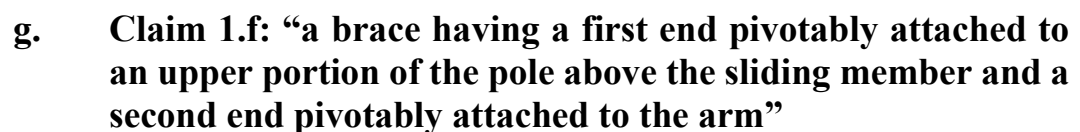
Ex. 1008 at 1:51-57. Because Bertola '895's locking mechanism creates a more stable detent locking mechanism with positive spring activation, replacing the Glatz '980 locking means with the Bertola '895 locking mechanism would achieve the goal identified in Glatz '980. Thus, a POSITA would have been motivated to use the pin and hole locking mechanism taught in Bertola '895 with Glatz '980.

e. Claim 1.d: “an umbrella canopy having a central region”

152. Glatz '980 discloses an umbrella canopy having a central region, i.e., the portion of the canopy 10 surrounding the canopy pole 44. *See* Ex. 1008 at Figure 3. As shown in annotated Figure 8 and Figure 9 below, the “foldable canopy (10) is equipped with a canopy pole (44) on which a crown (46)” is fastened in the center. Ex. 1008 at 5:12-14 and Figures 8-9. *See id* at 5:64-6:2.

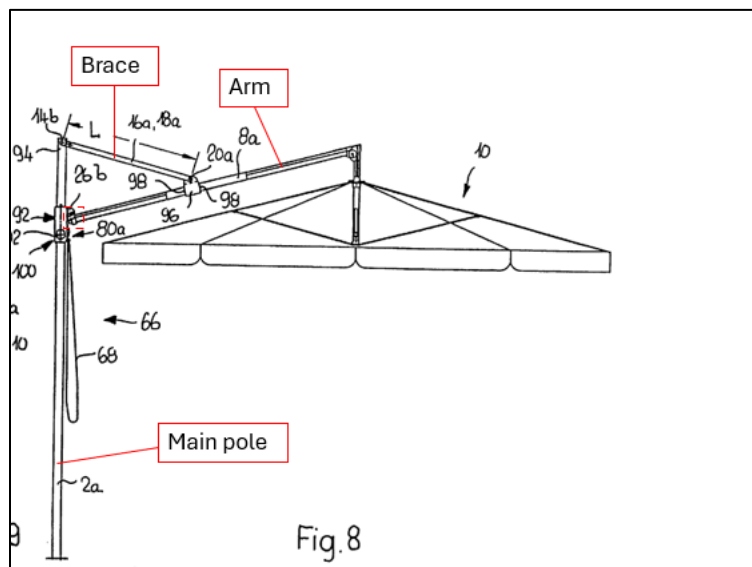


153. Glatz '980 discloses an arm (jib 8a) associated with the central region and extending radially therefrom to an outer end operatively associated with the sliding member (slide 92). As shown in annotated Figure 8 below, the “jib (8a) supports itself [at an outer end relative to the central region] against a mast (2a) via a slide (92)[.]” Ex. 1008 at 5:64-6:16, Figure 8. *See id.* at 6:26-36, 8:60-9:7 (claim 1) and 9:28-36 (claim 18).



Treasure Garden Ex. 1004
IPR Petition - USP 8,104,492

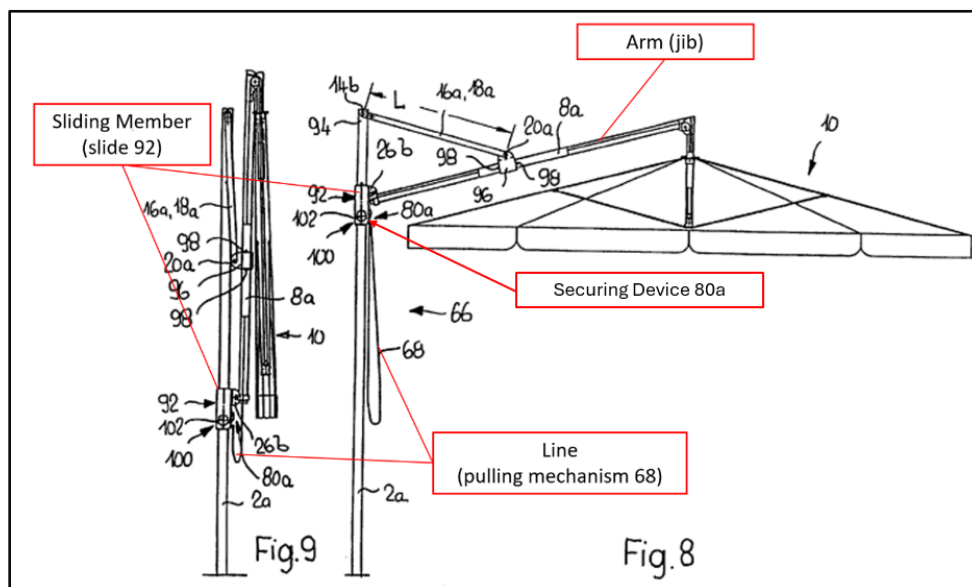
155. Further, Glatz '980 teaches that the brace is pivotably attached to an upper portion of the pole (mast 2a) above the sliding member (slide 92) and a second end pivotably attached to the arm (jib 8a). Claim 1 of Glatz '980 recites a “free arm-canopy including a mast (2, 2a) on which a jib (8, 8a) is guided for movement between extended and retracted positions and is supported by means of a connecting strut (16, 18, 16a, 18a) which is articulately secured to the mast (2,2a) and to the jib (8,8a)[.]” Ex. 1008 at 8:60-9:7 (claim 1). *See id.* at 5:64-6:16, 6:26-36, 9:28-36 (claim 18). An annotated Figure 8 is shown as an example below.



- h. Claim 1.g: “a winding mechanism having a winder hub around which a line can be wound, the winder hub being mounted to the sliding member and movable therewith”**

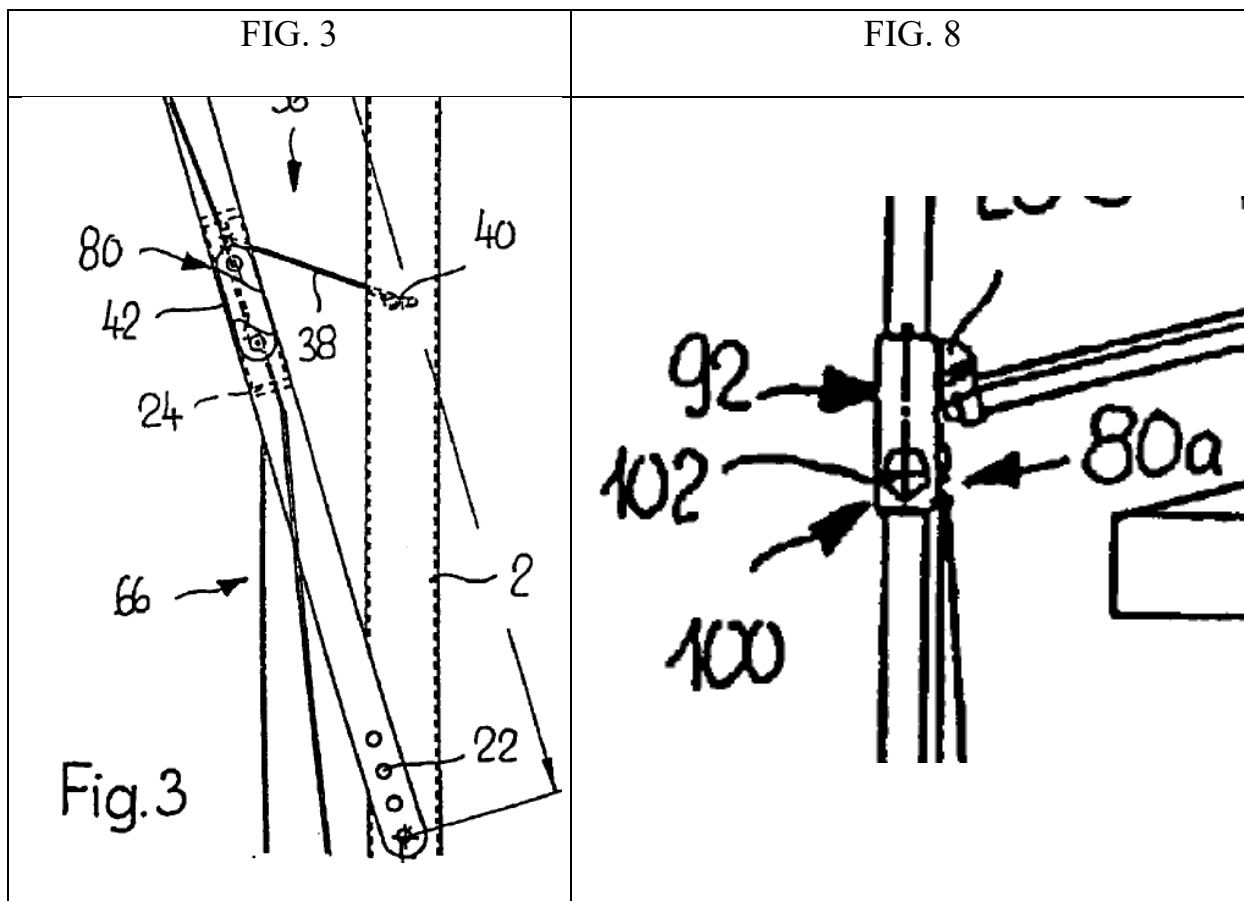
156. Glatz '980 discloses a securing device 80 mounted to the sliding member that anchors the line (pulling mechanism 68) that runs from the sliding member (slide 92) along the arm/jib to the center of the canopy. Ex. 1008 at 5:26-42,

6:23-26. Glatz '980 discloses a sliding member (slide 92) and a line (pulling mechanism/device 68) which at the end which faces away from the canopy is led out of the jib via a guide pulley (78) at the end which faces away from the canopy. Ex. 1008 at 5:26-49, 6:19-26, Figure 8 (see annotated below), Figure 9. The pulling mechanism/device (68) is pulled, transferring force along the guide pulley (74, 76, 78) to open the canopy (10). *Id.* at 5:26-49, 6:19-26, Figures 8 and 9.



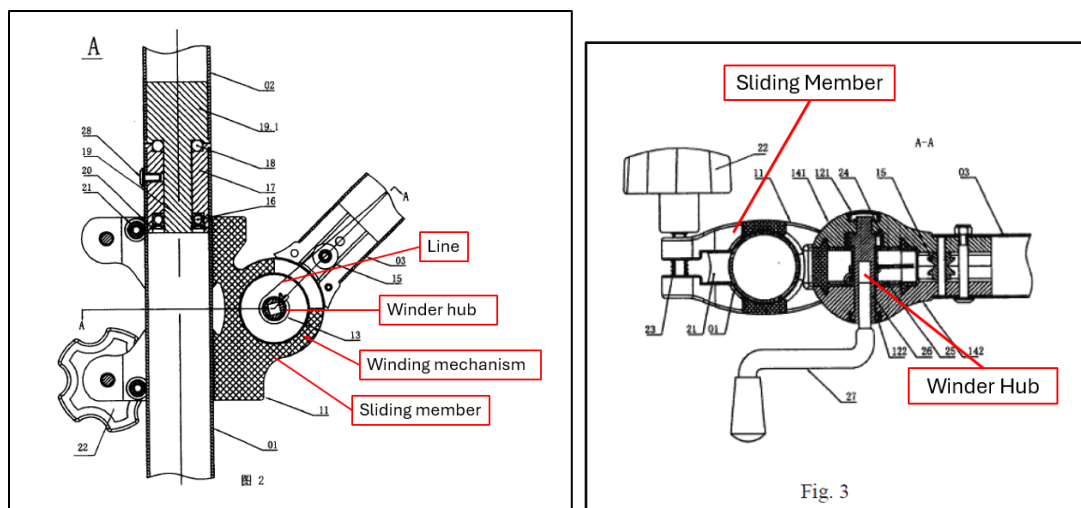
157. The line (pulling mechanism/device 68) is secured on the sliding member (slide 92). Glatz states in connection with the umbrella of Figures 8-9 that “[t]he construction of the canopy (10) and that of the actuating device (66) for opening and closing the canopy corresponds to that shown in FIGS. 1 to 7, so that reference is made to the construction as shown in the aforementioned figures. It

should be added in this connection that the securing device (80a) for fastening the pulling mechanism is positioned on the slide (92) so that the canopy can be inclined in the open state.” *Id.* at 6:19-26. Portions of Figures 3 and 8 including the securing devices (80, 80a) are shown below.



158. To the extent Glatz '980 does not disclose a winder hub mounted to the sliding member and moveable therewith, winder hubs were well-known in the prior art as ways to secure a line used to tension a canopy of this type. For example, Wang '460 discloses this. Wang '460 discloses a winding mechanism having a winder hub

(rope reel 26) around which a line (pull rope 13) can be wound, the winder hub (rope reel 26) being mounted to the sliding member (sliding sleeve 11) and movable therewith. As shown below, Wang '460 umbrella has a “sliding sleeve 11 [that] slide[s] smoothly with the parasol pole” which contains a “rope reel 26 of a winder handle 27 [] tied with a pull rope 13” and travels through the suspension rod 03 fixed to the parasol. Ex. 1007 at 15, 17, and 20 (Figures 2 and 3 (annotated below)). See *id.* at 10-11 (Abstract), 12 (claim 1), 19 (Figure 1).



i. Motivation to combine Glatz '980 with Wang '460

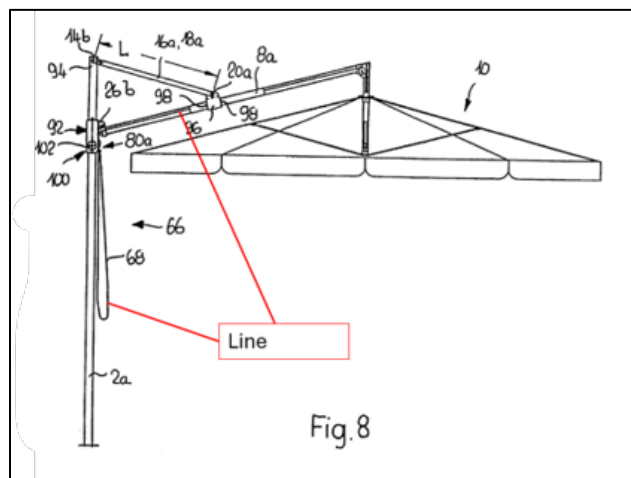
159. A POSITA would have understood that a simple substitution of the sliding member in Glatz '980 with the sliding member with the winding mechanism in Wang '460 would yield predictable results for manipulating the line to control the umbrella. Indeed, Glatz '980 and Wang '460 both relate to collapsable umbrella products and are thus in the same industry. A motivation to combine is also found in

Wang '460. Wang '460 describes a need to create a stable and easy to operate an umbrella. Ex. 1007 at 14 (Background). Wang '460 describes how an umbrella design including a sliding sleeve mounted on the supporting pole, including a rope winding device, makes the umbrella easy to open and close, enables the umbrella to be rotated 360 degrees around the supporting pole, and enables the umbrella to tilt. Ex. 1007 at 10-11 (Abstract). Glatz '980 also states a need to provide a device that is easier to handle and a design that can reduce user injury. Ex. 1008 at 1:46-56. A POSITA would understand that a winding mechanism using a winder hub can neatly store a line in the sliding member. This can prevent the line from getting tangled, obstructing a user, mitigate the risk of a child choking, and/or prevent damage from the elements, such as UV degradation. Ex. 1022 at 6:24-27. By storing an end of the line within a winding mechanism mounted to the sliding member, the device can thereby create a safer environment and accomplish the goals stated in Glatz '980 and Wang '460. Moreover, rather than requiring a user to pull on the line to manipulate the umbrella, tensioning or relaxing the line by using a winder hub can create a mechanical advantage that allows smaller users to easily manipulate a larger umbrella canopy and thereby accomplish the goals mentioned in Glatz '980 and Wang '460.

- i. **Claim 1.h: “a line having a first end that winds around the winder hub, an intermediate portion extending from the**

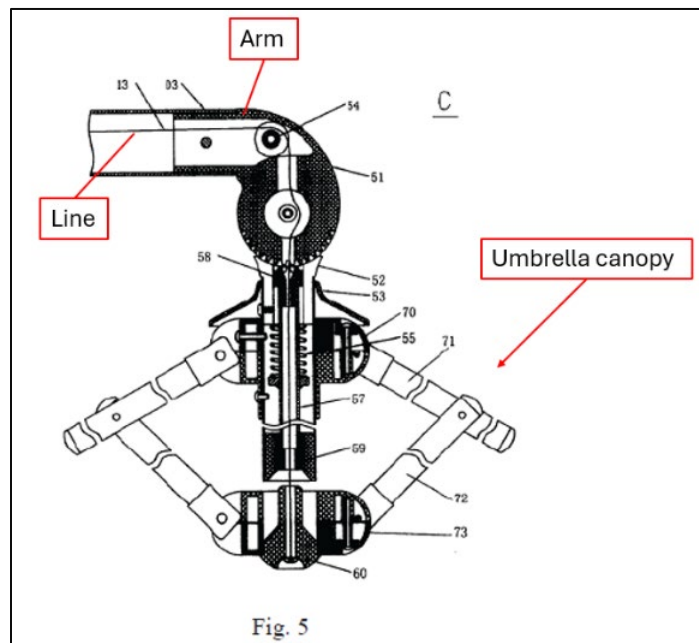
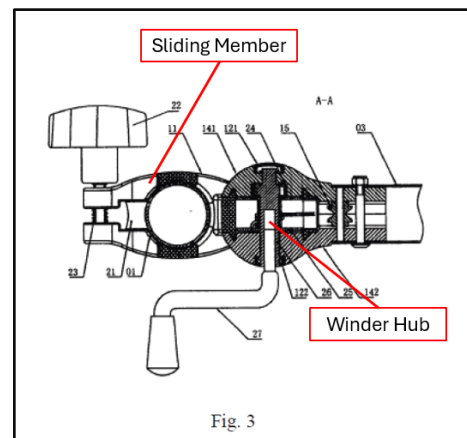
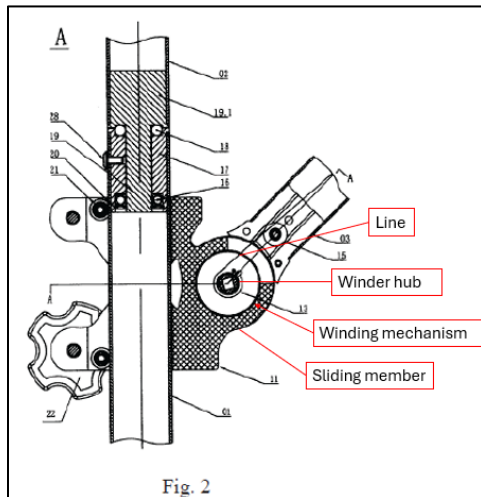
winder hub along the arm to the umbrella canopy, and a second end that engages the umbrella canopy”

160. Glatz '980 discloses a line (pulling mechanism or pulling device 68) extending from the securing device on the sliding sleeve 92 along the arm (jib 8, 8a) to the umbrella canopy (canopy 10), and engaging the umbrella canopy (end 70), as shown below. Ex. 1008 at 5:26-49, 6:19-26, Figure 8 (see annotated below) and Figure 9. The path of the line 68 in the arrangement of Fig. 8 can be seen, as has been annotated below, extending from the securing device (80a) through the upward inclined jib (8a), over a pulley and down in the canopy (10).



161. To the extent Glatz '980 does not disclose the winder hub on a sliding member, Wang '460 discloses this. Wang '460 discloses a line (pull rope 13) extending from the securing device or winder hub (rope reel 26) along the arm to the umbrella canopy (parasol cover 112), where it engages the umbrella canopy (parasol cover 112). Wang '460 further teaches a “sliding sleeve 11 [that] slide[s] smoothly

with the parasol pole” that holds a “rope reel 26 of a winder handle 27 [that] is tied with a pull rope 13, and the other end of the pull rope passes through the suspension rod 03...so as to be fixed to the” parasol. Ex. 1007 at 15, 17, and 20-21 (Figures 2, 3, and 5). *See id.* at 10-11 (Abstract), 12 (claim 1), 19 (Figure 1).



162. For similar reasons stated in Section VI.C.1.h (*supra* Section VI.C.1.h), including safety, neatness of rope storage, and mechanical advantage, a POSITA would be motivated to combine these references and follow the line path of Wang '460 in implementing the winder hub thereof (the “rope reel wheel 26”) in the umbrella of Glatz '980, to accomplish the goals stated in both references so that the pulling device 68 of Glatz '980 would be wound around a spool and extend from the winder hub along the arm to the umbrella canopy.

j. Claim 1.i: “wherein rotation of the winder hub tensions or relaxes the line depending upon the direction of rotation of the winder hub”

163. As discussed above, winder hubs were well known in the prior art, such as in Wang '460.

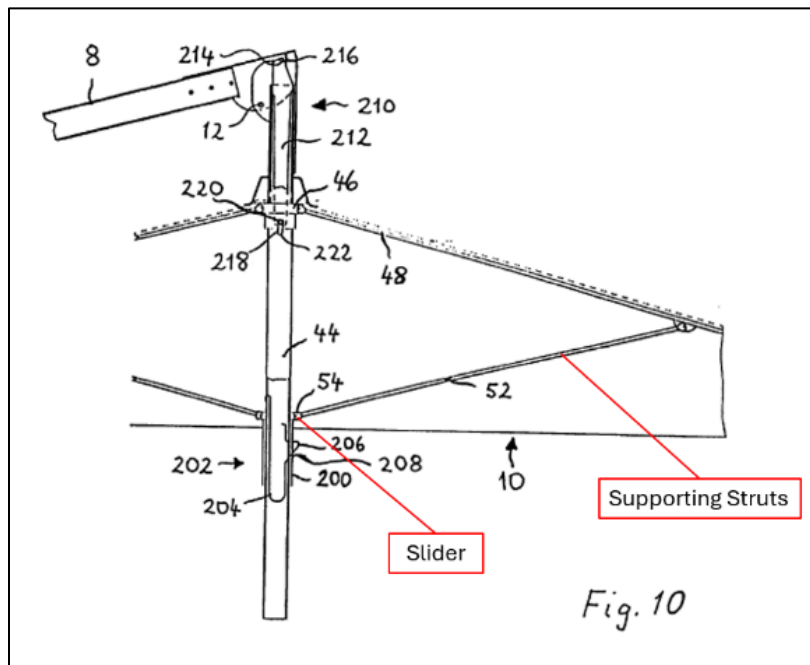
164. To the extent Glatz '980 does not disclose this limitation, a POSITA would readily recognize that the advantageous winding mechanism component for opening and closing the umbrella canopy would provide the function of tensioning and relaxing the line in Glatz '980. For example, Wang '460 discloses wherein rotation of the winder hub (rope reel 26) tensions or relaxes the line (pull rope 13) depending upon the direction of rotation of the winder hub (rope reel 26). Wang '460

teaches a user to operate the rope winder to manipulate the parasol (e.g., opening and closing the parasol). Ex. 1007 at 10-11 (Abstract), 15, 17. A POSITA would understand that the rotation of the rope reel creates an advantageous winding mechanism component for opening and closing the umbrella canopy by tensioning or relaxing the line depending upon the direction of the rotation of the rope reel. Further, as explained above, a POSITA would be motivated to combine Wang '460 with Glatz '980 to accomplish the goals stated in both references.

165. For similar reasons stated in Section VI.C.1.h (*supra* Section VI.C.1.h), including safety, neatness of rope storage, and mechanical advantage, a POSITA would be motivated to combine these references to accomplish the goals stated in both references.

k. Claim 1.j: “wherein operation of the winding mechanism to apply tension to the line opens and closes the umbrella canopy in response to movement of the line”

166. In the Glatz '980 umbrella, applying tension to the line opens and closes the umbrella canopy in response to movement of the line in the same way as in the umbrella of the '492 Patent. Specifically, Claim 2 of Glatz '980 describes an advantageous refinement of a control device for opening and closing the canopy. Ex. 1008 at 9:8-11. Claim 2 explains that “the slider (54) interacts with a pulling mechanism (68) of an actuating device (66) which is guided to the mast (2, 2a) in the direction of the jib (8, 8a).” Ex. 1008 at 9:8-11. As shown in Figures 8-10 below,



167. Thus, in Glatz '980, the pulling mechanism (68) is a line that runs from the slider (54) up through the crown of the canopy and along the arm (jib 8,8a), to the main pole (mast 2, 2a). Ex. 1008 at 9:8-11. Figure 8 shows that the line/pulling mechanism (68) is affixed to “slide (92) that can be slid along and be secured to the mast (2a).” Ex. 1008 at 9:25-26.

168. To the extent Glatz '980 does not disclose this limitation, Wang '460 discloses a winder hub (rope reel 26) used to anchor the line in a similar cantilever umbrella. Wang '460 also explains that using the winder hub to tension or relax the line (pull rope 13) opens and closes the canopy. For example, Wang '460 states “[w]hen opening the parasol...the rope winder is then operated to wind the parasol rope so as to lift the lower parasol disc[.]” Ex. 1007 at 17. A POSITA would understand that rotation of the rope reel would tension or relax the line in Glatz '980 to open and close the umbrella. A POSITA also would have been motivated to make the simple substitution to replace the cleat in the Glatz '980 umbrella with the winder hub disclosed in Wang '460 as discussed above.

I. Claim 1.k: “wherein the angle of the umbrella canopy with respect to the main pole can be controlled by moving the sliding member along the main pole”

169. Glatz '980 discloses that the angle of the umbrella canopy with respect to the main pole (mast 2) can be controlled by moving the sliding member (slide 92)

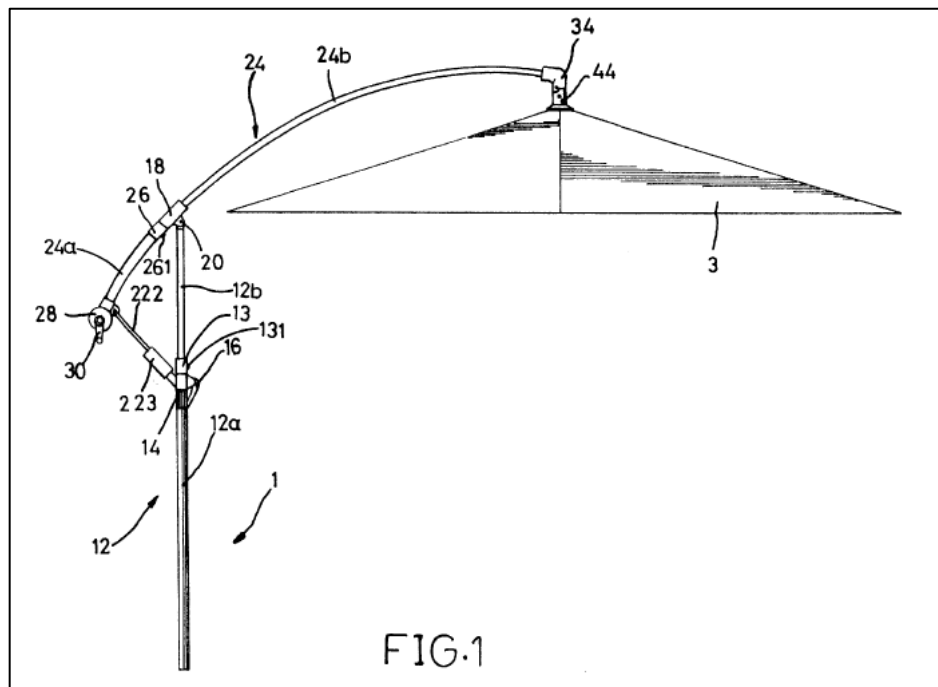
along the main pole (mast 2). Glatz '980 explains that the manipulation of the slide (92) affects “the inclination of the canopy.” Ex. 1008 at 3:14-37, 6:12-26, Figures 8-9. Furthermore, Glatz states in connection with the umbrella of Figures 8-9 that “[i]t should be added in this connection that the securing device (80a) for fastening the pulling mechanism is positioned on the slide (92) so that the canopy can be inclined in the open state. *Id.* at 6:19-26.

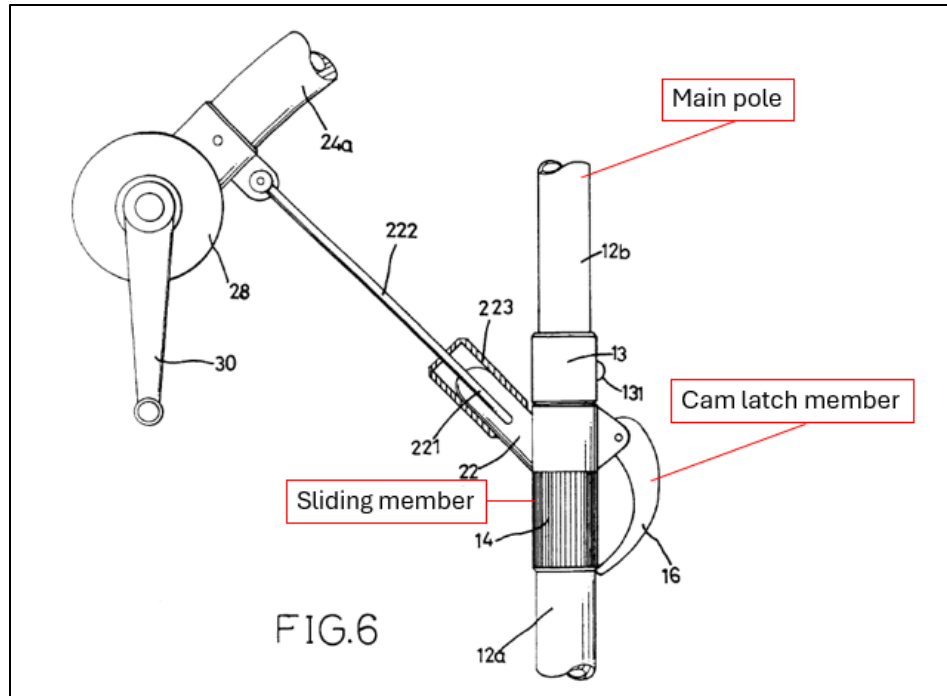
170. Accordingly, Glatz '980 in view of Wang '460 or in further view of Bertola renders claim 1 as obvious under pre-AIA 35 U.S.C. § 103.

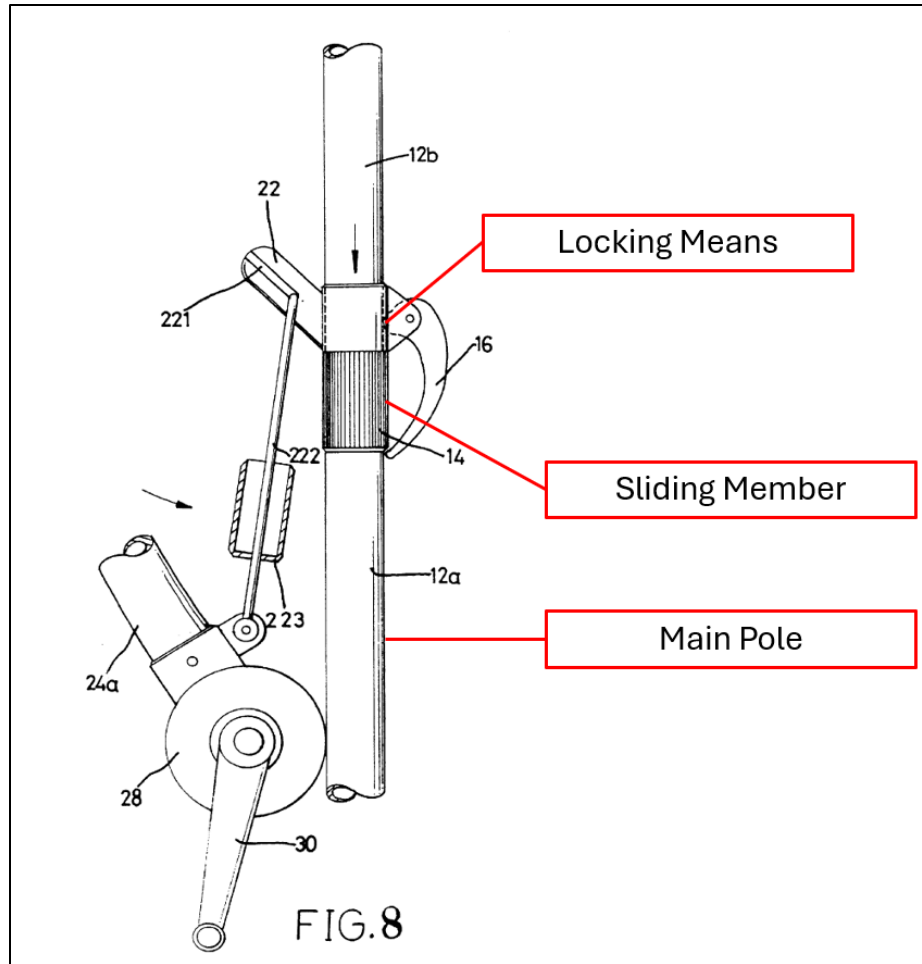
2. **Claim 2: “[t]he umbrella of claim 1, wherein the locking means for releasably securing the sliding member to the main pole comprises a cam latch member having a cam surface, the cam latch member being rotatable with respect to the sliding member between a first position in which the cam surface causes the sliding member to be clamped against the main pole, and a second position in which the cam surface permits movement of the sliding member with respect to the main pole.”**

171. To the extent Glatz '980 does not disclose this, Tung '037 discloses a locking means for releasably securing the sliding member (adjusting sleeve 14) to the main pole (supporting rod 12) comprising a cam latch member (lever 16) having a cam surface. Further, the Tung '037 cam latch member (lever 16) is rotatable with respect to the sliding member (adjusting sleeve 14) between a first position in which the cam surface causes the sliding member (adjusting sleeve 14) to be clamped against the main pole (supporting rod 12), and a second position in which the cam

surface permits movement of the sliding member (adjusting sleeve 14) with respect to the main pole (supporting rod 12). For example, Tung '037 states “[t]he main frame 1 includes a supporting rod 12, an adjusting sleeve 14 slidably mounted around the supporting rod 12, and a lever 16 mounted to the adjusting sleeve 14. When the lever 16 is in a locked position, the adjusting sleeve 14 is frictionally retained in place, and when the lever 16 is in a released position, sliding movement of the adjusting sleeve 14 relative to the supporting rod 12 is allowed.” Ex. 1010 at 3:36-46. *See id.* at 4:57-63 and Figures 1,5, and 6-10. Figure 1 and annotated Figures 6 and 8 are reproduced below.







i. Motivation to combine Glatz '980 with Tung '037

172. A POSITA would have understood that a simple substitution of the first detent device 100 and stopping bolt in Glatz '980 with the cam latch locking mechanism of Tung '037 would yield predictable results to improve adjustable collapsible umbrella products and to secure the umbrella into place. Indeed, Glatz '980 and Tung '037 both relate to collapsible umbrella products and are thus in the same industry. Ex. 1002 at 106.

173. Similar motivations to combine are also found in both references.

Tung '037 describes that other umbrella adjustment “is troublesome...[and] the user has to lower the canopy to a reachable level.” Ex. 1010 at 1:17-18. Also, Tung '037 states its design allows for easy adjustment of the canopy. *Id.* at 1:34-37. Glatz '980 states there was a need to have a safe and reliable locking means. For example, Glatz '980 states:

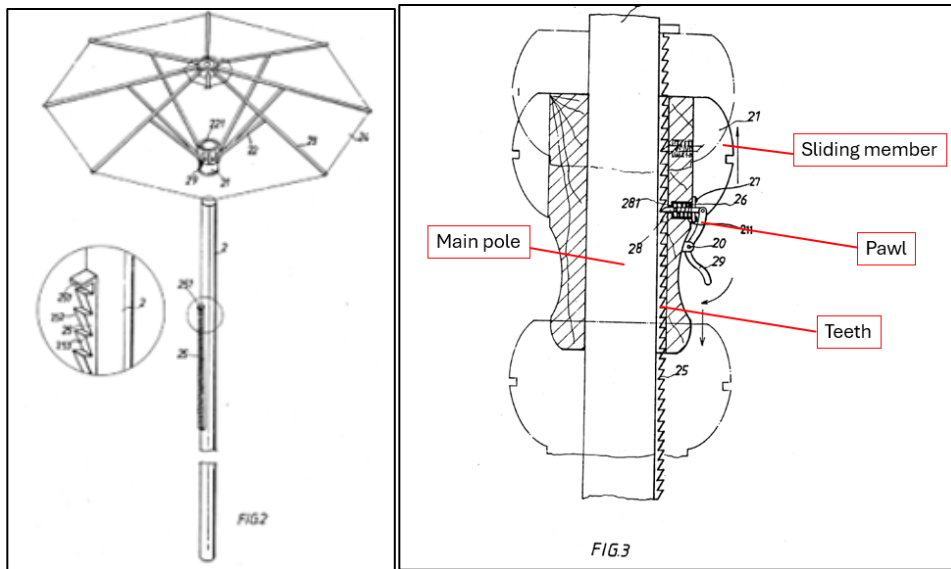
The disadvantage here is that when loosening the setscrew, the jib is free to move, thus creating the risk of the canopy folding or turning down unintentionally and the operator becoming injured. Such a free-arm canopy is difficult to handle and completely unsuitable for larger free-arm canopies.

Ex. 1008 at 1:51-57. Moreover, the cam latch mechanism taught in Tung '037 is advantageous over the locking means taught in Glatz '980 because the latter only locks in discrete positions whereas the former locks in infinitely many. Thus, a POSITA would have been motivated to combine the cam latch mechanism taught in Tung '037 with the locking means in Glatz '980 to make a device that is more capable, easier, and safer to use. A POSITA would understand that using the cam latch mechanism in Tung '037 provides for a locking means that can be locked at more heights than the locking means taught in Glatz '980. Thus, a POSITA would understand to use the locking mechanism of Tung '037 to achieve the goals of both references.

174. Thus, Glatz '980 in view of Tung '037 renders claim 2 as obvious under pre-AIA 35 U.S.C. § 103.

- 3. Claim 3: “[t]he umbrella of claim 1, wherein the locking means for releasably securing the sliding member to the main pole comprises a plurality of teeth formed on the main pole and a cooperating pawl associated with the sliding member and selectively operative to engage a selected one of the teeth to prevent movement of the sliding member with respect to the main pole.”**

175. To the extent this limitation is not disclosed in Glatz '980, Liu '171 discloses this. The Abstract of Liu '171 discloses a “rack-like member is equipped with a plurality of consecutive Z-shaped teeth” located on the main shaft of the sunshade where the sliding member can slidably move along the rack. Ex.1011 at Abstract; 2:21-38; 3:1-6. The front tip of the supporting pin located on the runner engages “with the teeth of the rack-like member and can disengaged there with by actuation of the arc arm so as to make the supporting pin retrievably actuated.” *Id.* at Abstract. *See id.* at 1:19-31, 2:21-38, 3:10-30. The movement of the runner allows the user to manipulate the sunshade. *Id.* at 3:31-49. Exemplary Figure 2 and annotated Figure 3 are shown below. *See* Ex.1011 at Figures 2 and 3.



i. Motivation to combine Glatz '980 with Liu '171

176. A POSITA would have understood that a simple substitution of the first detent device 100 and stopping bolt in Glatz '980 with the known locking means in Liu '171 would yield predictable results to improve adjustable collapsable umbrella products and to secure the umbrella into place. Indeed, Liu '171 and Glatz '980 both relate to collapsable umbrella products and are thus in the same industry. Moreover, the examiner for the '640 Non-Provisional Application found that Liu '171 was prior art that taught one how “to modify the locking means ... by using a teeth-and-pawl means as taught by Liu ['171].” Ex. 1002 at 141-142 (June 24, 2010 Non-Final Office Action). The applicant did not respond to the examiner’s characterization that Liu '171 was prior art. *Id.* at 93-96.

177. Similar motivations to combine are also found in both references. Glatz '980 also states there was a need to have a safe and reliable locking means. For example, Glatz '980 states:

The disadvantage here is that when loosening the setscrew, the jib is free to move, thus creating the risk of the canopy folding or turning down unintentionally and the operator becoming injured. Such a free-arm canopy is difficult to handle and completely unsuitable for larger free-arm canopies.

Ex. 1008 at 1:51-57.

178. Liu '171 explains that certain prior art umbrellas require “great effort” to operate because the operator must “hold the runner in place with one hand” and operate the locking device with the other. Ex. 1011 at 1:57-66. Liu '171 also explains how teeth disposed on the main shaft of the umbrella provide several advantages, including: (1) allowing operation by operators who are too weak to open a heavy sunshade with one hand; (2) reducing the danger that a user will injure their fingers in the crevice formed by the main shaft and runner; (3) making operation of the umbrella more convenient; and (4) reducing the effort required to operate the sunshade. Ex. 1011 at 1:57-2:11, 2:38-42, 3:50-4:8. A POSITA would recognize that Glatz '980's first detent device 100 requires holding the slide in place while using the other hand to lock it. Thus, using the locking mechanism in Liu would improve the ease of use of the umbrella while achieving the goals recited in Glatz '980. *Id.* Moreover, a POSITA would recognize that the locking means in Liu '171 would

offer more adjustability due to its finer teeth as compared to the discreet locking locations in Glatz '980. *Id.* Thus, a POSITA would understand to use the locking mechanism used in Liu '171 to improve the Glatz '980 umbrella while achieving the goals of Glatz '980. Thus, Glatz '980 in view of Liu '171 renders claim 3 as obvious under pre-AIA 35 U.S.C. § 103.

4. **Claim 4: “[t]he umbrella of claim 1, wherein the locking means for releasably securing the sliding member to the main pole comprises a plurality of holes formed in the main pole and a pin associated with the sliding member and operative to engage a selected one of the holes.”**

179. As set forth above regarding Claim 1, Glatz '980 describes a locking device that is essentially the same as the latch pin and hole structure corresponding to the § 112 ¶ 6 “locking means” limitation described in the '492 Patent. Glatz '980 specifically describes a “stop bolt which can engage into various detent openings along the mast.” Ex. 1008 at 3:31-38. A POSITA would recognize that the stop bolt “detent” described by Glatz '980 could be spring-loaded as detents commonly are.

180. Alternatively, Bertola '895 discloses a button 50 that is used to operate a spring-loaded pin (latch 52) under “spring pretension” that engages with a hole (hole 54) “for fixation of the slider [] on the mast.” Ex. 1013 at 30. As explained above, a POSITA would have understood that a simple substitution of the “spring pretensioned” locking pin and hole locking mechanism on the sliding member of Bertola for the “stop bolt which can engage into various detent openings along the

mast” of Glatz would yield predictable results of automatic engagement of the pin with the hole to improve adjustable collapsable umbrella products and to secure the umbrella into place without requiring the user to push the pin into the hole.

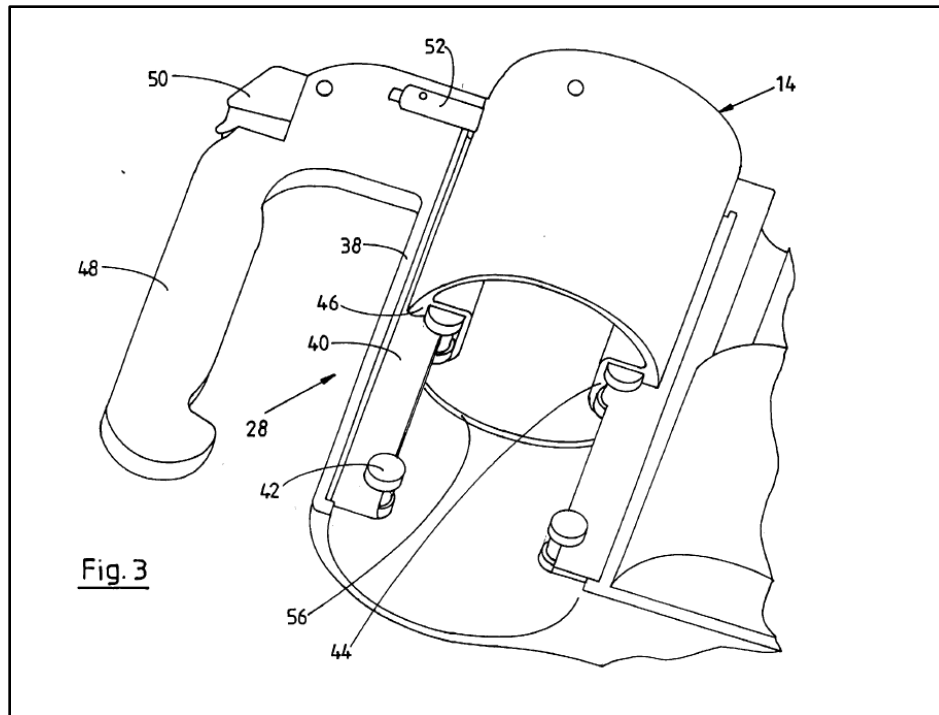
181. Thus, Glatz ’980 in view of Bertola ’895 renders claim 4 as obvious under pre-AIA 35 U.S.C. § 103.

5. Claim 5: “[t]he umbrella of claim 1, wherein the sliding member has a handle associated therewith.”

182. Glatz ’980 discloses this limitation. Glatz ’980 teaches that the “slide (92) which can be moved along the mast (2a) and against which the jib (8a) supports itself.” Ex. 1008 at 6:12-13. Because “handle” is construed with its plain of ordinary meaning and slide 92 must have a “handle” because a user must hold slide 92 to adjust the height of the umbrella, a POSITA would understand Glatz ’980 has a handle on the sliding member.

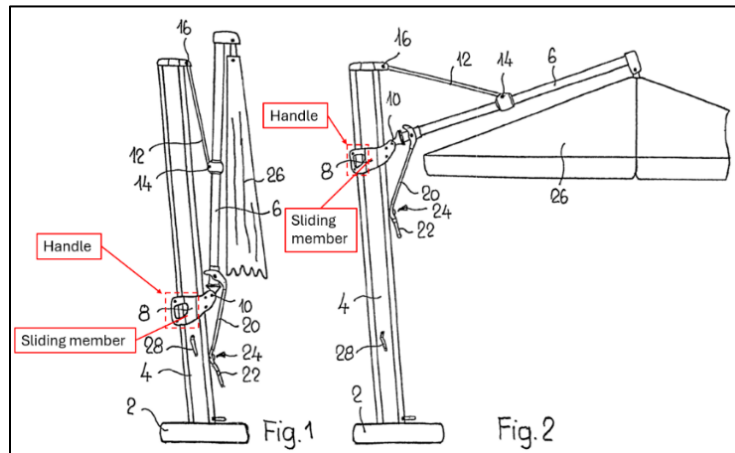
i. In the alternative, Glatz ’980 in view of Bertola ’895 renders Claim 5 obvious.

183. To the extent Glatz ’980 does not disclose a handle on the sliding member, Bertola ’895 discloses a handle on the sliding member as shown below in Fig. 3. Ex. 1013 at Figure 3.



184. Bertola '895 explains that the slider 28 further comprises a handle 48, which is preferably integrally connected to the sleeve 38. Ex. 1013 at 30. As explained above, a POSITA would have understood that a simple substitution of the sliding member in the Glatz '980 umbrella with the slider on the Bertola umbrella would yield predictable results to provide a structure to manipulate the sliding member. Both umbrellas use a sliding member for adjusting the umbrella and have a similar device for locking the sliding member in place along the main pole. *Id.* The added benefit of the handle on the Bertola sliding member would have motivated a POSITA to make this substitution. *Id.*

185. Additionally, handles for manipulating umbrella devices were common in the art prior to the priority date of the '492 Patent. For example, Glatz '311 discloses wherein the sliding member (slide 8) has a handle associated therewith. *See e.g.*, Ex. 1014, Figures 1-2 (annotated below) and 3.



**(a) Motivation to combine Glatz '980
with Bertola '895**

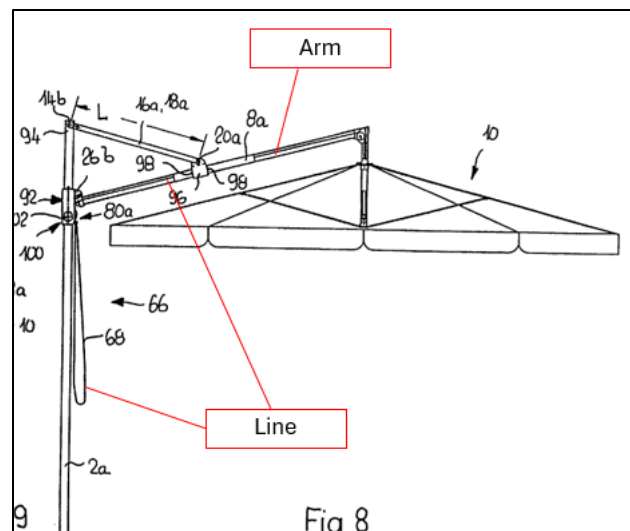
186. A POSITA would have understood that a simple substitution of the known structure in Glatz '980 with the structure in Bertola '895 would yield predictable results to provide a structure to manipulate the sliding member. Indeed, both inventions relate to collapsable umbrella products and are thus in the same industry. A motivation to combine is also found in Glatz '311. The umbrella disclosed by Glatz '311 includes an extension arm that is configured for operation by hand. For example, Glatz '311 states that an objective of the invention is to pivot the extension arm “in a simple manner with one hand.” Ex. 1014 at Abstract. Thus,

a POSITA would have understood Glatz '311 to provide a simpler manner to manipulate the device disclosed in Glatz '980.

187. Thus, Glatz '980 in view of Bertola '895 renders claim 5 as obvious under pre-AIA 35 U.S.C. § 103.

6. Claim 6: “[t]he umbrella of claim 1, wherein the line extends along at least substantially the entire length of the arm.”

188. Glatz '980 discloses wherein the line (pulling mechanism 68) extends along at least substantially the entire length of the arm (jib 8a). As shown in the annotated Figure 8 below, the pulling mechanism 68 extends across the jib. Ex. 1008 at 5:26-49 and Figure 8.

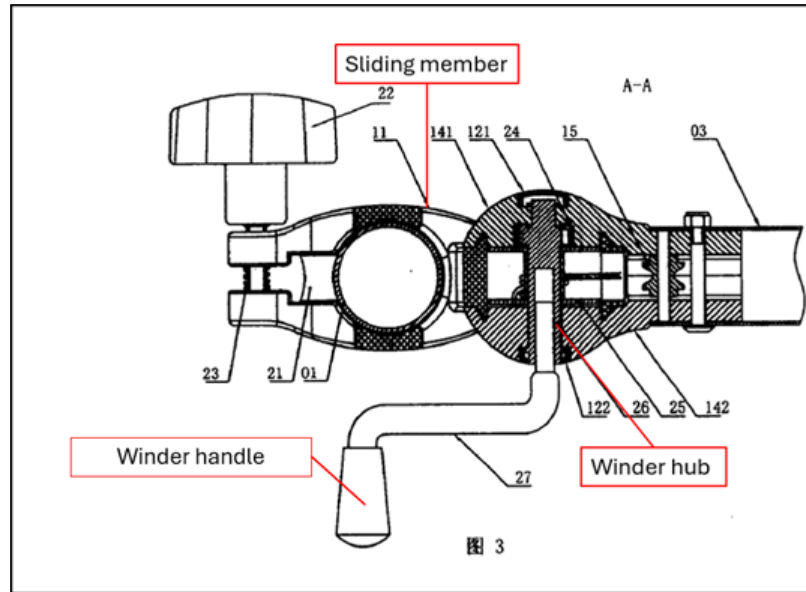


189. Thus, Glatz '980 renders claim 6 as obvious under pre-AIA 35 U.S.C.

§ 103

7. **Claim 7: “[t]he umbrella of claim 1, further comprising a crank handle operatively associated with the winder hub, whereby rotating the crank handle causes the winder hub to rotate.”**

190. To the extent Glatz '980 does not disclose this limitation, Wang '460 discloses a crank handle (winder handle 27) operatively associated with the winder hub (rope reel 26) located on the sliding member (sliding sleeve 11), whereby rotating the crank handle (winder handle 27) causes the winder hub (rope reel 26) to rotate. For example, and as shown in Figure 3 (annotated below), “[a] roller 21 is respectively installed at the upper end and lower end of the sliding sleeve 11 to slide smoothly with the parasol pole. The sliding sleeve 11 is connected to the spherical left and right casings 141 and 142 of the rope winder. The rope reel 26 of a winder handle 27 is tied with a pull rope 13, and the other end of the pull rope passes through the suspension rod 03 through a pulley 15 and the top tube 57 installed in the upper parasol disc 70, so as to be fixed to the lower parasol disc 73.” Ex. 1007 at 17 and 20 (Figure 3); An annotated embodiment of Figure 3 is shown below.



i. Motivation to combine Wang '460 with Glatz '980

191. A POSITA would have understood that a simple addition of the winding mechanism, winder hub, and crank handle in Wang '460 to the sliding member in Glatz '980 would yield predictable results for manipulating the line to control the umbrella. Indeed, Glatz '980 and Wang '460 both relate to collapsable umbrella products and are thus in the same industry. A motivation to combine is also found in both references. Wang '460 describes a need to create a stable and easy to operate umbrella. Ex. 1007 at 14 (Background). Wang '460 describes how an umbrella design including a sliding sleeve mounted on the supporting pole, including a rope winding device, makes the umbrella easy to open and close and enables the umbrella to be rotated 360 degrees around the supporting pole. Ex. 1007 at 10-11 (Abstract). Glatz '980 also states a need to provide a device that is easier to handle

and a design that can reduce user injury. Ex. 1008 at 1:46-56. A POSITA would understand that a winding mechanism using a crank handle and winder hub can neatly store a line in the sliding member. This can prevent the line from getting tangled and obstructing a user or preventing the line from getting damaged. Ex. 1022 at 6:24-27. By storing the line within the sliding member, the device can thereby create a safer environment (e.g., prevention of a child choking hazard, tripping, or having a non-damaged line to support the device) and accomplishing the goals stated in Glatz '980 and Wang '460. Moreover, rather than requiring a user to pull on the line to manipulate the umbrella, tensioning or relaxing the line by using a winder hub with a crank handle can create a mechanical advantage that allows smaller users to easily manipulate a larger umbrella canopy and thereby accomplish the goals mentioned in Glatz '980 and Wang '460.

192. Thus, Glatz '980 in view of Wang '460 renders claim 7 as obvious under pre-AIA 35 U.S.C. § 103.

VII. CONCLUSION

193. Thus, the Challenged Claims are anticipated by or obvious in view of Grounds 1-3 under pre-AIA 35 U.S.C. § 102 or § 103.

194. In signing below, I recognize that this declaration may be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I also recognize that I may be subject to cross-

examination in the case and that cross-examination will take place within the United States. If cross-examination is required of me, I will cooperate to the best of my ability to appear for cross-examination within the United States during the time allotted for cross-examination.

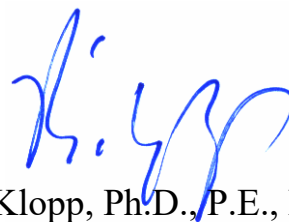
195. My opinions are held to a reasonable degree of engineering certainty, meaning they rise to the level of at least more likely than not and are based on logical reasoning from the evidence. My opinions are based on the information available to me. If additional information becomes available, I reserve the right to supplement this declaration.

196. 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 correct; and further that these statements are 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.

I declare under penalty of perjury that the foregoing is true and correct.

Dated: 9 May 2025

By:



Richard W. Klopp, Ph.D., P.E., F.A.S.M.E.