UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BESTWAY (USA), INC.
Petitioner,

v.

INTEX MARKETING LTD.
Patent Owner.

Case No. PGR2024-00036
U.S. Patent No. 11,959,512

DECLARATION OF DR. KIMBERLY CAMERON IN SUPPORT OF PETITION FOR POST GRANT REVIEW

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LIST OF CHALLENGED CLAIMS

Claim Element	Claim Language
[1.0]	An above ground pool, comprising:
[1.1]	a first frame member including a first opening;
[1.2]	a second frame member including a second opening;
[1.3]	a vertical frame member;
[1.4]	a frame joint comprising:
[1.5]	a first joint portion including a first pin configured to engage the first opening thereby coupling the first joint portion to the first frame member;
[1.6]	a second joint portion including a second pin configured to engage the second opening thereby coupling the second joint portion to the second frame member; and
[1.7]	a vertical joint portion connected to the first and second joint portions and configured to couple to the vertical frame member; and
[1.8]	a liner positioned around the first and second frame members;
[1.9]	wherein a width of the vertical joint portion accounts for at least 50% of a width between the first and second pins.
[2.0]	The above ground pool of claim 1, wherein the width of the vertical joint portion accounts for at least 40% of a total width of the frame joint.
[3.0]	The above ground pool of claim 2, wherein the width of the vertical joint portion accounts for about 50% of the total width of the frame joint.
[4.0]	The above ground pool of claim 1, wherein the first joint portion includes a first coupling assembly including the first pin, a first base, and a first helical spring supported by the first base,

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Claim Element	Claim Language
[4.1]	the first pin being biased outward through a first hole in the first joint portion by the first helical spring to engage the first opening of the first frame member.
[5.0]	The above ground pool of claim 4, wherein the second joint portion includes a second coupling assembly including the second pin, a second base, and a second helical spring supported by the second base,
[5.1]	the second pin being biased outward through a second hole in the second joint portion by the second helical spring to engage the second opening of the second frame member.
[6.0]	The above ground pool of claim 5, wherein the width of the vertical joint portion accounts for about 70% of a width between the first and second pins.
[7.0]	The above ground pool of claim 5, wherein a width of the frame joint exceeds a width of a hole defined by the liner to expose the first and second coupling assemblies.
[8.0]	The above ground pool of claim 7, wherein a height of the frame joint exceeds a height of the hole in the liner.
[9.0]	The above ground pool of claim 1, wherein the vertical joint portion is centered between the first and second joint portions to form a T-shaped frame joint.
[10.0]	The above ground pool of claim 1, wherein the first and second joint portions form an obtuse angle.
[11.0]	The above ground pool of claim 1, wherein the vertical joint portion is integrally formed with the first and second joint portions as a single piece.
[12.0]	The above ground pool of claim 1, wherein the vertical joint portion includes at least one internal vertical reinforcing rib.

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Claim Element	Claim Language
[13.0]	The above ground pool of claim 1, wherein at least one of the first joint portion and the second joint portion includes an internal reinforcing rib.
[14.0]	The above ground pool of claim 1, wherein at last one of the first joint portion and the second joint portion includes an internal support member.
[15.0]	A method of assembling an above ground pool, the method comprising:
[15.1]	coupling a first joint portion of a frame joint to a first frame member with a first pin configured to engage a first opening of the first frame member;
[15.2]	coupling a second joint portion of the frame joint to a second frame member with a second pin configured to engage a second opening of the second frame member;
[15.3]	coupling a vertical joint portion of the frame joint to a vertical frame member; and
[15.4]	positioning a liner around the first and second frame members;
[15.5]	wherein a width of the vertical joint portion accounts for a majority of a width between the first and second pins.
[16.0]	The method of claim 15, wherein: an external cross-section of the first joint portion matches an internal cross-section of the first frame member;
[16.1]	an external cross-section of the second joint portion matches an internal cross-section of the second frame member; and
[16.2]	an external cross-section of the vertical joint portion matches an internal cross-section of the vertical frame member.
[17.0]	The method of claim 15, wherein the first joint portion, the second joint portion, and the vertical joint portion are constructed of plastic.
[18.0]	The method of claim 15, wherein: coupling the first joint portion to the first frame member comprises depressing the first pin into the first joint

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Claim Element	Claim Language
	portion and releasing the first pin into engagement with the first frame member; and
[18.1]	coupling the second joint portion to the second frame member comprises depressing the second pin into the second joint portion and releasing the second pin into engagement with the second frame member.
[19.0]	The method of claim 15, wherein the vertical joint portion of the frame joint is coupled to the vertical frame member with a coupling assembly and
[19.1]	wherein a height of the hole in the liner is less than a distance between the first pin and the coupling assembly.
[20.0]	A frame joint for an above ground pool frame having a first frame member, a second frame member, and a vertical frame member, the frame joint comprising:
[20.1]	a first joint portion including a first coupling assembly to couple with the first frame member;
[20.2]	a second joint portion including a second coupling assembly to couple with the second frame member; and
[20.3]	a vertical joint portion connected to the first and second joint portions and configured to couple with the vertical frame member;
[20.4]	wherein a width of the vertical joint portion accounts for at least 50% of a width between the first and second coupling assemblies; and
[20.5]	wherein the first joint portion comprises a first external cross-section which is generally triangular.
[21.0]	The frame joint of claim 20, wherein the first external cross-section comprises rounded edges.

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Claim Element	Claim Language
[22.0]	The frame joint of claim 20, wherein the first and second coupling assemblies are actuatable from an exterior of the frame joint along a vertical direction.
[23.0]	The frame joint of claim 20, wherein the first and second joint portions cooperate to form an obtuse angle that supports a liner that defines a water cavity.
[24.0]	The frame joint of claim 20, wherein the vertical joint portion is integrally formed with the first and second joint portions as a single piece.

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I, Kimberly Cameron, hereby declare as follows:

I. INTRODUCTION

1. I am over the age of 18 and am competent to submit this declaration. The statements and opinions herein are based on my personal knowledge and upon my background, education, research, training, and experience relating to the subject matter discussed.

2. I have been retained by Dickinson Wright PLLC on behalf of Petitioner Bestway USA, Inc. ("Bestway") in this matter to offer technical opinions relating to U.S. Patent No. 11,959,512 ("the '512 Patent") and to submit this declaration in connection with the Post Grant Review (PGR) of Claims 1-24 of the '512 Patent. If called upon to do so, I am prepared to testify as an expert witness in this regard.

3. Where appropriate, I refer to the claim elements shown above in the "LIST OF CHALLENGED CLAIMS" table.

II. BACKGROUND AND QUALIFICATIONS

4. I am a Principal Engineer at Engineering Systems Incorporated (ESi), a leading scientific and engineering firm committed to providing clear answers to challenging technical problems. I specialize in mechanical engineering and materials science and have extensive experience with the design of mechanical systems as well as with materials selection and analysis. Relevant to my Report here, I have worked on numerous projects involving structural supports and

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consumer products. These projects include, but are not limited to, design evaluation, materials selection and evaluation, stress analysis, failure analysis, as well as patent validity and infringement analyses. A copy of my curriculum vitae is attached as Exhibit A to this Report. The curriculum vitae includes a current list of publications authored in the previous ten (10) years. A list of all other cases in which, during the last 4 years, I testified as an expert at trial or by deposition is attached as Exhibit B.

5. I graduated with high honors from Princeton University with a bachelor's degree in Mechanical Engineering and minors in Materials Science, Applied Mathematics and Engineering Physics. I also received a master's degree and doctorate in Mechanical Engineering with a minor in Materials Science and Engineering from Stanford University.

6. I have received numerous awards including fellowships from the Department of Defense, the National Science Foundation, and Lucent Technologies. I am a Registered Professional Engineer in both Mechanical Engineering and Materials Science and Metallurgy and am a registered patent agent. Given the foregoing, I am qualified to provide an opinion as to what a person of skill in the art ("POSA" or "POSITA") in the field of above-ground pools and associated frame joints would have understood, known, or concluded as of the priority date of the '512 Patent.

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III. INFORMATION RELIED UPON

7. In addition to my general knowledge from education and experience in this field, I have reviewed and considered, among other things: the '512 Patent, the prosecution history of the '512 Patent, the prior art of record, and the prior art described in this Declaration. I have also researched and reviewed other prior art references that are relevant to the '512 Patent.

IV. SCOPE OF ASSIGNMENT AND MATERIALS REVIEWED

8. I have been retained as an expert on behalf of Bestway to provide information and opinions to the Patent Trial and Appeal Board ("the Board") to assist in its analysis of the patentability of the '512 Patent in the above-captioned Post Grant Review.

9. I am being compensated at a rate of $570 per hour. My compensation does not depend on the substance of my opinions nor on the outcome of this proceeding.

10. In formulating my opinions herein, I have relied upon my training, knowledge, and experience that are relevant to the '512 Patent. Furthermore, I have specifically considered the following documents listed below in addition to any other documents cited in this declaration. I understand that the references are true and accurate copies of what they appear to be:

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Exhibit No.	Description
EX1001	U.S. Patent No. 11,959,512, ("the '512 Patent")
EX1002	Declaration of Dr. Kimberly Cameron
EX1003	File History of the '512 Patent
EX1004	U.S. Patent No. 11,692,572, "the '572 Patent"
EX1005	File History of the '572 Patent
EX1006	U.S. Patent Publication No. 2016/0222686 ("Liu")
EX1007	U.S. Patent Publication No. 2009/0205121 ("Cheng")
EX1008	PCT Publication No. WO 2014/100855 ("Hunter")
EX1009	U.S. Patent Publication No. 2002/0042948 ("Lee")
EX1010	Intex's 2005 Above Ground Pool Catalog
EX1011	Intex's 2006 Above Ground Pool Catalog
EX1012	Intex's 2007 Above Ground Pool Catalog
EX1013	Intex's 2008 Above Ground Pool Catalog
EX1014	Intex's 2009 Above Ground Pool Catalog
EX1015	Intex's 2010 Above Ground Pool Catalog
EX1016	Intex's 2011 Above Ground Pool Catalog
EX1017	Intex's 2014 Above Ground Pool Catalog
EX1018	Declaration of Patrizio Fumagalli
EX1019	Online Listings of Intex Pool, Captured by Wayback Machine of Internet Archive
EX1020	(Intentionally Omitted)
EX1021	2006 Owner's Manual for Intex Pool

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EX1022	2011 Owner's Manual for Intex Pool
EX1023	June 27, 2015 YouTube Video of Intex Pool available https://www.youtube.com/watch?v=ETAiHLC89fI (screenshots of video)
EX1024	July 8, 2012 YouTube Video of Intex Pool available at https://www.youtube.com/watch?v=iilGN5cF-YU (screenshots of video)
EX1025	July 28, 2012 YouTube Video of Intex Pool available at https://www.youtube.com/watch?v=1iBwYtnzYfs&t=258s (screenshots of video)
EX1026	Cambridge English Dictionary Definition of "width"
EX1027	Transcript of Chat with Intex Representative
EX1028	U.S. Patent No. 3,225,362 ("Barrera")
EX1029	Intex Website https://intexcorp.com/replacement-parts/10573-corner-top-rail-joints-for-small-rectangular-frame-pools/
EX1030	Intex Website https://intexcorp.com/replacement-parts/corner-joint-with-corner-seal-for-small-rectangular-frame-pool/
EX1031	Intex Website https://intexcorp.com/replacement-parts/10574-pins-for-small-rectangular-frame-pools/
EX1032	Receipt of Order of Intex Pool

V. LEGAL STANDARDS AND UNDERSTANDING APPLIED

11. In connection with the opinions that I am offering herein, I am relying upon the legal standards and understandings that Petitioner's attorneys have provided and/or explained to me, which I summarize below.

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12. I understand that in a PGR proceeding, the Petitioner must show that it is more likely than not that at least one challenged claim is unpatentable.

13. I understand that a claim is indefinite if a POSA, viewing the claim in light of the specification and prosecution history, cannot determine the full scope of the invention with reasonable certainty. I understand that, if a claim term is amenable to two or more different constructions, any claim containing that term is indefinite.

14. It is also my understanding that a claim may be indefinite if one measurement technique yields a measurement within the claim scope, but a different measurement technique results in a measurement outside of the claim scope.

15. I understand that a claim that depends from an indefinite claim is itself indefinite unless additional limitations resolve any indefiniteness.

16. I understand that a patent application must reasonably convey to a POSA that the inventor had possession of and actually invented the claimed subject matter at the time the application was filed.

17. I understand that the first step in analyzing the patentability of a claim over the prior art is to determine the claim's meaning and scope from the perspective of a POSA, *i.e.* what I understand is called claim construction. Next, I understand that the claim as construed is compared to the prior art, as described in more detail below.

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18. I understand that each claim must be analyzed from the perspective of a POSA at the time of invention. Petitioner's counsel has asked me to consider the state of the art from the perspective of a POSA during the time period shortly before June 17, 2016, which is the earliest claimed priority date listed on the face of the '512 Patent.

19. I understand that several factors should be considered in determining the ordinary level of skill in the art including (1) the types of problems encountered in the art; (2) the prior art solutions to those problems; (3) the rapidity with which innovations are made; (4) the sophistication of the technology; and (5) the educational level of active workers in the field of the patent.

20. I have been informed by Petitioner's counsel that in this proceeding, the Board interprets the claims of a patent in a PGR under the same standards used in a United States District Court. I understand that this standard requires interpreting the claims through the lens of a POSA in view of the entire patent and the prosecution history. I understand that, unless an express claim construction is adopted by the Board for any term, the terms of the claims should be given their plain and ordinary meaning to a POSA at the time of the invention, in the light of the specification and prosecution history. Accordingly, in formulating my opinions, I have reviewed the claims of the '512 Patent as I perceive a POSA would have understood them at the time of the earliest claimed priority date (June 17, 2016) of

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the ’512 Patent, after reading the entire ’512 Patent specification and the prosecution history.

21. I understand that, for a patent to be “anticipated” by the prior art, every limitation of the claim must be found expressly, implicitly or inherently, to be disclosed and arranged as required by the claim, in a single prior art reference which describes the claimed invention in sufficient detail to enable a person of ordinary skill in the art to carry out the claimed invention. I understand that if one limitation of a claim is missing from that prior art, then the claim is not anticipated by the prior art.

22. I understand that a limitation of a claim may be expressly disclosed in the prior art even if the prior art does not use identical terminology. Rather, I understand that the focus is whether the substance of the limitation is disclosed. I understand that a limitation that is not expressly disclosed may be considered to be implicitly disclosed based on the inferences that a POSA would be expected to draw from the express disclosures based on the POSA’s knowledge and experience. Moreover, I understand that where an item is not expressly or implicitly disclosed in an item of prior art, the prior art may be considered to disclose that limitation inherently if the limitation would be necessarily present in the prior art, such as when a characteristic necessarily flows from the teachings of the applied prior art.

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23. I understand that even if a claimed invention is not anticipated, the claimed invention is still unpatentable as obvious if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a POSA.

24. I understand that there must have existed an apparent reason, as of the effective filing date, for a POSA to have combined the prior art references in the manner claimed. I understand that reasons that can support conclusion of obviousness include:

- Combining prior art elements according to known methods to yield predictable results;
- Simple substitution of one known element for another to obtain predictable results;
- Use of known technique to improve similar devices (methods, or products) in the same way;
- Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;
- "Obvious to try" – choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;

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- 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 are predictable to one of ordinary skill in the art;
- Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

VI. LEVEL OF ORDINARY SKILL IN THE ART

25. Based on my experience, and applying my above-explained understanding of the relevant legal principles, it is my opinion that a POSA of the '512 Patent, at the time of its earliest claimed priority date, would have at least a Bachelor's degree in Mechanical Engineering, or an equivalent degree, with at least one year of experience in design evaluation of consumer products or other comparable experience. Alternatively, a person having 3-5 years of experience in the consumer product industry would quality as a POSA.

VII. CLAIM CONSTRUCTION

26. Based on my experience, and applying my above-explained understanding of the relevant legal principles, it is my opinion that no express construction of any claim term of the '512 Patent is needed to resolve any of the

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issues of patentability I opine about here. Except as otherwise noted below, I have applied the plain and ordinary meaning of the terms of the patent to a POSA as of the purported earliest filing date (June 17, 2016) in light of the specification and the prosecution history.

27. I understand that claim construction is ultimately a question of law, and that the Board may choose to provide a construction of certain terms should any dispute arise between the parties over how a term should be construed. I reserve the right to review and potentially modify any of my opinions discussed below in view of any such claim construction which is adopted by the Board or any other tribunal.

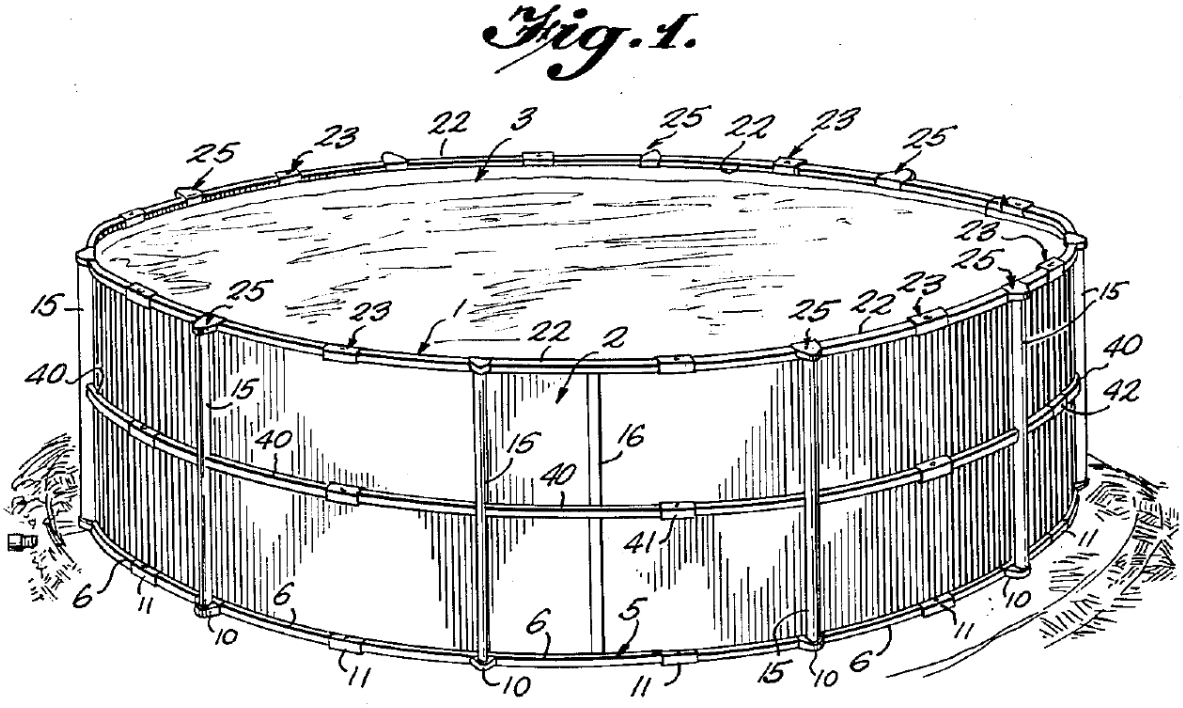
VIII. BACKGROUND OF THE TECHNOLOGY

28. An above-ground pool (AGP) is a type of pool that can be assembled such that it sits above the ground. This serves as an alternative to pools that require digging of the ground. Above-ground pools are typically a more affordable option than in-ground pools.

29. One type of above ground pool is known as a "frame pool." A frame pools is a type of above-ground pool that features a frame structure that supports the pool walls and provides stability. The frame is typically made of metal or durable plastic, and it forms the skeleton of the pool. The pool liner, which holds the water, is then attached to the frame.

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30. Frame pools are well known in the recreational industry, and have been for decades. Frame pools first became popular in the 1960s. Consider, for example, U.S. Patent No. 3,225,362 ("Barrera"), which as shown below. Barrera discloses an AGP having a circular frame formed from frame uprights 15 connected to top rail sections 22 with top snap connectors. Once formed, the frame supports a flexible tank 2 for holding water.



EX1027, Fig. 1

As shown in Figure 1 of Barrera, bottom rail connectors 11 interconnect bottom rails 6, top rail connectors 23 interconnect top rail sections 22, and uprights 15 and top slide connectors 25 interconnect the top and bottom rails together. EX1027, 2:1-71.

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31. One type of frame pool is shown below, sold by Intex. This is representative of what is known in the industry as a frame pool.



32. It is my understanding that this image is from a 2005 catalog distributed by Intex. EX1010, p.4

33. As can be seen in the above image, the frame pool includes several vertically-extending frame members (poles), and several horizontally-extending frame members (poles). The vertical poles are connected to the horizontal poles at connectors that are T-shaped.

34. While the above frame pool is generally circular in shape, frame pools can also come in other shapes, such as rectangular. For example, Intex's 2007 Above Ground Pool Catalog (EX1012) shows the following type of frame pool, titled "Rectangular Frame Pool":

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ectangular Frame Pools



FEATURES	NEW! 58983 / E	NEW! 58980 / E	NEW! 58981 / E	NEW! 58982 / E
Approximate Set-up Size	86⅝" x 59" x 23⅝" (2.2m x 1.5m x 0.60m)	102½" x 63" x 25⅝" (2.6m x 1.6m x 0.65m)	118" x 78¾" x 29½" (3.0m x 2.0m x 0.75m)	177¼" x 86⅝" x 33½" (4.5m x 2.2m x 0.85m)
Water Capacity (90%)	439 gal. (1,663 L)	603 gal. (2,284 L)	1,013 gal. (3,834 L)	1,907 gal. (7,217 L)
Ready for Water in	30 Minutes	30 Minutes	30 Minutes	30 Minutes
Retail Packaging	Shelf box	Shelf box	Shelf box	Shelf box
Case Pack	1 Ea.	1 Ea.	1 Ea.	1 Ea.
Case Weight	37.6 Lb. (17.1kg)	42.6 Lb. (19.4kg)	52.1 Lb. (23.7kg)	89.7 Lb. (40.8kg)

NEW!
58980 / E
102½" x 63" x 25⅝"
(2.6m x 1.6m x 0.65m)
603 gal. (2,284 L)
30 Minutes
Shelf box
1 Ea.
42.6 Lb. (19.4kg)

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EX1012, p.13 (annotated)

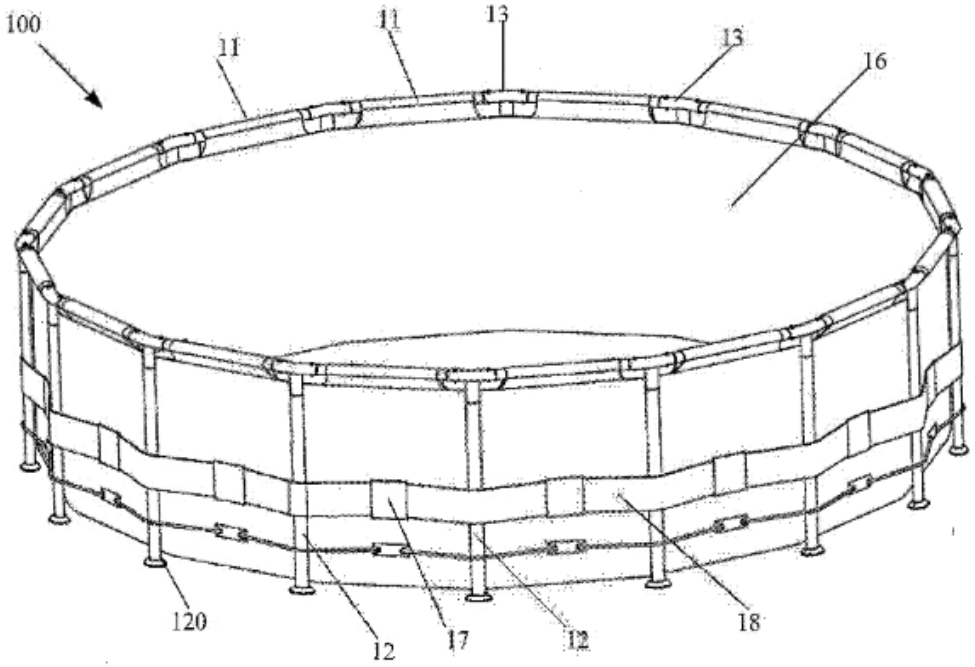
35. One of these rectangular frame pools is model number 58980, having size 102-1/2" x 63" x 25-5/8" (or 2.6m x 1.6m x 0.65m). It is in the second column in the chart above, with model number 58980 highlighted. This particular pool is referred to as the "Intex Pool" in this Declaration.

36. It appears Intex sold this Intex Pool for several years, and at least over a year prior to the earliest claimed priority date of the '512 Patent. Evidencing this are other product catalogs (EX1010-1017), Owner's Manuals associated with the Intex Pool (EX1021-1022), YouTube videos showing assembly of the Intex Pool (EX1023-1025), and archived internet listings on Intex's website listing the Intex Pool for sale (EX1019). The Owner's Manuals (EX1021-1022) also demonstrate the prior on-sale and public availability of the Intex Pool. These Owner's Manuals are typically included in each box for the Intex Pool, and bears a copyright date of the year it was published. Both the 2006 and 2011 Owner's Manuals disclose the same Intex Pool, and the 2011 Owner's Manual was archived on the Wayback Machine. The corner joint (*i.e.*, part number 10573) and all other connected components have not changed in these two Owner's Manuals. The YouTube videos depict the Intex Pool that is shown in the Owner's Manuals and archived internet listings, and include publication dates that predate the '512 Patent. EX1023-1025. All of this collectively shows me that the Intex Pool was on sale or otherwise

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available to the public at least prior to June 17, 2015, which is one year prior to the earliest effective filing date of the '512 Patent.

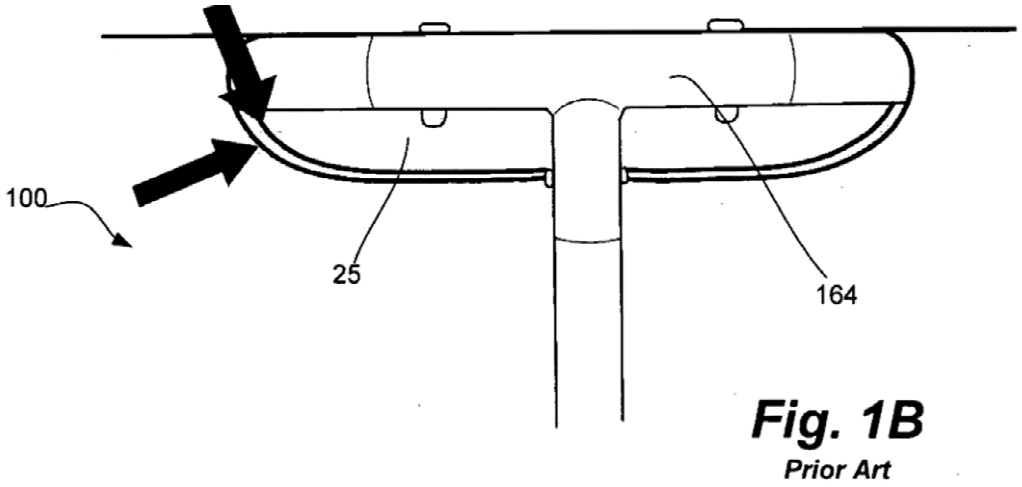
37. Above-ground pools having frames with horizontal poles connected to vertical poles were far from new, and were well-developed prior to 2015. For example, U.S. Patent Publication No. 2016/0222686 ("Liu") (EX1006) is directed to an above ground-pool. Similar to the Frame Pool in the 2005 Catalog I showed above, Liu's frame pool has a frame that includes horizontal support members (pipes) 11 and vertical support members (pipes) 12 connected at T-shaped connectors 13.



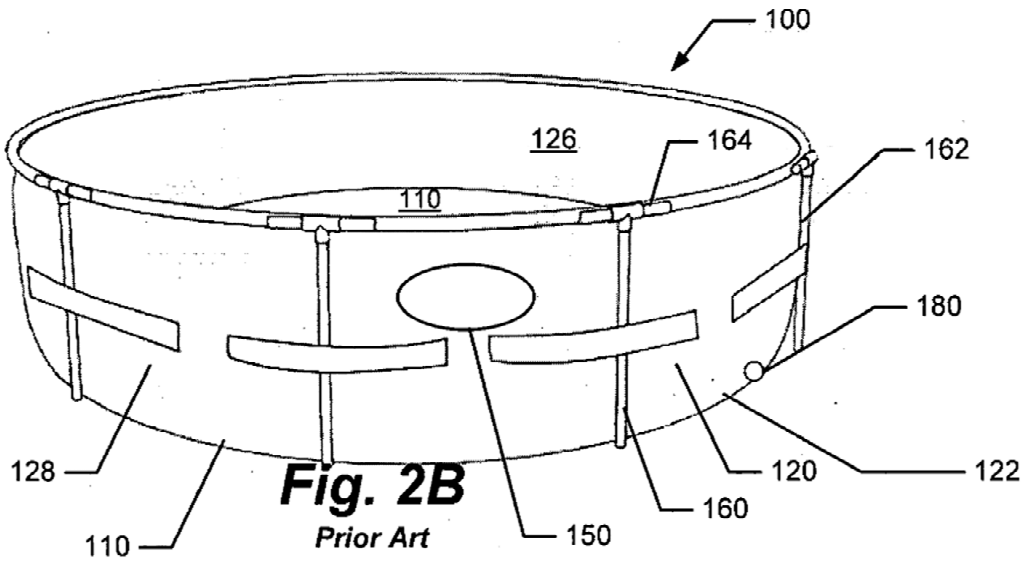
EX1006, Fig. 12

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38. As another example, U.S. Patent Publication No. 2009/0205121 ("Cheng") (EX1007) is directed to an above-ground frame pool with a similar T-shaped connector that connects horizontal support members to vertical support members. This is shown, for example, in FIGS. 1B and 2B, reproduced below.



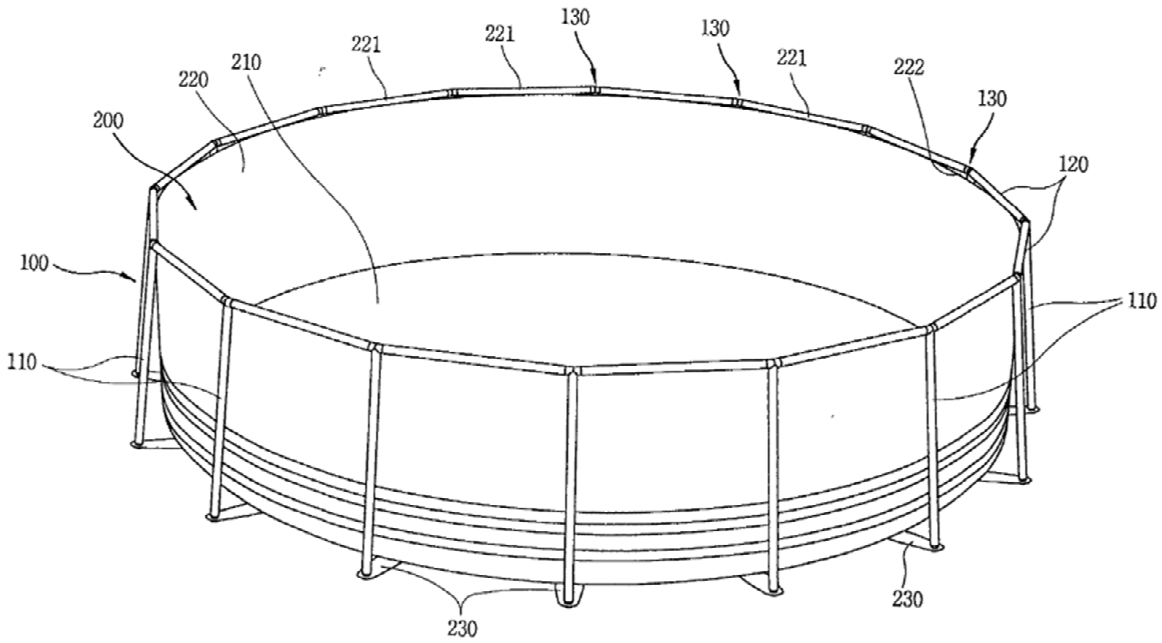
EX1007, Fig. 1B



EX1007, Fig. 2B

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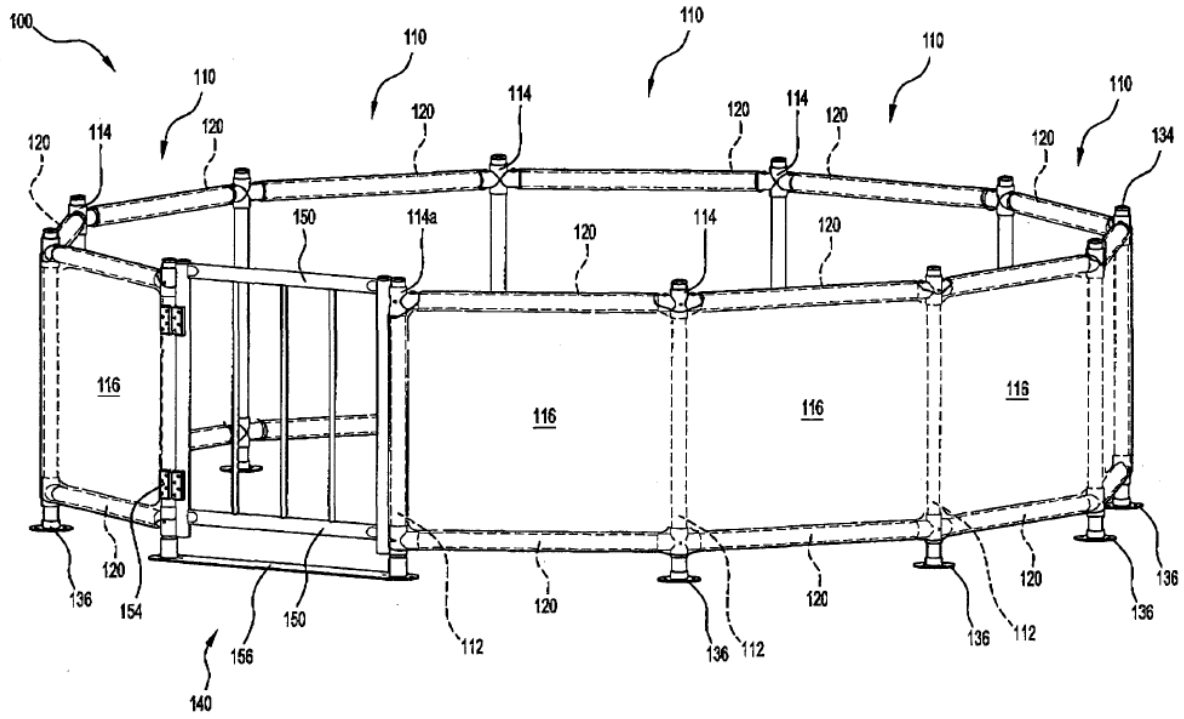
39. As another example, U.S. Patent Publication No. 2002/0042948 ("Lee") (EX1008) is directed to an above-ground pool including a pool frame having a plurality of vertical frames 110 and horizontal frames 120 connected by T-shaped connectors 130. *Id.*, Abstract; [0057]-[0058]. Lee's Figure 1 is reproduced below.



EX1009, Fig. 1

40. Similar T-shaped connectors that connect horizontal poles to vertical poles are found in other settings in and around a pool. For example, PCT Publication No. WO 2014/100855 ("Hunter") (EX1008) is directed to a modular fence for extending around an above-ground pool. *Id.*, Abstract. As shown in Hunter's Fig. 9 reproduced below, the fence 100 includes vertical struts or poles 112 and horizontal struts or poles 120 connected by linkage 114, also referred to as a "T-connector." *Id.*, [069].

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EX1008, Fig. 9

41. Although the above illustrates a fence for surrounding an above-ground pool, a POSA would turn to, and consider, Hunter's fence 100 (namely, the connection between the vertical struts and the horizontal struts at the T-connector 114) given its similarities in structure and purpose with the other above-referenced frame pools. I discuss this more below regarding the motivation to combine the teachings of Hunter with those of Liu and Cheng.

IX. OVERVIEW OF THE '512 PATENT

42. The '512 Patent is directed to a frame assembly for a "frame pool." EX1001, Abstract. By way of background, the '512 Patent explains that typical frame assemblies for AGPs:

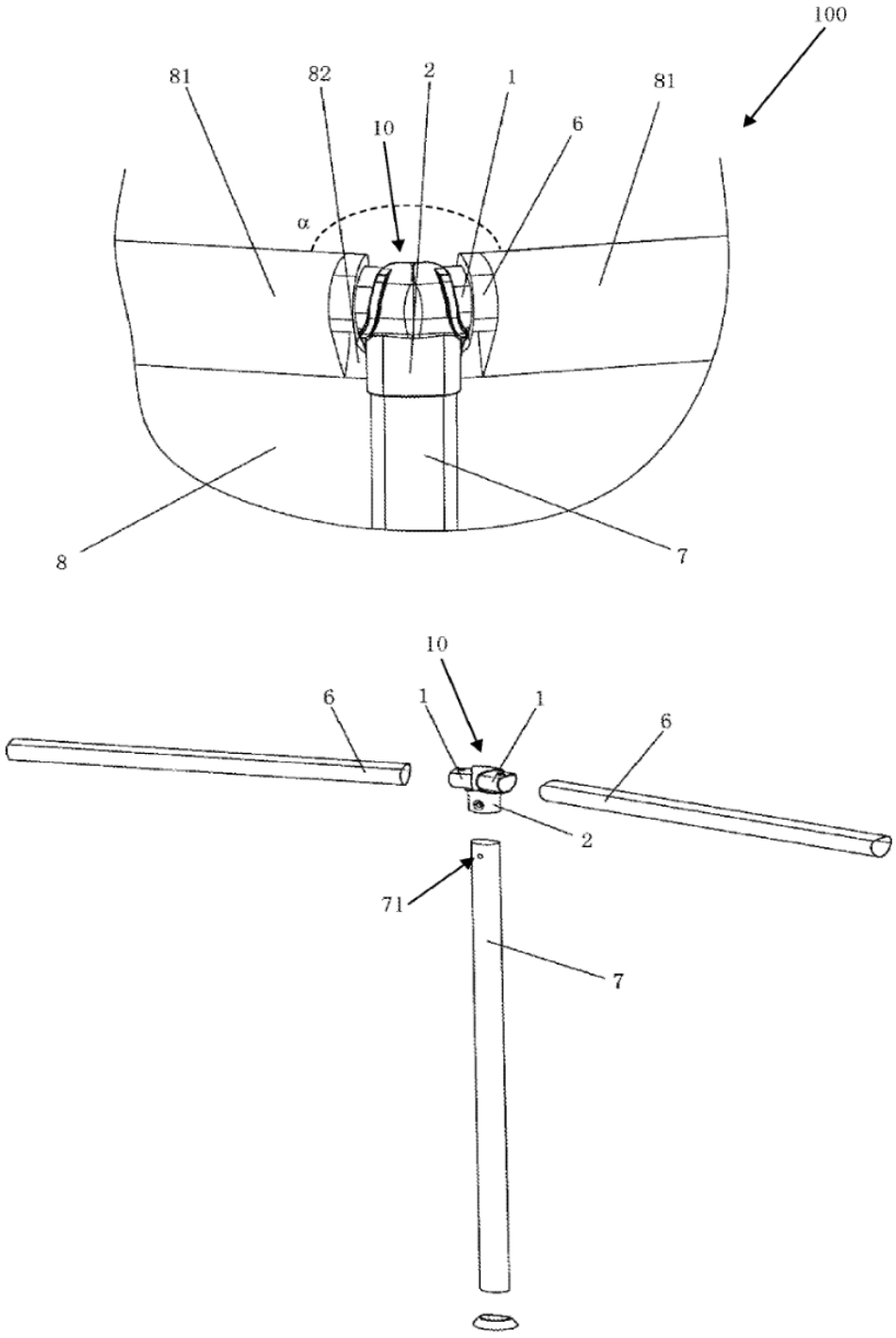
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> may include one or more horizontal frame members (e.g., horizontal pipes) that form an upper rim of the pool and one or more vertical frame members (e.g., vertical pipes) that extend downward from the horizontal frame members to the ground. To allow the frame assembly to be disassembled for storage and assembled for use, the horizontal frame members and the vertical frame members may be removably coupled together via a plurality of T-shaped joints.

EX1001, 1:33-41. The specification identifies an existing concern regarding these T-shaped joints: "existing T-shaped joints are relatively wide, so existing pool liners may require wide holes or gaps to accommodate such T-shaped joints, which may impact the pool's appearance and ability to contain water." *Id*., 1:44-48.

43. Figures 1-2 of the '512 Patent illustrate a "frame pool 100" with a "T-shaped joint 10." Each T-shaped joint 10 "includes two horizontal joint portions 1 configured to couple to the horizontal frame members 6 and a vertical joint portion 2 configured to couple to the vertical frame member 7." *Id*., 3:14-17. Below are Figures 1 and 2 of the '512 Patent:

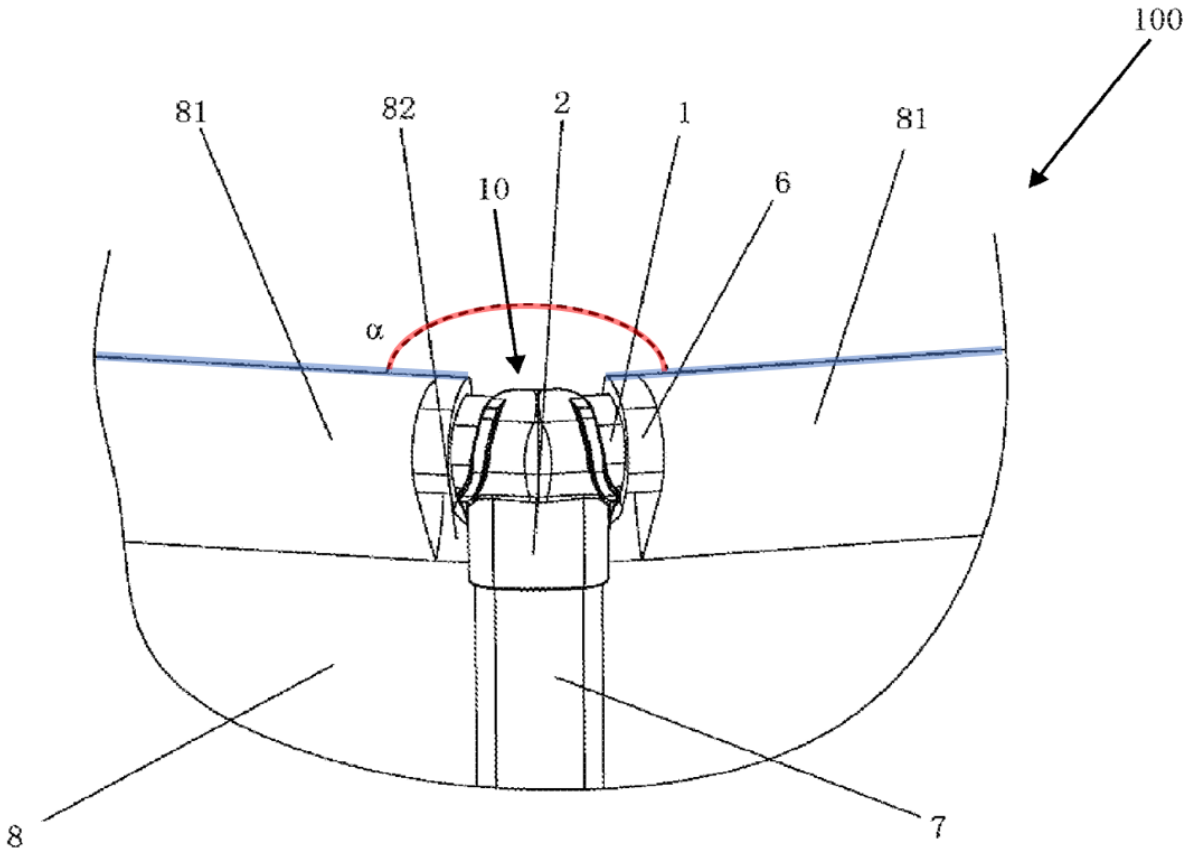
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44. The ’512 Patent describes that the shape of the joint 10 can vary. For example, it can be “rectangular, circular, elliptical, or other suitable shapes.” *Id.*,

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3:5-7. Referring to Figure 1 annotated below, "the horizontal joint portions 1 define an obtuse angle α therebetween, so the horizontal frame members 6 define the same angle α therebetween." *Id.*, 3:22-25. Below, the angle α is highlighted red defining the angle between the horizontal frame members (blue).



Such a configuration with an obtuse angle α can result in a circular pool. For example, if there are 16 T-connectors assembled together to form a pool, then the angle α would be 157.5 degrees. This is because the angle of the T-connector would be 180-(360/n), where n is the number of T-connectors in the assembly. Lee (EX1009) discusses these geometric principles in paragraphs [0059] and [0060].

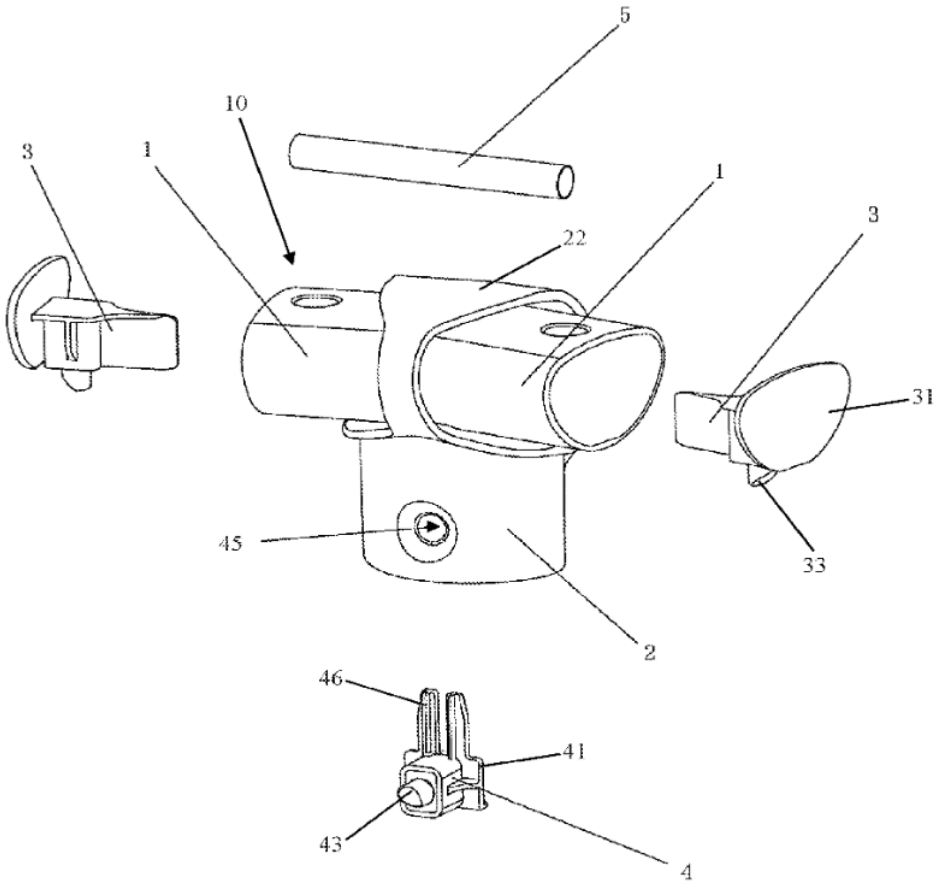
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45. The ’512 Patent does not limit the angle α to be obtuse. In fact, it specifically contemplates the angle α being a right angle such that the pool is rectangular in shape. For example, the ’512 Patent states: “In another embodiment, the horizontal joint portions 1 may be perpendicular to each other, so the horizontal frame members 6 would also be perpendicular to each other, such as along a corner of a rectangular frame pool 100.” EX1001, 3:27-31. In such an embodiment, the angle α would be 90 degrees such that the horizontal joint portions 1 of a single T-shaped joint 10 are perpendicular to each other.

46. The ’512 Patent describes two different coupling assemblies: a coupling assembly 3 for connecting the T-shaped joint 10 to the horizontal frame members 6, and a coupling assembly 4 for connecting the T-shaped joint 10 to the vertical frame member 7. Regarding the coupling assembly 3, the ’512 Patent explains: “Each horizontal joint portion 1 of the T-shaped joint 10 includes a coupling assembly 3 for removable attachment to the adjacent horizontal frame member 6 (FIG. 2). As shown in FIGS. 3 and 4, each coupling assembly 3 includes a base 31 received in the horizontal joint portion 1, a helical spring 32 held in place by the base 31, and a pin 33 extending radially outward (e.g., downward) through a hole 35 in the horizontal joint portion 1.” EX1001, 4:7-14. The spring 32 “may bias pin 33 radially outward through hole 35 to engage a corresponding recess or hole (not shown) of the horizontal frame member 6 (FIG. 2).” *Id*. at 4:17-20. Regarding

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the other coupling assembly 4, the '512 Patent explains: "each coupling assembly 4 includes a base 41 received in the vertical joint portion 2, a helical spring 42 held in place by the base 41, and a pin 43 extending radially outward (e.g., rearward) through a hole 45 in the vertical joint portion 2." EX1001, 4:42-46. The spring 42 "may bias pin 43 radially outward through hole 45 to engage a corresponding recess or hole 71 of the vertical frame member 7 (FIG. 2)." *Id*. at 4:50-52.



EX1001, Fig. 3

47. All of the independent claims of the '512 Patent include a key limitation regarding the width of the vertical joint portion 2 compared to the width between the

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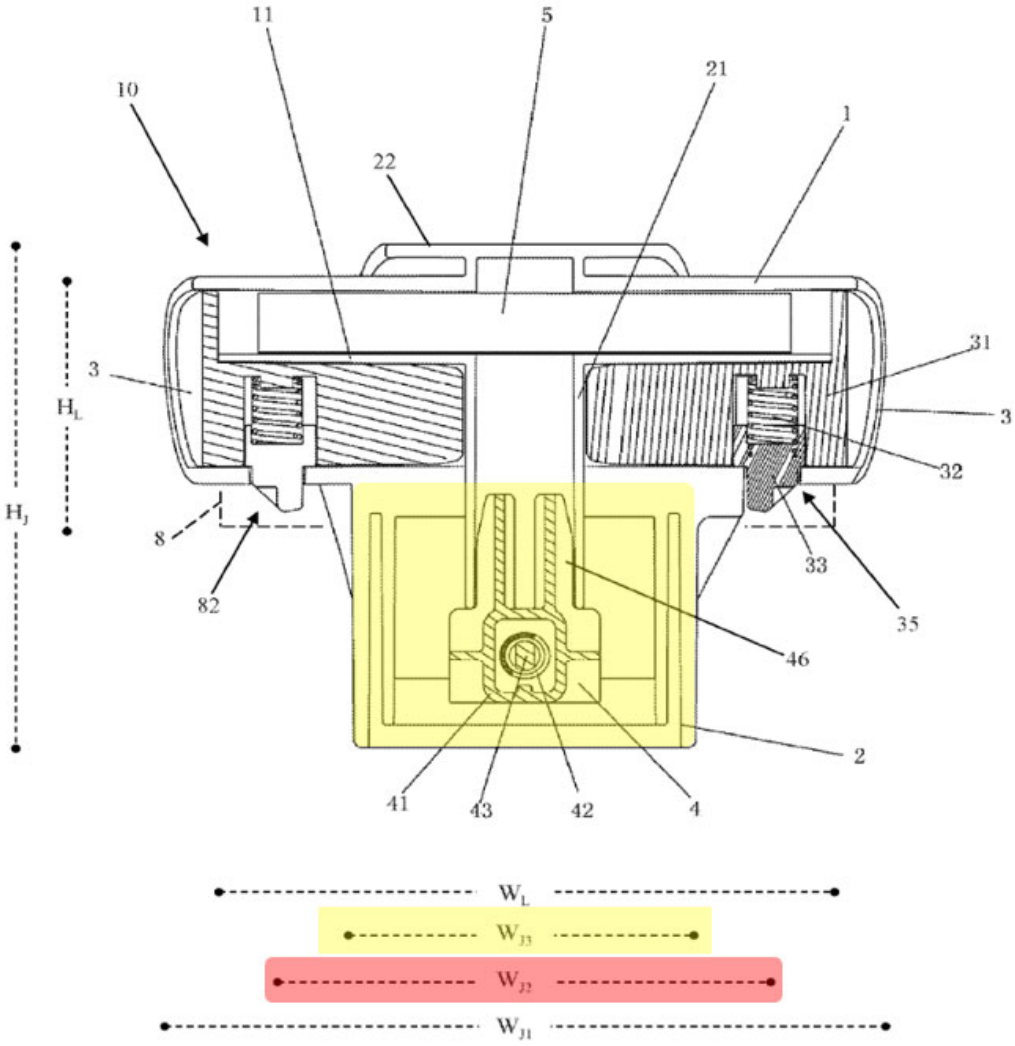
pins 33. For example, claim 1 states: "wherein a width of the vertical joint portion accounts for at least 50% of a width between the first and second pins." Similarly claim 15 states: "wherein a width of the vertical joint portion accounts for a majority of a width between the first and second pins." As a POSA, I would understand a "majority" to mean more than 50%. In other words, claim 15 should mean "wherein a width of the vertical joint portion accounts for more than 50% of a width between the first and second pins."

48. The '512 Patent explains this relationship in reference to its Figure 4. It explains:

> To help minimize the size of the T-shaped joint 10, the pins 33 of the coupling assemblies 3 may be positioned close to the vertical joint portion 2. Due to this close positioning, the width W_{J3} of the vertical joint portion 2 may account for a majority of the width W_{J2} between the pins 33 of the coupling assemblies 3. For example, the width W_{J3} of the vertical joint portion 2 may account for 50%, 60%, 70%, 80%, or more of the width W_{J2} between the pins 33 of the coupling assemblies 3. In the illustrated embodiment of FIG. 4 , in particular, the width W_{J3} of the vertical joint portion 2 accounts for about 70% of the width W_{J2} between the pins 33 of the coupling assemblies 3.
>
> EX1001, 5:16-27.

49. Below I have annotated the '512 Patent's Figure 4 to illustrate this point. As shown, the width W_{J3} of the vertical joint portion 2 (yellow) accounts for at least 50% of the width W_{J2} between the pins 33 (red).

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EX1001, Fig. 4 (annotated)

The purpose of this relationship is to minimize the size of the T-shaped joint. I know this because the Background states that "existing T-shaped joints are relatively wide, so existing pool liners may require wide holes or gaps to accommodate such T-shaped joints, which may impact the pool's appearance and ability to contain water" and the Detailed Description states that "[t]he width of the T-shaped joint 10 may be minimized such that the width of the corresponding hole 82 in the pool liner 8 may

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also be minimized." EX1001, 1:44-48, 4:65-67. Bringing in the pins as close to the vertical joint portion 2 as possible allows for the overall width of the T-shaped joint 10 to be minimized. No other apparent benefit for this relationship is provided in the '512 Patent.

X. GROUND 1: CLAIMS 1-24 ARE INVALID UNDER 35 U.S.C. § 112(b) AS INDEFINITE

A. Claims 1-19

50. The phrase "wherein a width of the vertical joint portion accounts for at least 50% of *a width between the first and second pins*" as used in Element [1.9], is indefinite as it does not inform with reasonable certainty its scope, including how to determine the width between the pins. The identical term appears in Element [15.5] except "a majority" replaces "at least 50%" and is indefinite for at least the same reason.

51. I will refer to these phrases in Elements [1.9] and [15.5] collectively as the "Width Limitation." As explained below, the Width Limitation renders claims 1 and 15 indefinite because its scope is unclear. In particular, the width between the pins cannot be determined with reasonable certainty.

52. Neither the Width Limitation nor any other claim language provides any precision as to what location(s) along the pins the width measurements should be taken from for pins that are not parallel to the vertical joint portion. A POSA would be left guessing as to the meaning of the Width Limitation because it is not

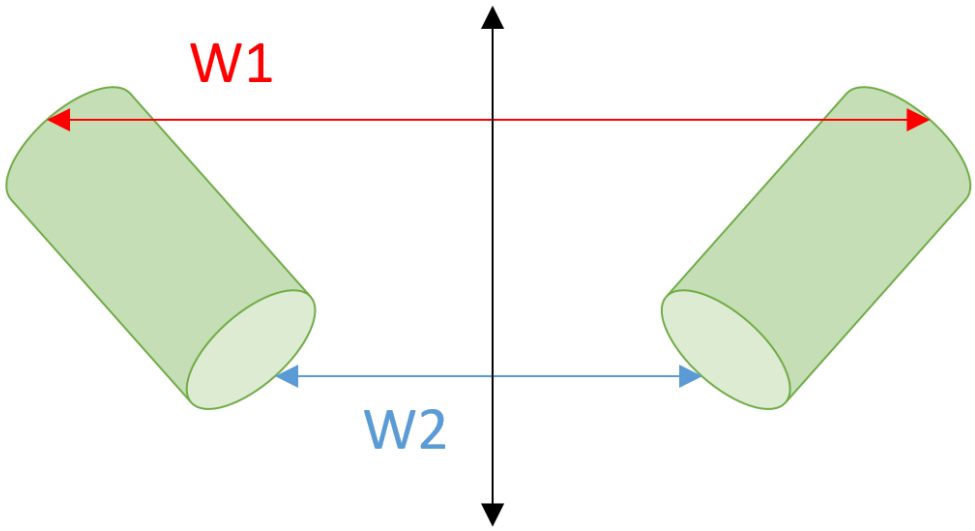
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clear where the "width between the pins" should be measured from. For example, if the pins are oriented at an angle (*i.e.*, not parallel), where along the pin lengths is the width between the first and second pins to be measured? This is troublesome because the width between the pins can vary wildly if you measure that distance from different locations along non-parallel pins. Moreover, while I see Figure 4 of the '512 Patent shows the width between the pins measured from the center axes, the claims and specification do not require such a measurement. Couldn't the width between the pins be measured from somewhere else, such as the innermost pin surfaces (*i.e.*, the surfaces of the first and second pins that are closest to each other, or face each other)?

53. Each of these different locations can yield different width measurements such that a POSA could not readily determine the scope of the Width Limitation such that the Challenged Claims are indefinite. For example, if the "width between the first and second pins" refers to the distance between centerlines of the pins, that distance would be greater than if the "width between the first and second pins" refers to the innermost (closest) pin surface, *i.e.* the portions of the outer surface of the pins that face one another.

54. Nothing in the claims requires any particular pin orientation, and therefore the "width between the pins" can vary depending upon their orientation. Below is a schematic illustrating this point.

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If pins (shown above in green) are angled relative to one another with respect to a vertical axis (shown above in black), the claim provides no guidance as to where along the pin length the width should be measured. This is significant because a width measurement at the pin upper ends (red, W1) differs from a width measurement at the pin lower ends (blue, W2) as well as other width measurements taken therebetween. As can clearly be seen above, if the width between the two pins is measured at W1, that width measurement would be far greater than if the width between the two pins is measured at W2. Again, measuring the width at different locations along the pin length yields different measurements.

55. The same would hold true if the pins were oriented horizontally, yet angled (*i.e.*, not parallel) to one another. For example, consider the above schematic except with the black line representing a horizontal axis (*i.e.*, the view of the pins is from above). In other words, the viewpoint of the above schematic can be from the

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top looking down at a pool, with the pins angled inward toward the center of the pool relative to a horizontal axis (black). Here again, the width between the pins would vary if measured at W1 versus W2.

56. The Specification of the ’512 Patent similarly provides no guidance as to the scope of the Width Limitation. The specification’s only description of this feature is in reference to Figure 4 (annotated below) which identifies the width W_{J3} of the vertical joint portion (highlighted yellow below) and the width W_{J2} between the pins 33 (highlighted red).

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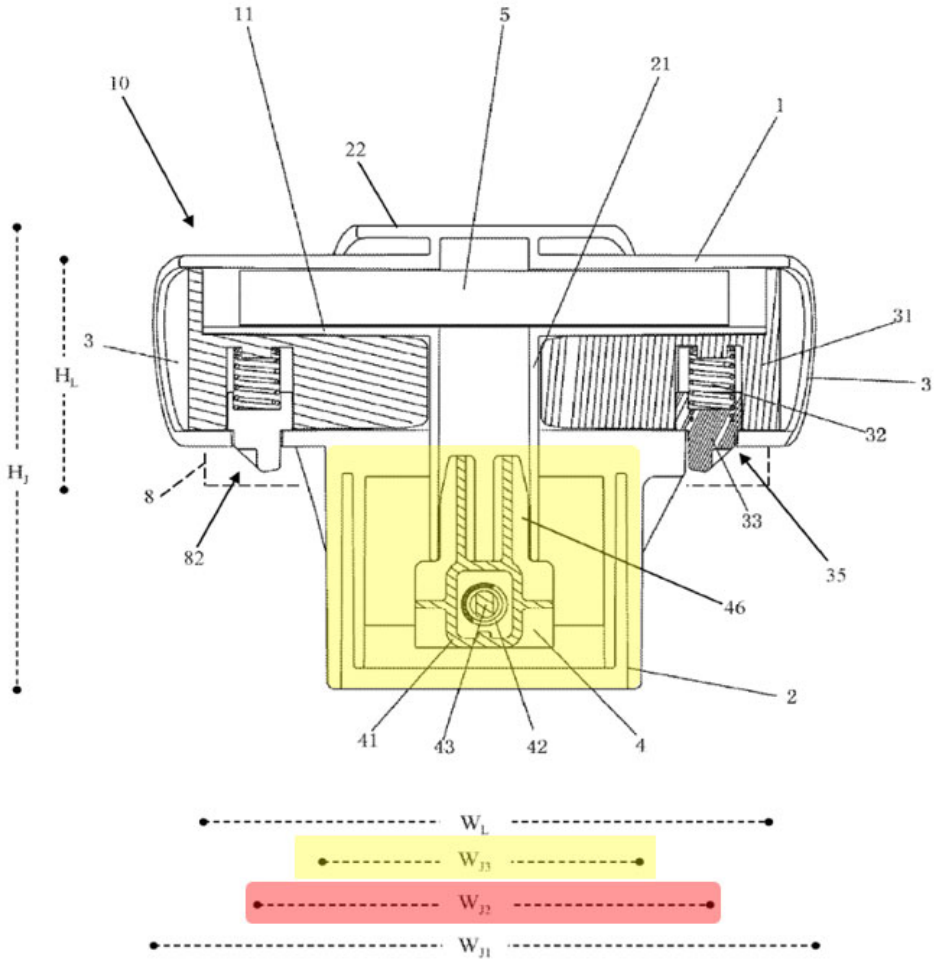


FIG. 4

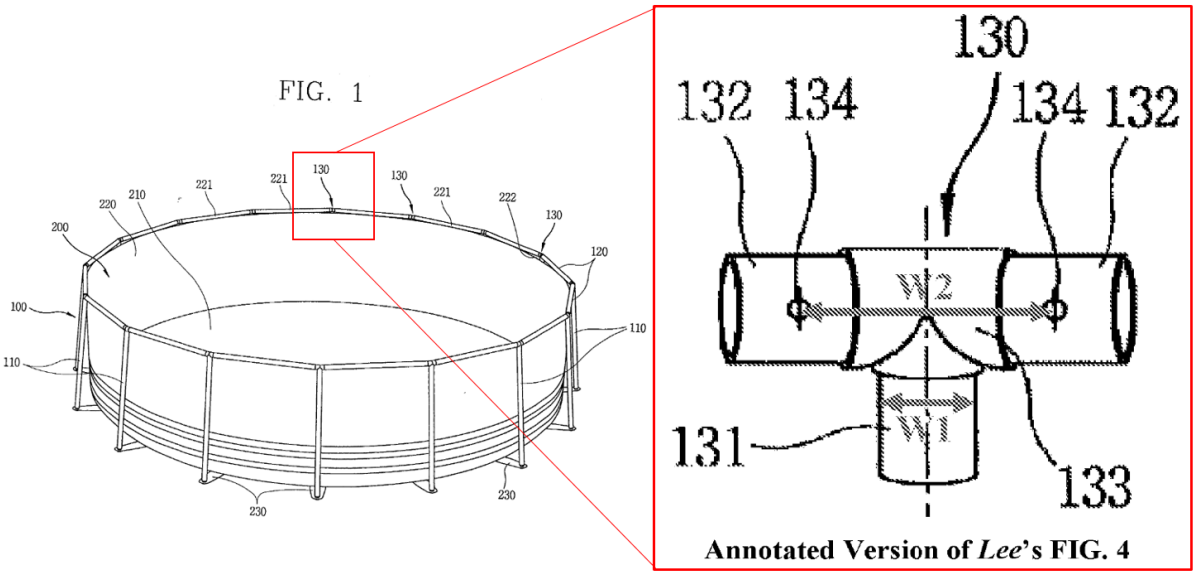
EX1001. Fig. 4 (annotated)

However, the specification does not limit the pins to any particular orientation – it only describes the embodiment illustrated above as having the pins "extending radially outward (e.g., downward) through a hole 35 in the horizontal joint portion". EX1001, 4:18-20. Therefore, the specification would not rectify the problem of what to do if the pins are not parallel to one another.

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57. The prosecution history only adds to the confusion and highlights the indeterminate nature of the Width Limitation. Specifically, during prosecution of the '572 Patent (to which the '512 Patent claims priority), the Examiner contended that U.S. Patent Publication No. 2002/0042948 ("Lee," EX1009) taught the Width Limitation. In multiple attempts at distinguishing Lee from this limitation, the Applicant measured the width between the pins at different locations on Lee's Figures as part of each attempt.

58. In a first attempt, the Applicant annotated Fig. 4 of Lee in arguing that Lee does not teach the Width Limitation. EX1005, pp.252-259. Applicant's annotations are reproduced in the below Figure on the right, and I have provided a red rectangle in Figure 1 to show the context about where the T-shaped joint 130 is in reference to the entire frame pool.

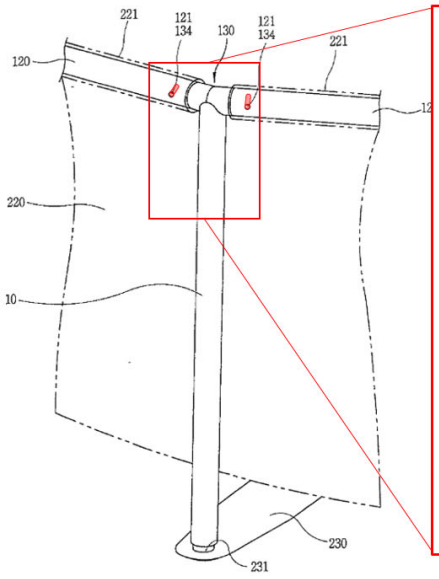


EX1009, Figs. 1, 4 (annotated); EX1005, p.253

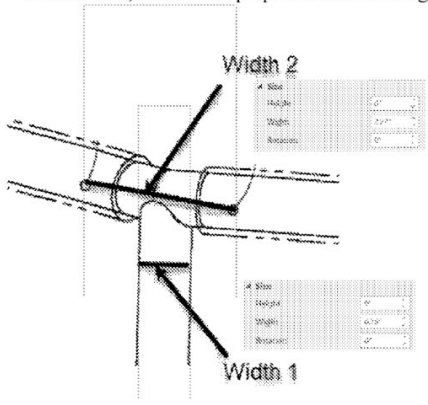
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The Applicant stated that the width of Lee's vertical joint portion (W1) is not "at least 50%" of the width between the pins (W2). EX1005, p.252. As can be seen, the horizontal portions 132 of Lee's T-shaped joint 130 are positioned at an oblique angle with respect to one another, and the pins are thus oriented at an angle with respect to a horizontal axis like discussed above. EX1005, p.253. Since the view of Lee's Figure 4 is from the *inside* of the frame pool, the Applicant identified the width (W2) as the distance between the *inner*-facing ends of Lee's pins. (It should be noted that 134 is called out as the pin).

59. Then, in a second attempt to distinguish Lee, the Applicant annotated Lee's Figure 2 as shown below. Here once again, I have drawn a red box around part of Figure 2 to give the proper context of where along the frame pool the view of Applicant's annotations is from. I have also left in the text that Applicant used in its argument:



Furthermore, the claimed proportions are not taught or suggested by Lee when the relevant proportions of Lee's joint portion are measured. The provided annotated figure of Lee (left) was reproduced in Microsoft® PowerPoint® and has a width of the vertical portion ("Width 1") measuring 0.78" and a width between the first and second coupling assemblies ("Width 2") measuring 2.27", resulting a ratio of approximately 34%, which does not meet or even come near to the recited claim limitations. Appellant respectfully submits for at least these reasons, Lee fails to meet or suggest the claimed limitations and, as such, a prima facia case of obviousness has not been established.



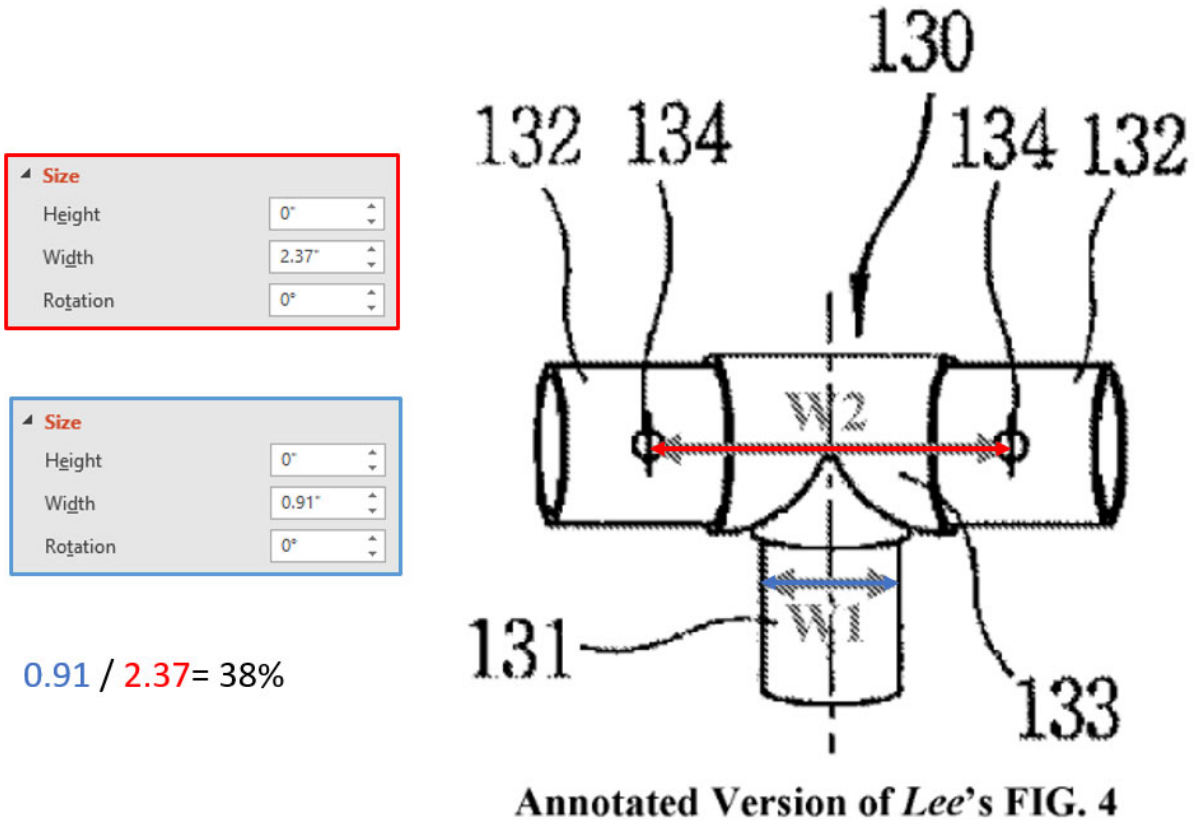
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EX1005, p.544; EX1009, Fig. 2 (annotated)

Unlike the annotations above where the Applicant measured the width between the *inner*-facing ends of the pins, here it noted "Width 2" as the distance between the *outer*-facing ends of the pins, which I have shown in red above.

60. Thus, Applicant's measurement methodology from the outer-facing ends of the pins yields a claimed ratio of 34%. However, due to the angled nature of the pins in Lee, measuring the widths at the outer-facing ends will unquestionably yield a different value than a measurement from the inner-facing ends. For example, as shown below, had the Applicant performed the same PowerPoint measurement exercise on Lee's Figure 4 (*i.e.*, from the *inner*-facing ends of the pins), the ratio of the width between the pins (W2) to the width of the vertical portion (W1) would have been 38%:

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Annotated Version of *Lee*'s FIG. 4

EX1005, p.253

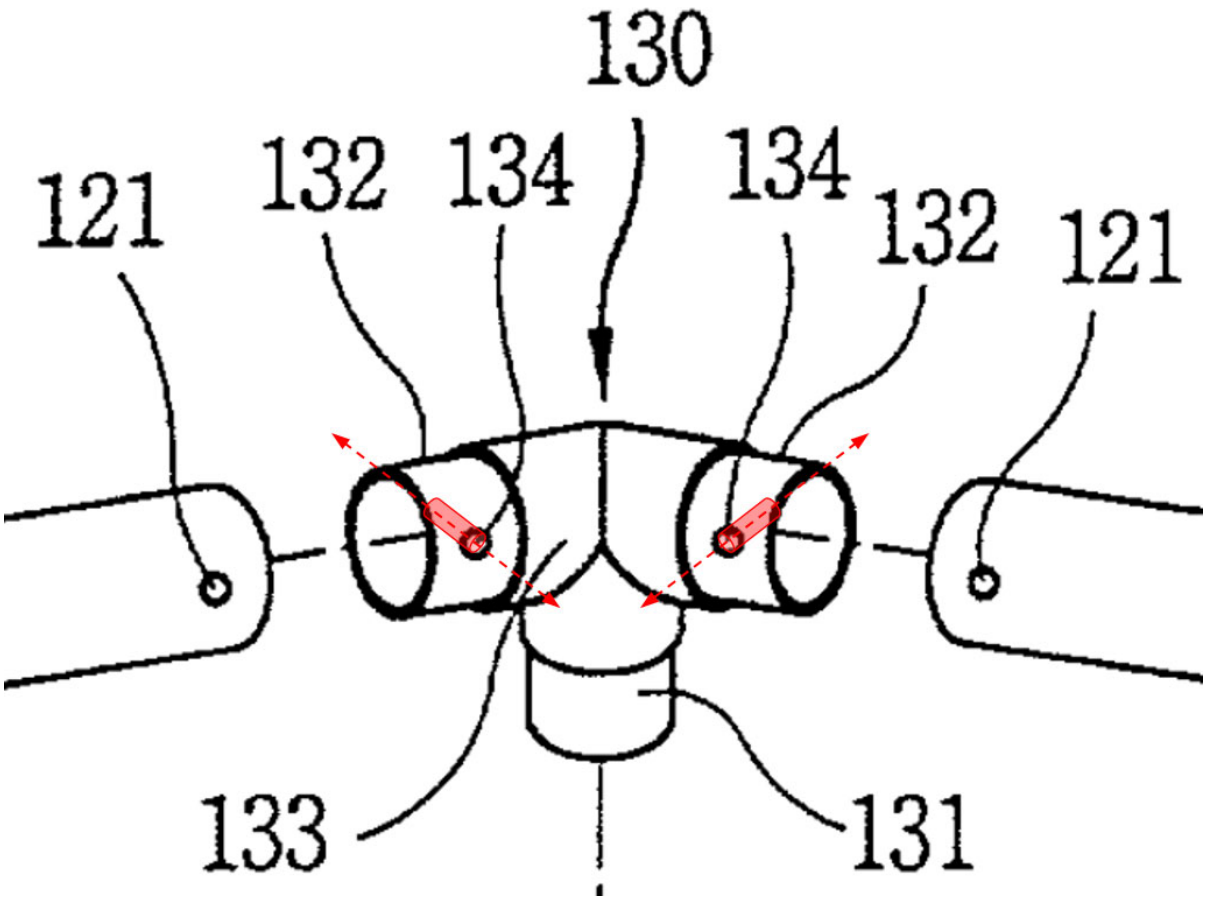
Performing this Powerpoint measuring technique is simple. After selecting a line (for example, the red or blue lines above), under the Format tab there is a "size" feature which shows the horizontal and vertical lengths of the lines that were created. The relative sizes of the red and blue lines are shown in the red and blue boxes, respectively.

61. As shown above, when measuring the width between the pins from the *inside* of the pins, the ratio of the width of the vertical joint portion W1 to the width between the pins W2 is 38%, whereas when measuring the width between the pins from the *outside* of the pins, the ratio of the width of the vertical joint portion W1 to

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the width between the pins W2 is 34%. Thus, where two pins are oriented at an angle with respect to one another, the result is width measurements that ***differ depending on where along the length of the pins the measurement is taken from***. The claims are therefore indefinite because it is not clear where along the pins the "width between the first and second pins" should be measured from.

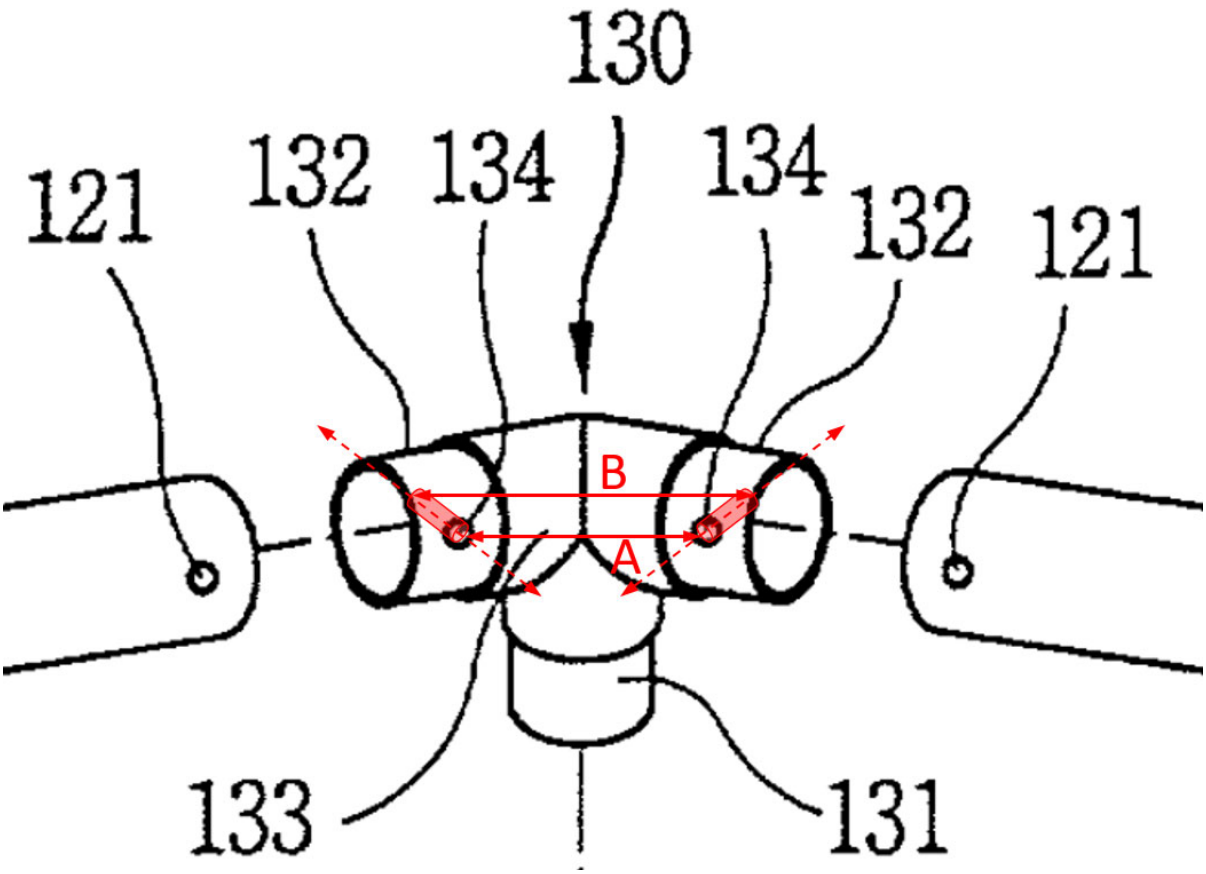
62. This issue is amplified when applied to 90-degree joints, *i.e.* corner joints for a rectangular pool. Consider Lee's Figure 3 for example, annotated below to show the orientation of the pins 134 within the joint 130, with the pins 134 extending along the direction of the red arrows.



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EX1009, Annotated

Due to the pins 134 being oriented at an angle to one another, the measured "width between the pins" would once again depend on where along the pins the measurement is taken. For example, below is another annotated Figure 3 with the width at Line A being clearly less than the width at Line B.

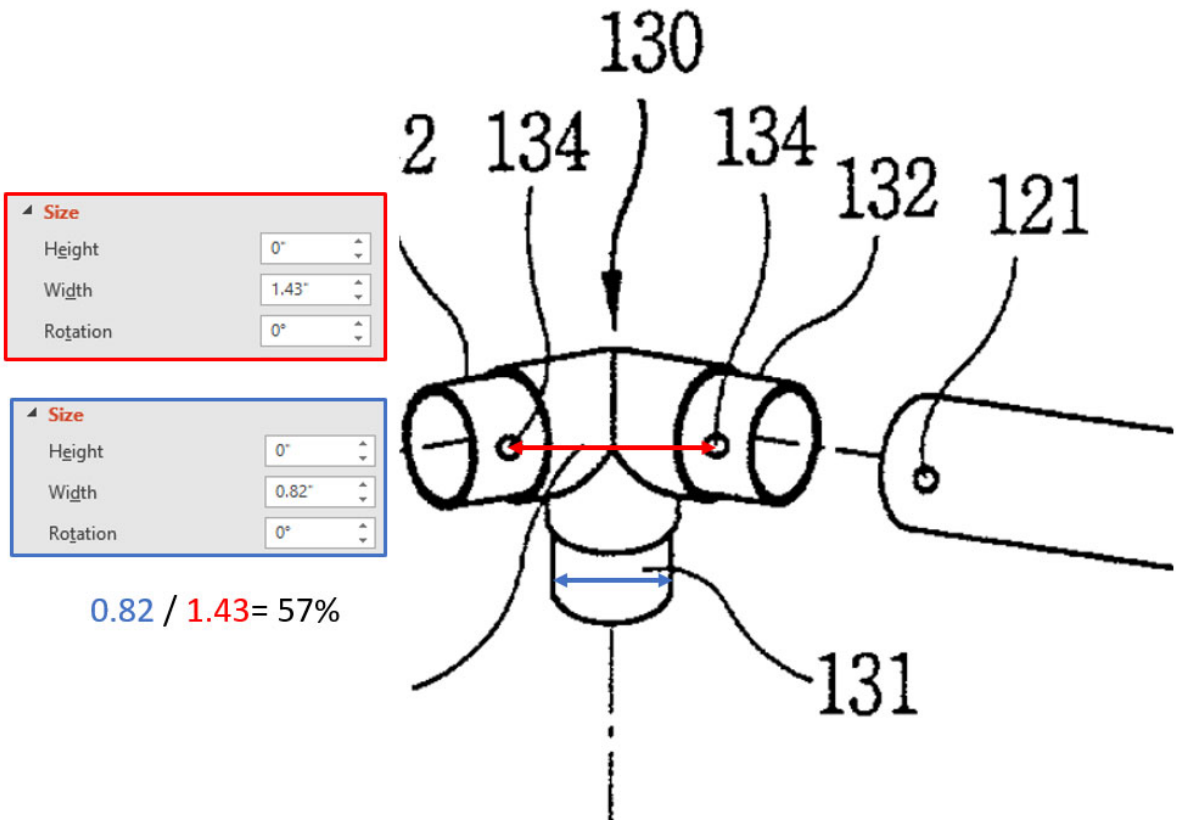


EX1009, Fig. 3 (annotated)

63. Applying Applicant's same PowerPoint measurement technique on this Figure (which the Applicant failed to do) demonstrates that this connector 130 *does* disclose the Width Limitation. For example, again using the same PowerPoint

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measurement techniques explained above, the width of Lee's vertical joint portion 131 (blue) is 0.82" compared to the width between the pins 134 (red) being 1.43". In other words, the width of the vertical joint portion is 57.3% of the width between the inner-facing ends of the pins, which is greater than 50%. The width between the pins (red) would be different if the width measurement was taken from the outer-facing ends of the pins, as demonstrated above.

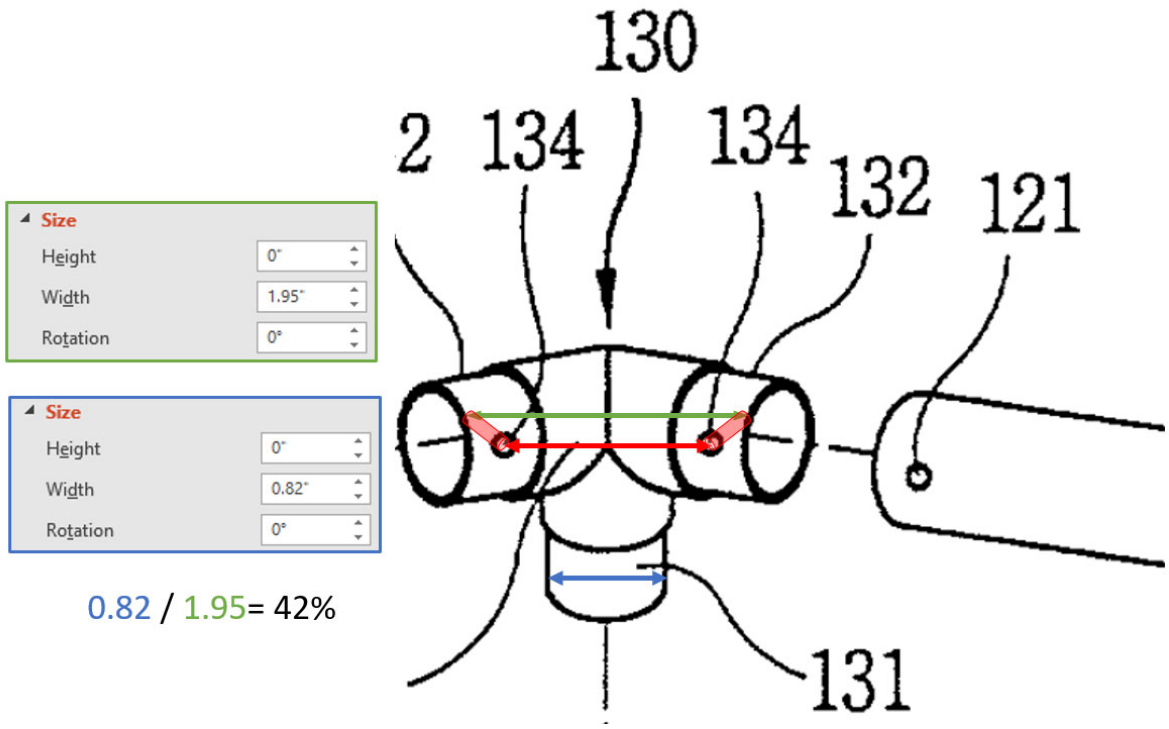


EX1009, Fig. 3 (annotated)

64. And clearly, because of the angle of Lee's corner connector 130, measuring the width between the pins at their *outer* ends – like Applicant did with

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respect to Figure 2 of Lee – would yield a drastically different measurement. In particular, the width of the vertical joint portion would be *less than* 50% of the width between the pins.

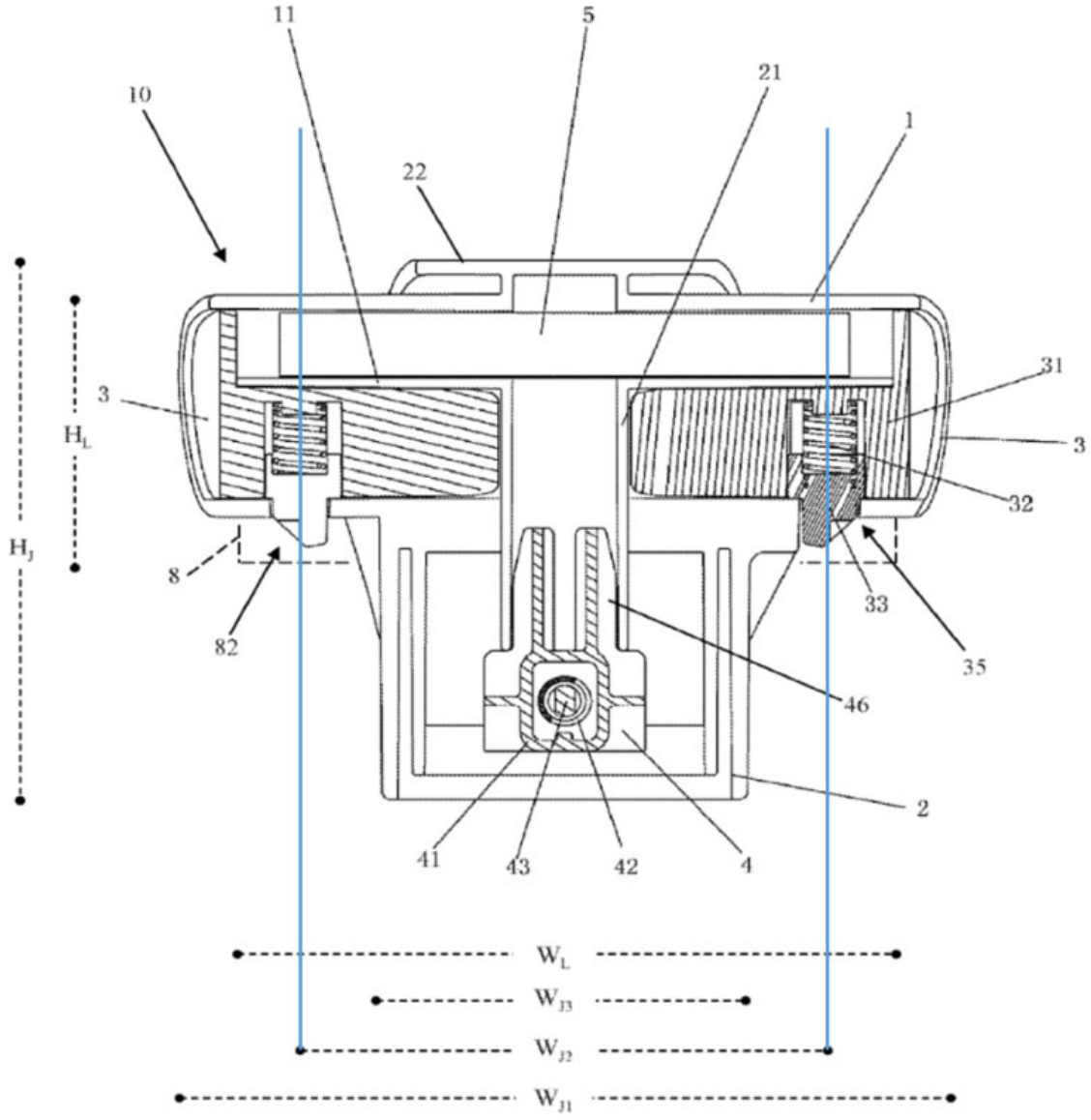


EX1009, Fig. 3 (annotated)

65. The fact that measuring at one pin location can yield an arrangement that falls within the Width Limitation, but measuring at another location can yield an arrangement that falls outside it, demonstrates that the Width Limitation cannot be defined with reasonable certainty. A POSA would also understand that the distance the pins extend out of the pinhole openings can also alter the width measurements, which further highlights the lack of clarity of the Width Limitation.

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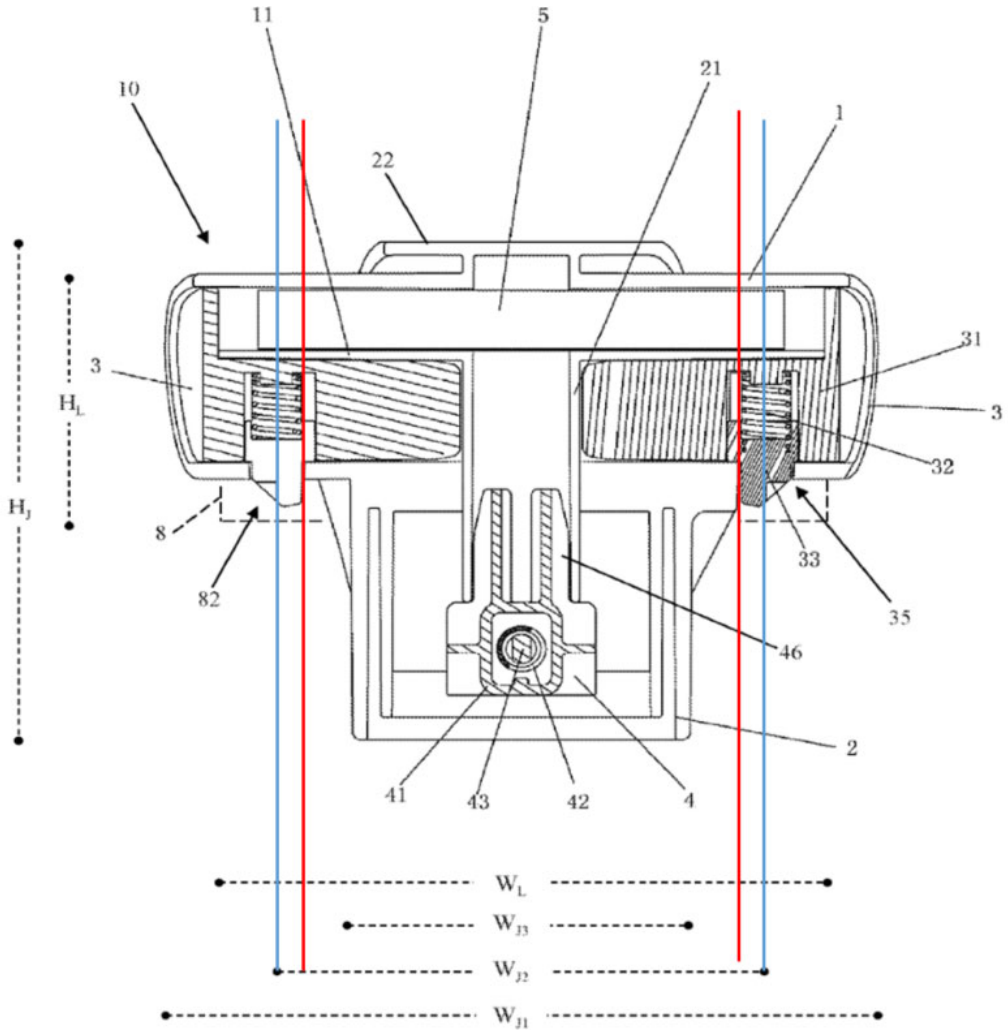
66. Finally, even if measuring the width between *parallel* pins, the Width Limitation remains indefinite. The '512 Patent itself exemplifies this. For example, once again, the '512 Patent denotes the width between the pins as W_{J2}, and the below annotation shows this in blue.



EX1001, Fig. 4, annotated

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67. This width W_{J2} in blue above appears to be a distance between the pins' centerlines. However, there is no guidance in the specification regarding what location the width *needs* to be measured from. For example, nothing in the specification would dissuade a POSA from measuring the width between the pins as the distance between surfaces of the pins that face each other, as shown in red below. Indeed, the ordinary meaning of "width" is a measurement "from one side to the other". EX1026.



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EX1001, Fig. 4, annotated

68. As shown above, the distance between the pins' centerlines (blue) and the distance between the surfaces of the pins that face one another (red) would both yield different measurements. Thus, the scope of the Width Limitation is unclear to a POSA.

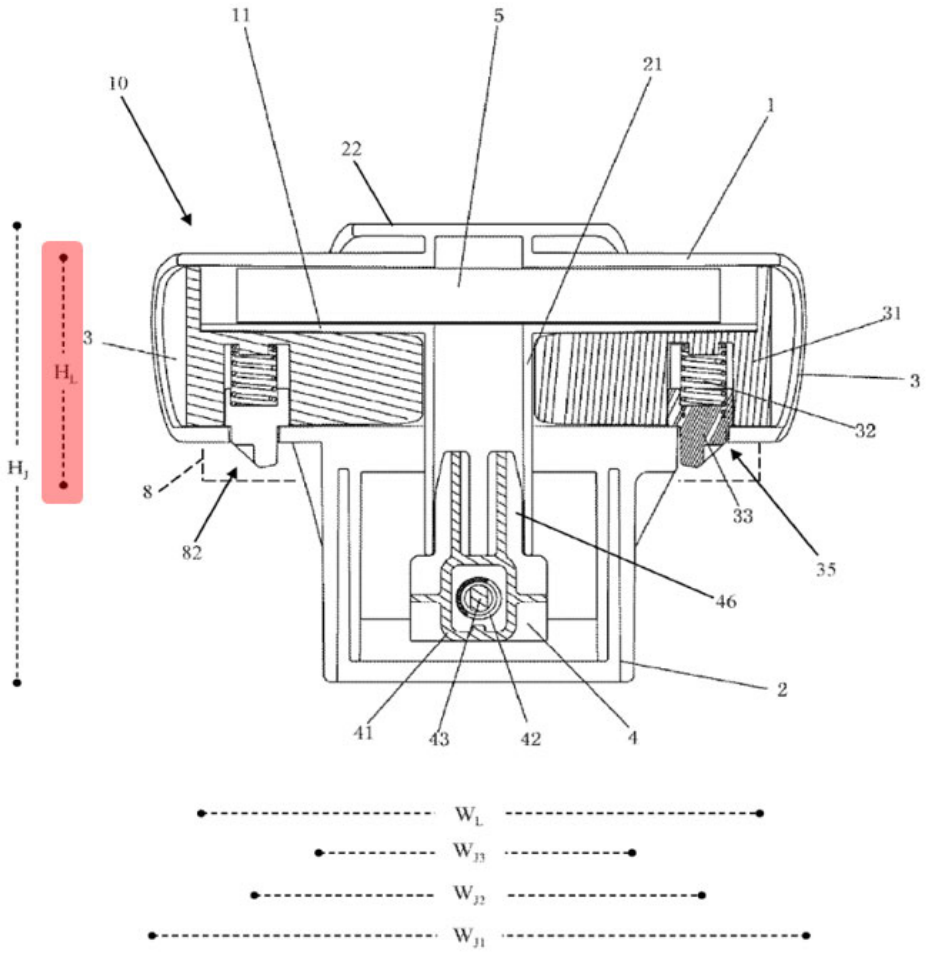
B. Claims 20-24

69. I note that with respect to the Width Limitation, claim 20 reads identical to claims 1 and 15 except "coupling assemblies" are claimed rather than "pins" ("wherein a width of the vertical joint portion accounts for at least 50% of a width between the *first and second coupling assemblies*"). According to the '512 Patent's specification, the term "coupling assembly" includes pin 33 as well as base 31 and helical spring 32. However, for similar reasons as provided above regarding claims 1-19, claims 20-24 are also indefinite. The claimed "width between the first and second coupling assemblies," when read in light of the specification and the prosecution history, fails to inform, with reasonable certainty, those skilled in the art about the scope of the invention. In particular, a POSA would not know where along the coupling assemblies the width measurements should be taken from – e.g., the inner-facing portions of the coupling assemblies, the outer-facing portions of the coupling assemblies, the centerlines of the pins, etc. Therefore, for reasons similar to claims 1-19, claims 20-24 are also indefinite.

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XI. GROUND 2: CLAIM 19 IS INVALID UNDER 35 U.S.C. § 112(a) FOR LACK OF WRITTEN DESCRIPTION

70. Claim 19 requires "wherein a height of the hole in the liner is less than a distance between the first pin and the coupling assembly." The "height of the hole in the liner" is labeled as H_L in Figure 4 of the '512 Patent (below, red).

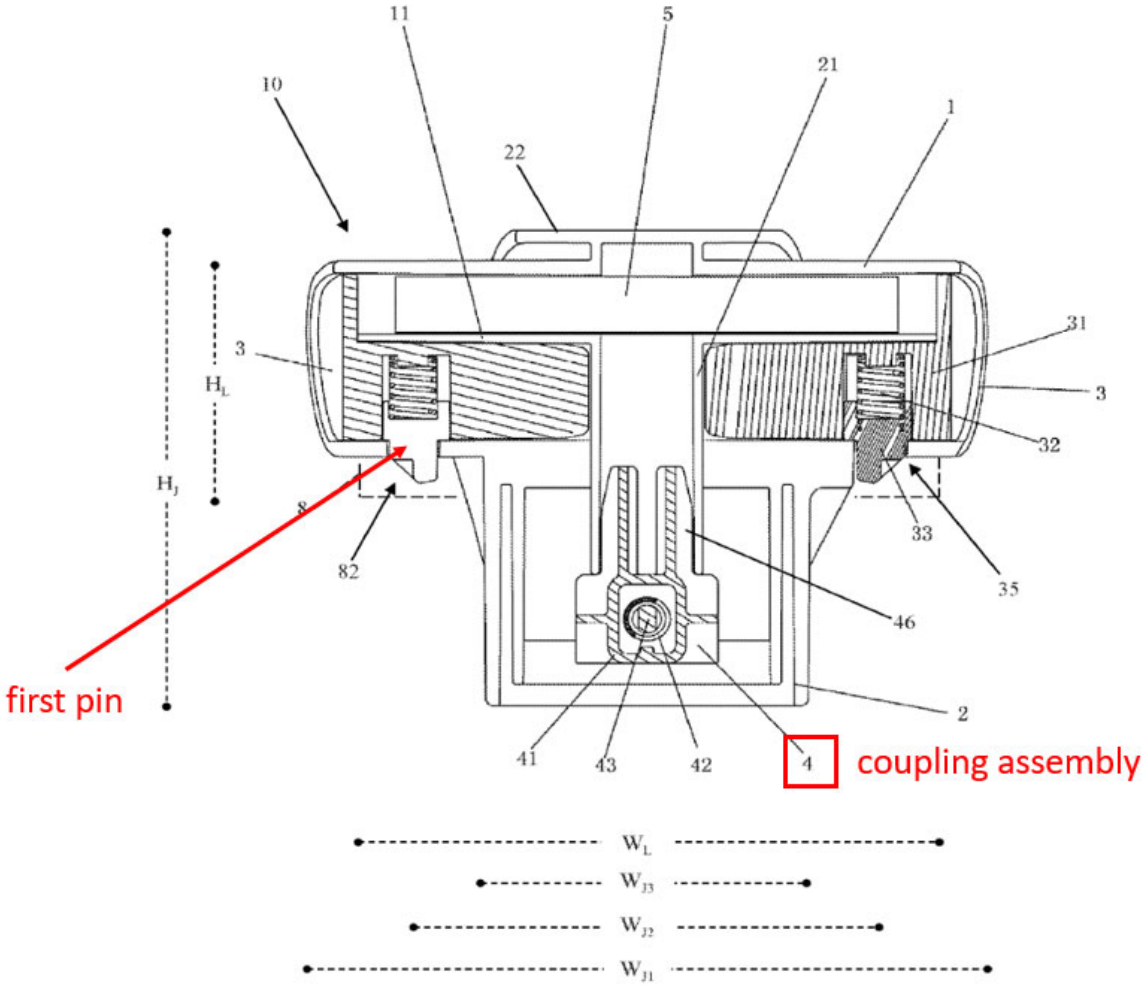


EX1001, Fig. 4 (annotated)

71. However, the '512 Patent makes no mention of the remainder of this limitation. In particular, there is no disclosure whatsoever about any distance

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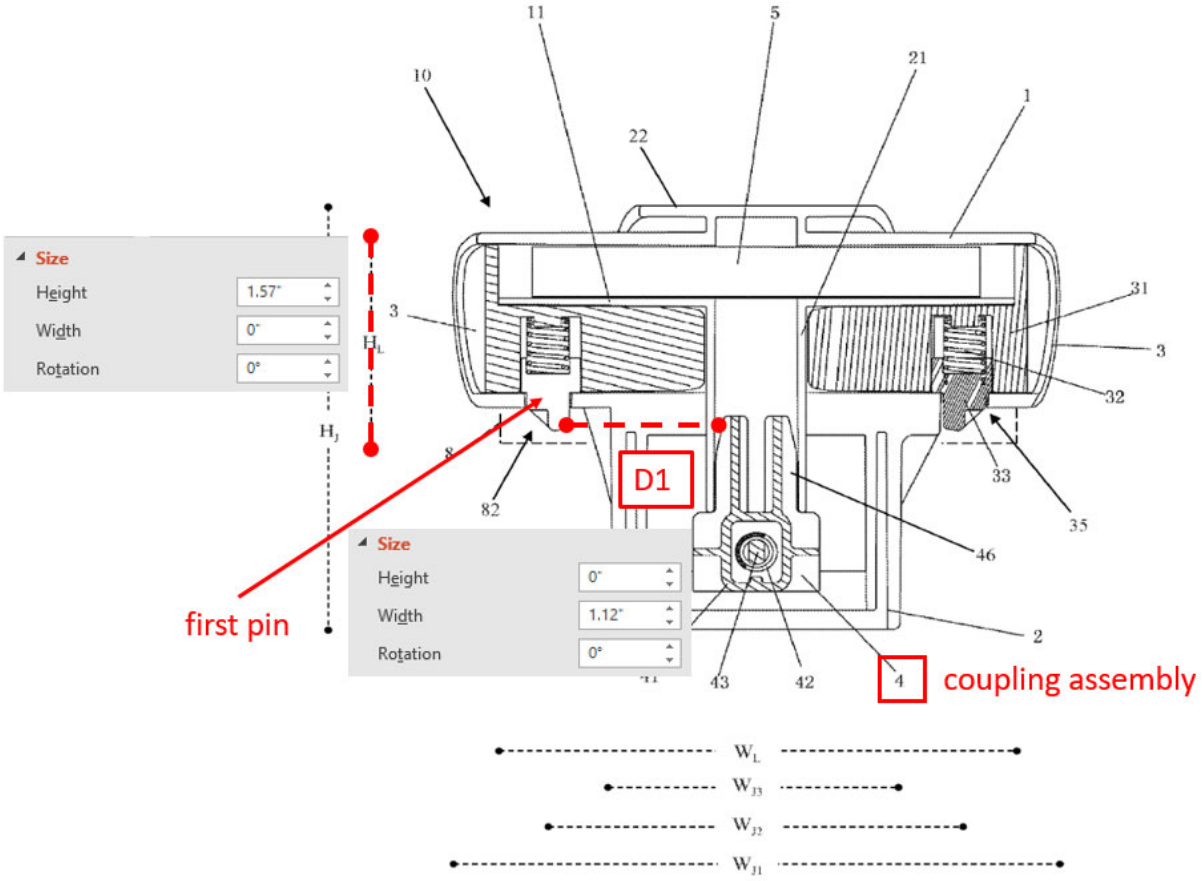
between the first pin (*e.g.*, one that couples a *horizontal* frame member to the frame joint) and the coupling assembly (e.g., that couples a vertical frame member to the *vertical* joint portion). Referring to FIG. 4 of the '512 Patent, (reproduced below), claim 19 would refer to a distance between pin 33 and coupling assembly 4. No such distance is explained in the specification, let alone one that exceeds the height of the hole in the liner H_L.



EX1001, Fig. 4 (annotated)

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72. Even considering one possibility for the measurement of the distance between pin 33 and coupling assembly 4 (shown as D1 in my annotated version of FIG. 4 below) leads to a situation where FIG. 4 does not practice Claim 19. Using the same PowerPoint measuring technique explained above, the measured length of the height of the hole in the liner H_L is 1.57" while the measured length of line D1 is 1.12". In other words, H_L is greater than D1, which is *opposite* of Element [19.1].



EX1001, Fig. 4 (annotated)

73. The specification of the '512 Patent provides absolutely no guidance as to the meaning of this claim. No reasonable measurement of the distance between

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the first pin and the coupling assembly would exceed the height of the hole in the liner H_L, providing no help as to what configuration was contemplated by the inventor that would meet Claim 19. It is my opinion that the Applicant of the '512 Patent did not reasonably convey to a POSA that the inventor had possession of, or actually invented, the subject matter of claim 19.

XII. GROUND 3: CLAIMS 1, 9, 11-15 AND 17-18 ARE OBVIOUS IN VIEW OF THE INTEX POOL

A. Claim 1

1. Element [1.0]

74. The Intex Pool discloses "an above ground pool." For example, the Intex Pool was listed within the "above ground pool" section of the Intex website. EX1019. The Owner's Manuals also refers to it as an "above ground pool." EX1021-1022. The pools are assembled for use above the ground, as shown below which is a screen shot of a YouTube video that shows the Intex Pool fully assembled.

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EX1025 at 0:05.

2. Elements [1.1] and [1.2]

75. The Intex Pool discloses "a first frame member including a first opening" and "a second frame member including a second opening."

76. The Owner's Manuals state the Intex Pool has several "horizontal beams," labeled below. As an example, "HORIZONTAL BEAM (B)" and "HORIZONTAL BEAM (C)" are Ref. Nos. 2 and 3 in the Owner's Manual.

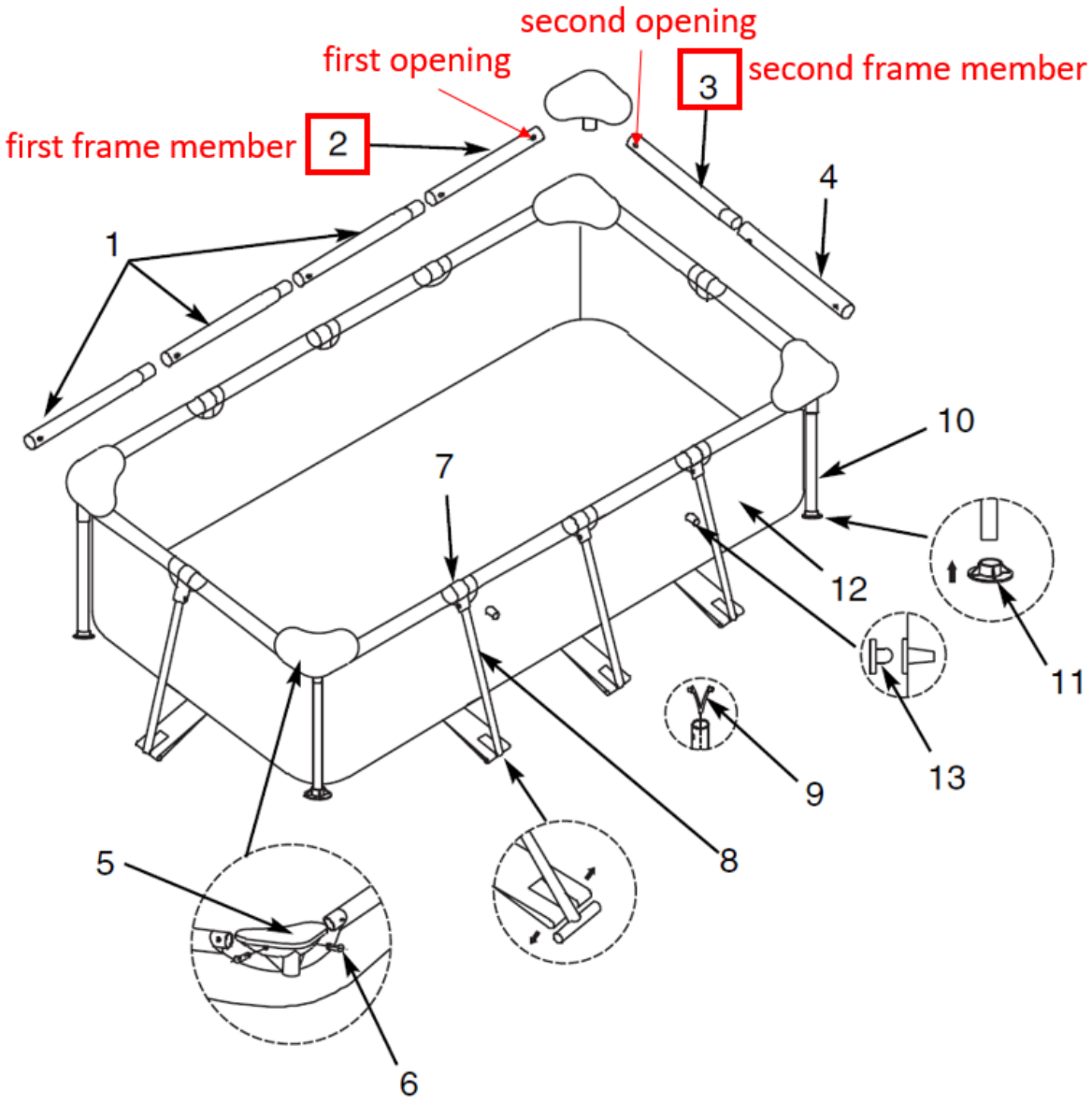
BESTWAY EX. 1002; Pg 57
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REF. NO.	DESCRIPTION	86-5/8" x 59" x 23-5/8" (220cm x 150cm x 60cm)	102-1/2" x 63" x 25-5/8" (260cm x 160cm x 65cm)	118" x 78-3/4" x 29-1/2" (300cm x 200cm x 75cm)	177-1/4" x 86-5/8" x 29-1/2" (450cm x 220cm x 75cm)
		SPARE PART NO.			
1	HORIZONTAL BEAM (A)	10947	10948	10949	10951
2	HORIZONTAL BEAM (B)	10952	10953	10954	10956
3	HORIZONTAL BEAM (C)	10947	10958	10959	10961
4	HORIZONTAL BEAM (D)	10952	10963	10964	10966
5	CORNER JOINT (WITH CORNER SEAT)	10573	10573	10573	10573
6	PIN (WITH 2 EXTRA)	10574	10574	10574	10574
7	"T" JOINT	10967	10967	10967	10967
8	"INVERTED T" SIDES SUPPORT LEG (SPRING PIN INCLUDED)	10968	10969	10970	10970
9	SPRING PIN	10313	10313	10313	10313
10	VERTICAL CORNER LEG	10628	10557	10563	10563
11	VERTICAL LEG END CAP	10576	10576	10576	10576
12	POOL LINER (DRAIN VALVE CAP INCLUDED)	10942	10943	10944	11218
13	STRAINER HOLE PLUG (WITH 1 EXTRA)	10127	10127	10127	10127
14	DRAIN CONNECTOR	10201	10201	10201	10201
15	DRAIN VALVE CAP	10649	10649	10649	10649

EX1022, p.6; EX1021, p.6

77. These two beams constitute a first frame member and a second frame member. They are members for the frame pool that connect to the "T" Joint as explained below.

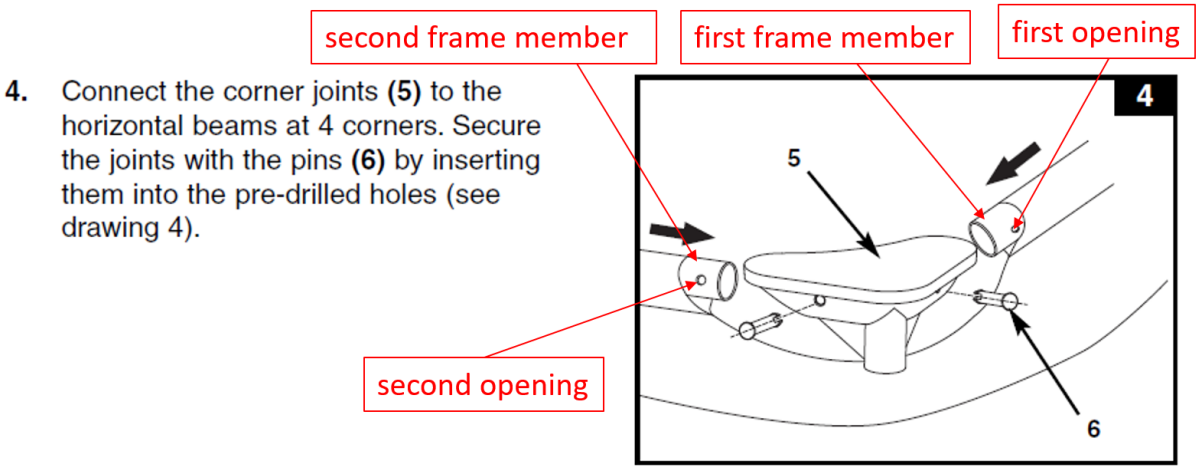
BESTWAY EX. 1002; Pg 58
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EX1022, p.5

78. And, as shown below, these beams have "pre-drilled holes" for pins (6) to connect the beams to a corner joint (5).

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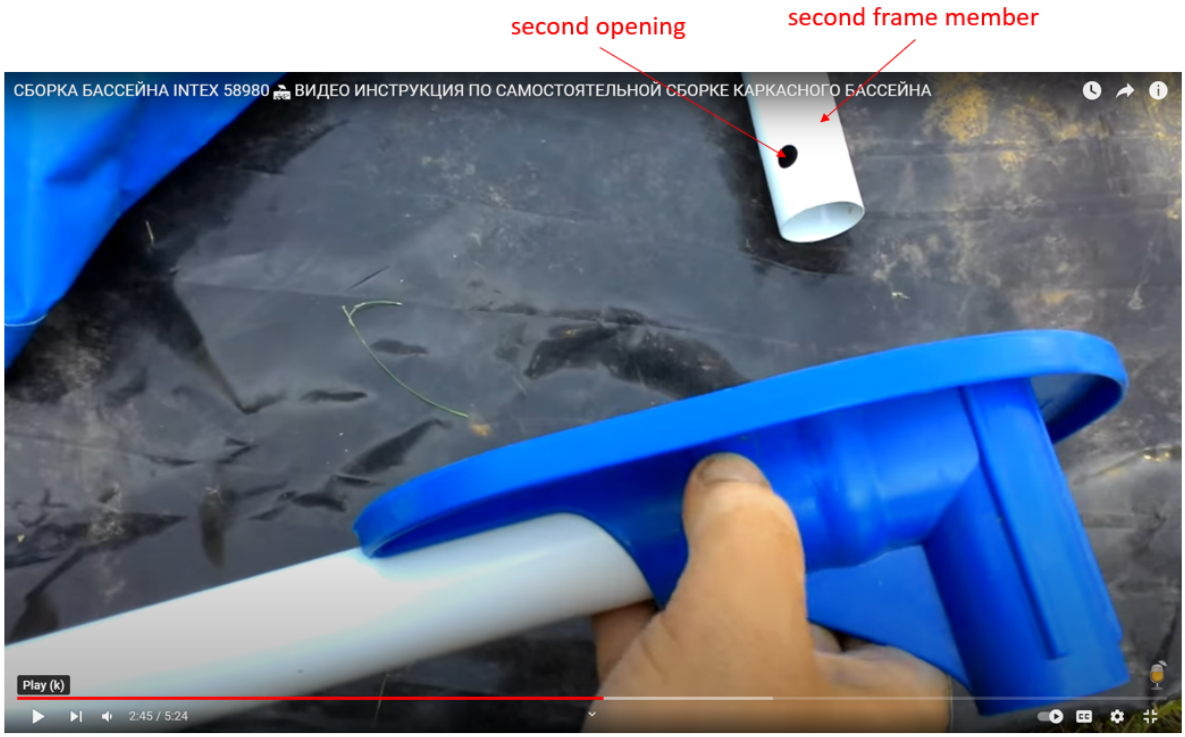
EX1022, p.9 (annotated)

79. Below are several screen shots of one of the YouTube videos that shows assembly of the Intex Pool, where the first and second frame members (and corresponding first and second openings) are labeled.



EX1023 at 2:09

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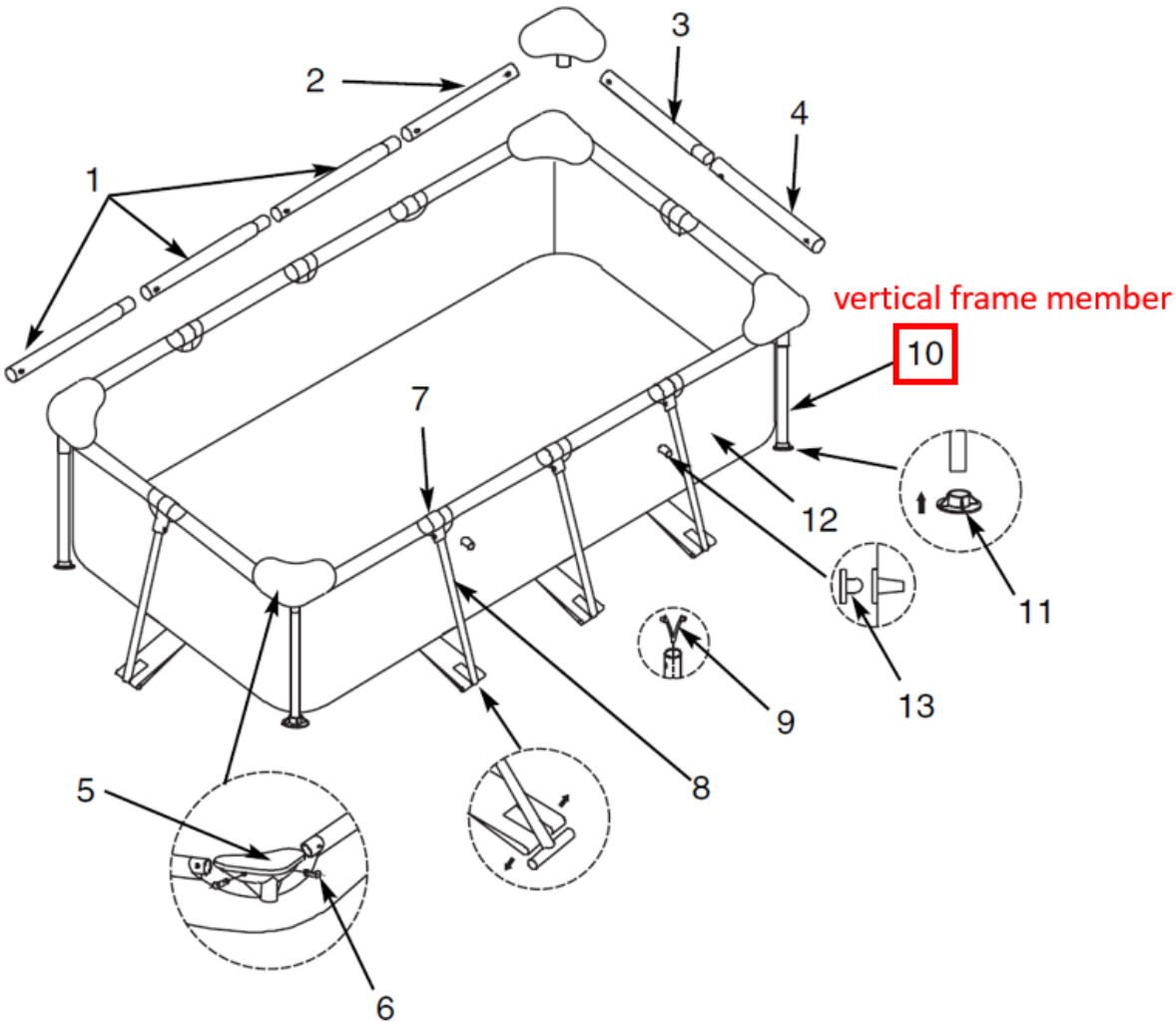
EX1023 at 2:45

3. Element [1.3]

80. The Intex Pool discloses "a vertical frame member."

81. For example, the Intex Pool has several vertical supports, labeled as four "VERTICAL CORNER LEGS" at each corner of the Intex Pool. These "VERTICAL CORNER LEGS" are listed as Ref. No. 10 in the Owner's Manual, and read on the claimed vertical frame member.

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EX1022, p.5

REF. NO.	DESCRIPTION	86-5/8" x 59" x 23-5/8" (220cm x 150cm x 60cm)	102-1/2" x 63" x 25-5/8" (260cm x 160cm x 65cm)	118" x 78-3/4" x 29-1/2" (300cm x 200cm x 75cm)	177-1/4" x 86-5/8" x 29-1/2" (450cm x 220cm x 75cm)
		SPARE PART NO.			
10	VERTICAL CORNER LEG	10628	10557	10563	10563

EX1022, p.6

82. Below is a screenshot of one of the YouTube videos that shows the assembled Intex Pool, where the vertical frame member is labeled:

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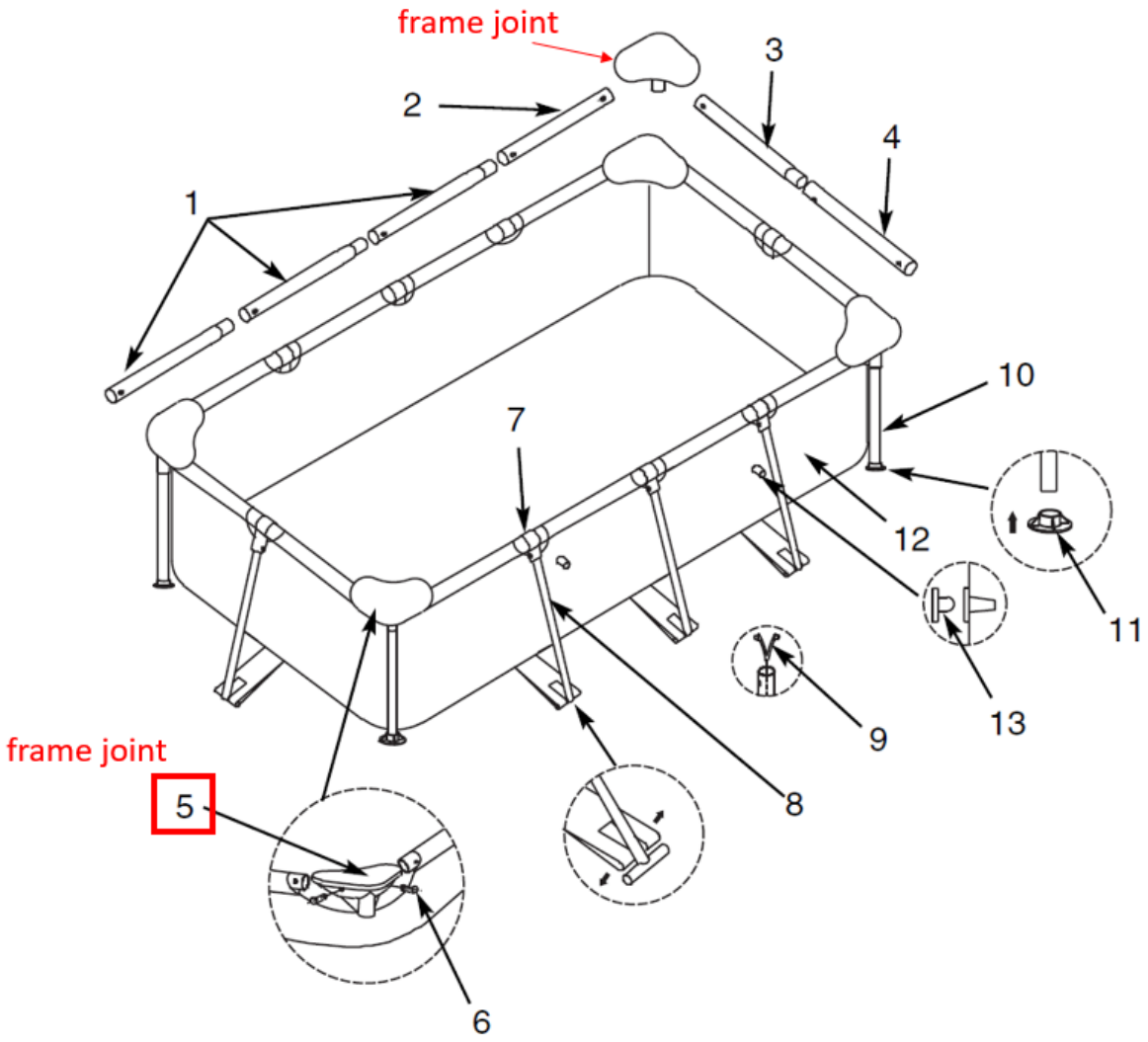
EX1025 at 0:05

4. Element [1.4]

83. The Intex Pool discloses "a frame joint."

84. For example, at each corner, the Intex Pool has a "CORNER JOINT" which is Ref. No. 5 in the Owner's Manual. As shown below, each one of these corner joints (5) connect the first and second horizontal frame members to a vertical frame member.

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EX1022, p.5

REF. NO.	DESCRIPTION	86-5/8" x 59" x 23-5/8" (220cm x 150cm x 60cm)	102-1/2" x 63" x 25-5/8" (260cm x 160cm x 65cm)	118" x 78-3/4" x 29-1/2" (300cm x 200cm x 75cm)	177-1/4" x 86-5/8" x 29-1/2" (450cm x 220cm x 75cm)
		SPARE PART NO.			
1	HORIZONTAL BEAM (A)	10947	10948	10949	10951
2	HORIZONTAL BEAM (B)	10952	10953	10954	10956
3	HORIZONTAL BEAM (C)	10947	10958	10959	10961
4	HORIZONTAL BEAM (D)	10952	10963	10964	10966
5	CORNER JOINT (WITH CORNER SEAT)	10573	10573	10573	10573

EX1022, p.6

85. Below is a screenshot of one of the YouTube videos that shows the assembled Intex Pool, where I have labeled the four frame joints. They are at the

BESTWAY EX. 1002; Pg 64
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corner of the pool, and each connect the first and second frame members to one of the vertical frame members.



EX1023 at 0:02

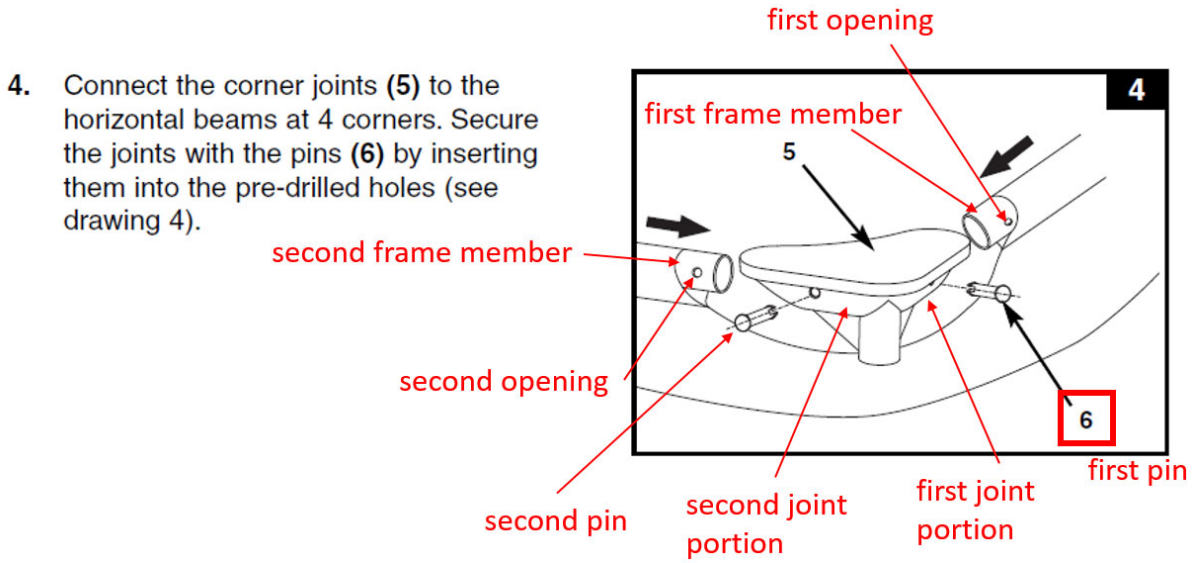
5. Elements [1.5] and [1.6]

86. The Intex Pool discloses a frame joint comprising "a first joint portion including a first pin configured to engage the first opening thereby coupling the first joint portion to the first frame member" and "a second joint portion including a second pin configured to engage the second opening thereby coupling the second joint portion to the second frame member."

87. For example, each "corner joint" (5) of the Intex Pool defines receptacles that receive the two "horizontal beams" (2 and 3). Once the horizontal beams (2 and 3) are inserted into the receptacles of the corner joint (5), pins (6) are

BESTWAY EX. 1002; Pg 65
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inserted into the predrilled holes to connect the horizontal beams to the receptacles of the corner joint (5). Evidencing this is the Owner's Manual annotated below:



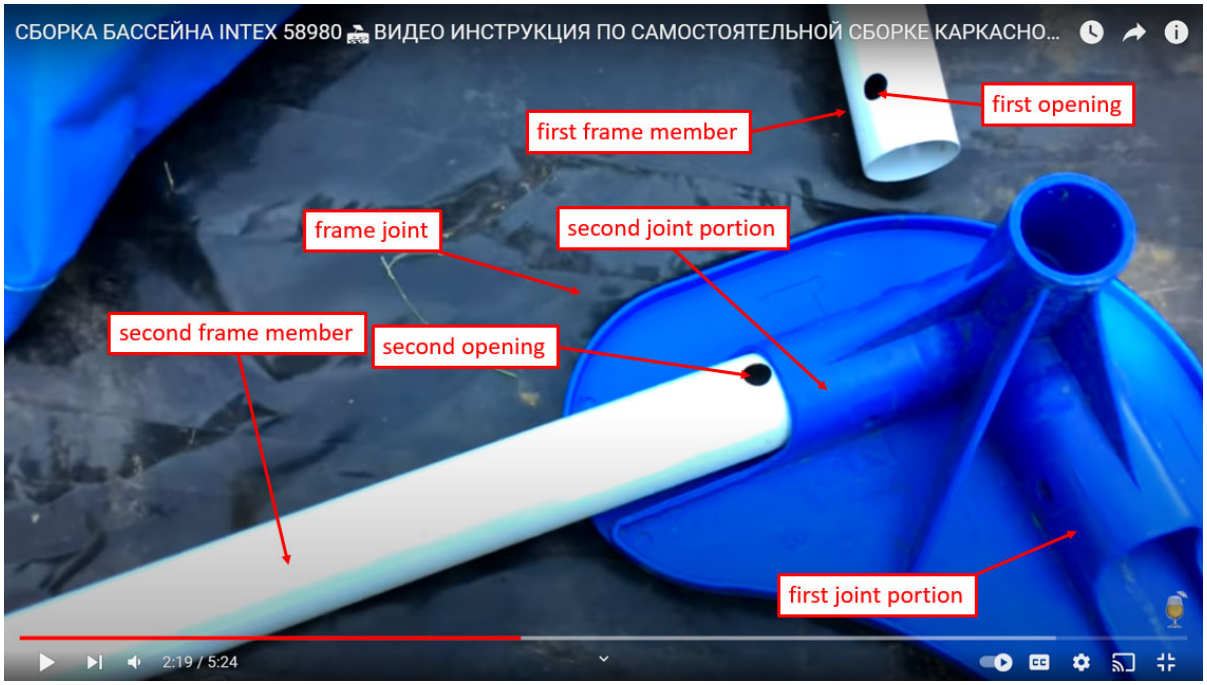
EX1022, p.9

REF. NO.	DESCRIPTION	86-5/8" x 59" x 23-5/8" (220cm x 150cm x 60cm)	102-1/2" x 63" x 25-5/8" (260cm x 160cm x 65cm)	118" x 78-3/4" x 29-1/2" (300cm x 200cm x 75cm)	177-1/4" x 86-5/8" x 29-1/2" (450cm x 220cm x 75cm)
		SPARE PART NO.			
6	PIN (WITH 2 EXTRA)	10574	10574	10574	10574

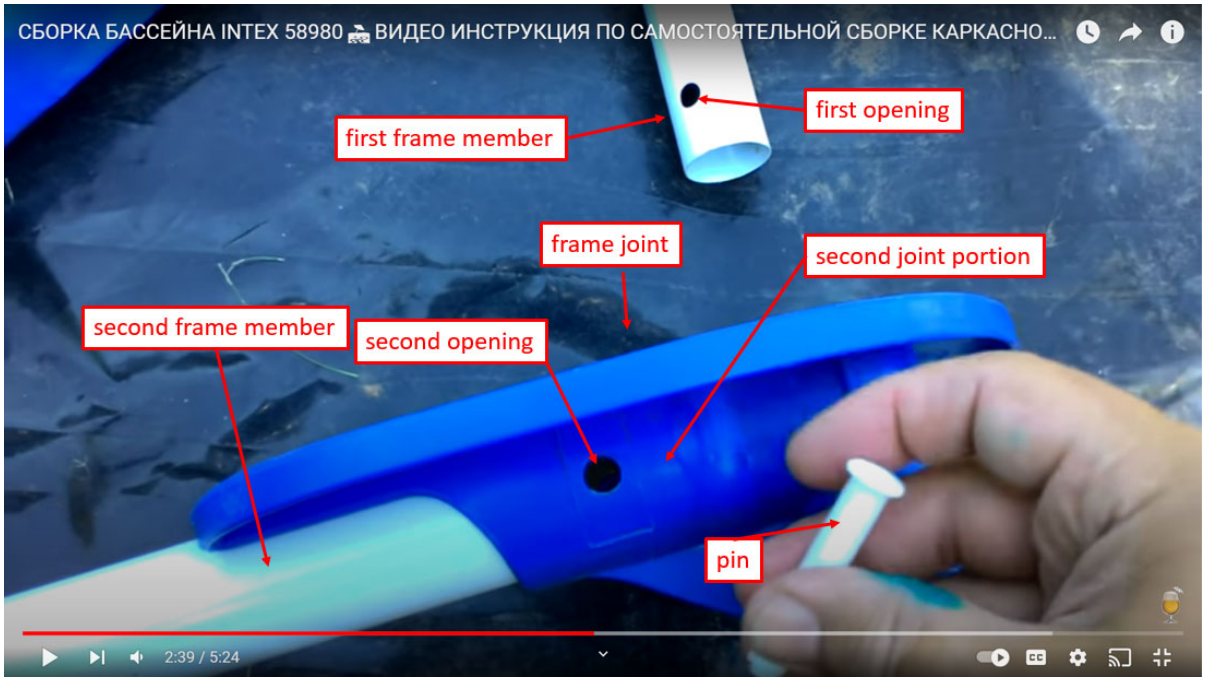
EX1022, p.6

88. The YouTube video below (EX1023), which shows the assembly of the Intex Pool, shows connecting one of the horizontal beams to the corner joint, and the process is repeated for the other horizontal beam. As shown below, each corner joint (*i.e.*, "frame joint") has two sleeves (*i.e.*, "joint portions") that receive the horizontal beams (*i.e.*, "frame members").

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EX1023 at 2:19 (annotated)



EX1023 at 2:39 (annotated)

BESTWAY EX. 1002; Pg 67
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EX1023 at 2:46 (annotated)

6. Element [1.7]

89. The Intex Pool discloses a frame joint comprising "a vertical joint portion connected to the first and second joint portions and configured to couple to the vertical frame member."

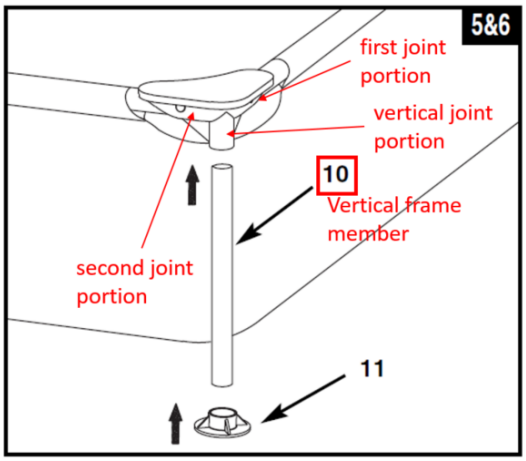
90. For example, each "corner joint" (5) of the Intex Pool has a receptacle that receives the "vertical corner leg" (10). The Owner's Manual calls for the vertical corner leg (10) to be connected to the corner joint (5) as follows:

BESTWAY EX. 1002; Pg 68
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5. Connect the vertical corner legs **(10)** to the corner top rail joints **(5)** (see drawings 5 & 6).

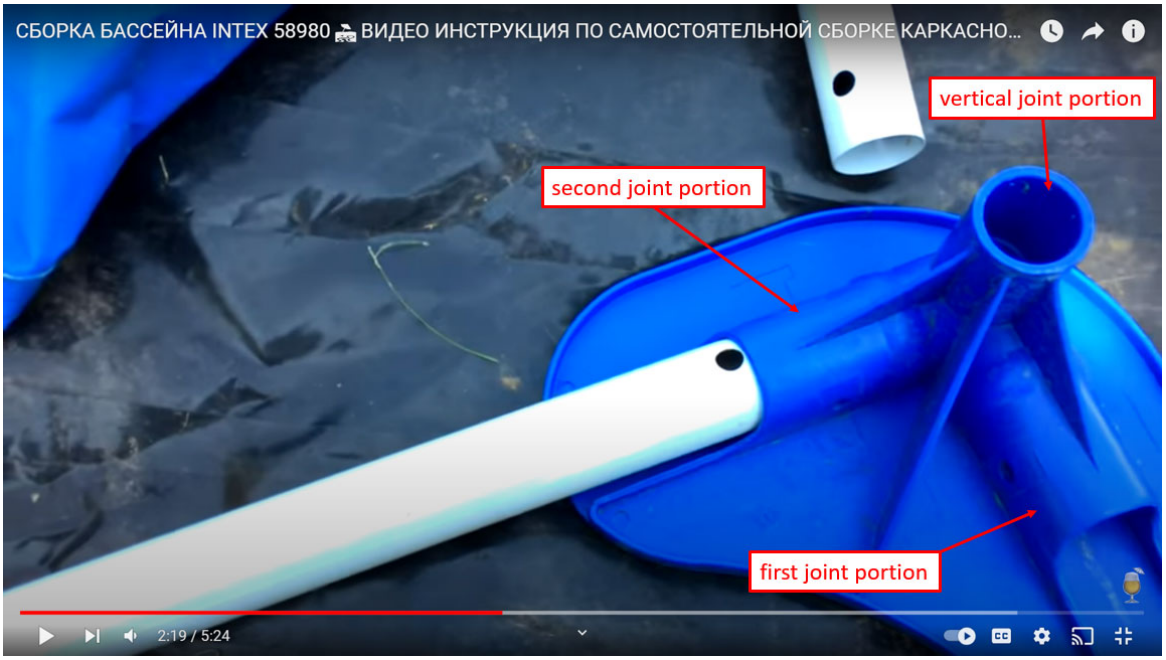
6. Attached the leg's end cap **(11)** to the bottom of the vertical legs **(10)** (see drawings 5 & 6).

.



EX1022, p.9

91. Moreover, the YouTube video (EX1023) showing assembly of the Intex Pool shows the vertical corner leg (10) connected to the first and second joint members of the corner joint (5) as follows, and a vertical frame member fits into the vertical joint portion:



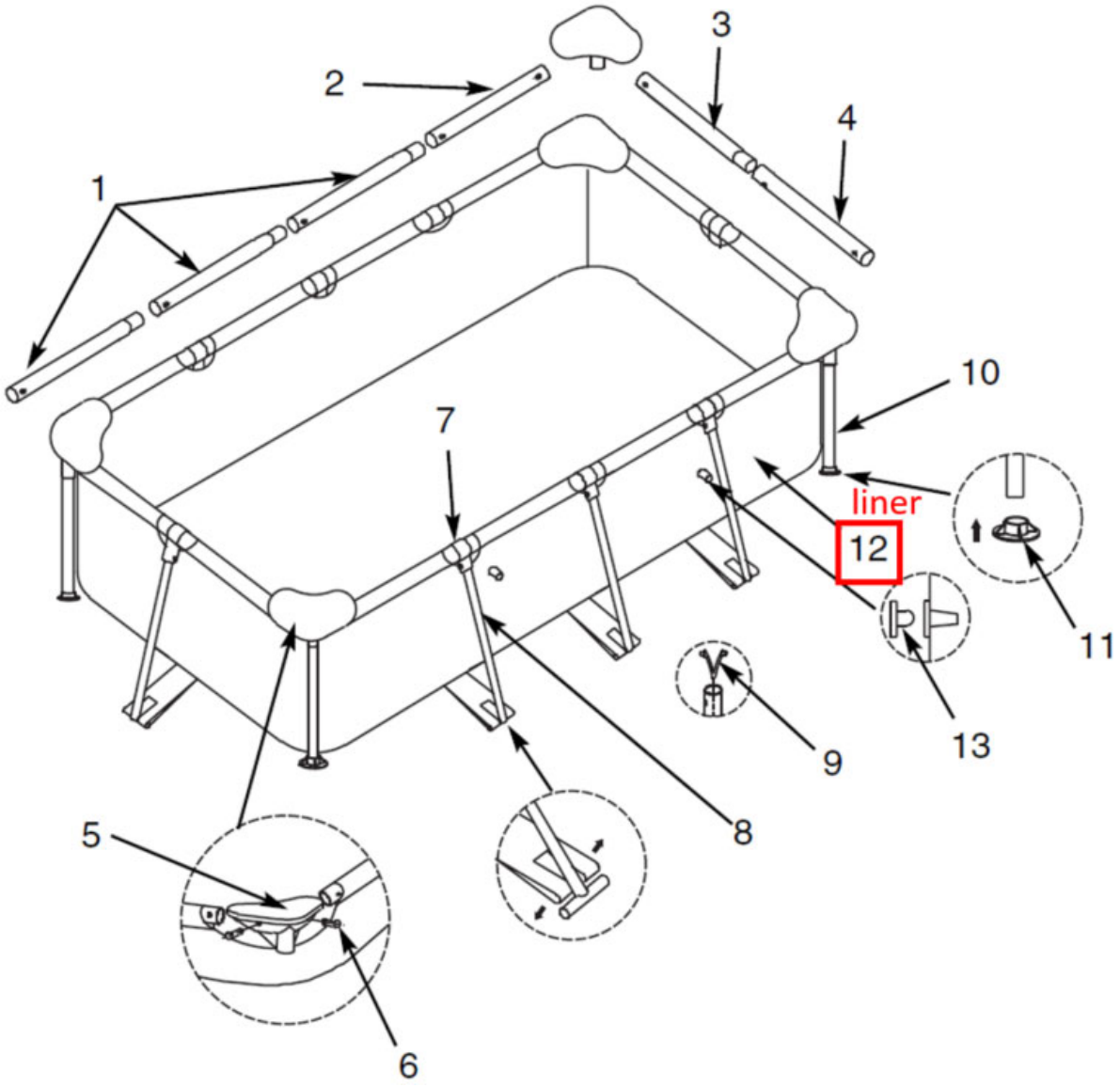
EX1023 at 2:19

BESTWAY EX. 1002; Pg 69
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7. Element [1.8]

92. The Intex Pool discloses "a liner positioned around the first and second frame members."

93. For example, the Owner's Manual lists Ref. No. 12 as a "POOL LINER."



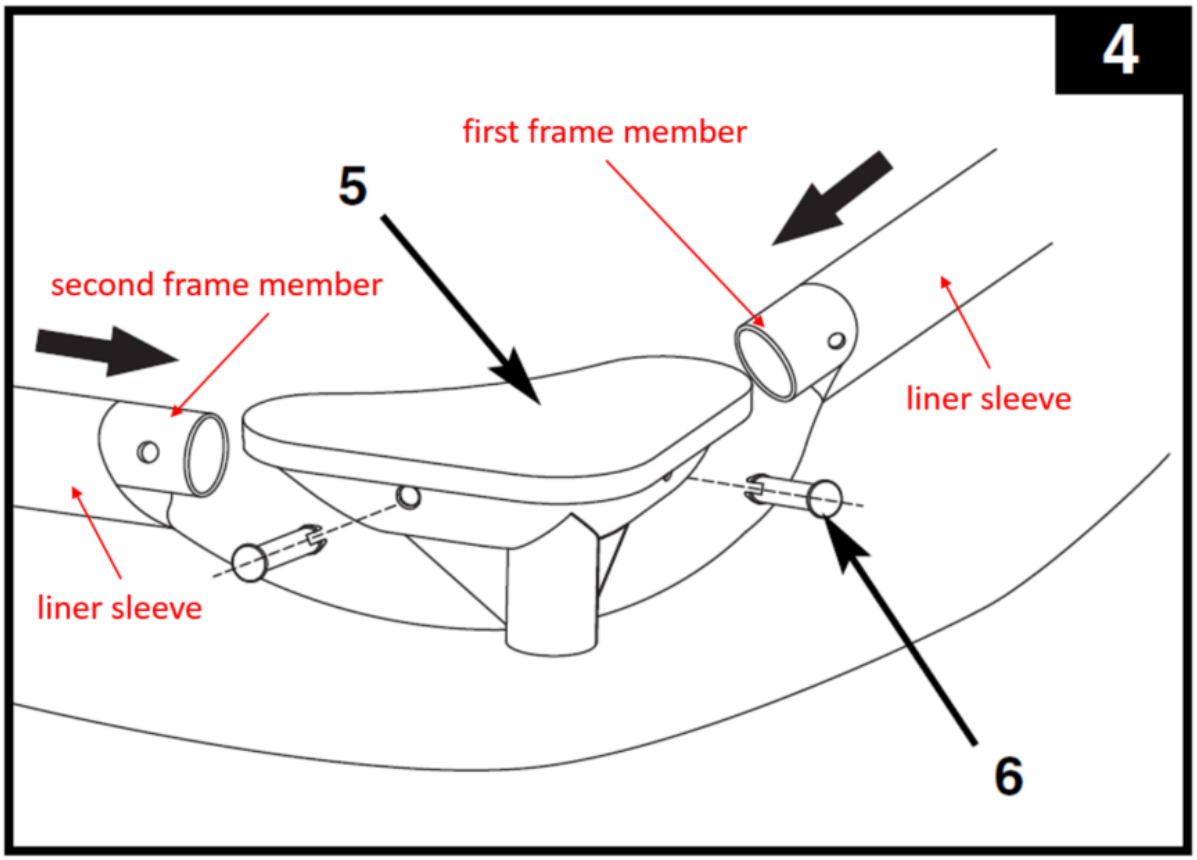
EX1022, p.5 (annotated)

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REF. NO.	DESCRIPTION	86-5/8" x 59" x 23-5/8" (220cm x 150cm x 60cm)	102-1/2" x 63" x 25-5/8" (260cm x 160cm x 65cm)	118" x 78-3/4" x 29-1/2" (300cm x 200cm x 75cm)	177-1/4" x 86-5/8" x 29-1/2" (450cm x 220cm x 75cm)
		SPARE PART NO.			
12	POOL LINER (DRAIN VALVE CAP INCLUDED)	10942	10943	10944	11218

EX1022, p.6 (annotated)

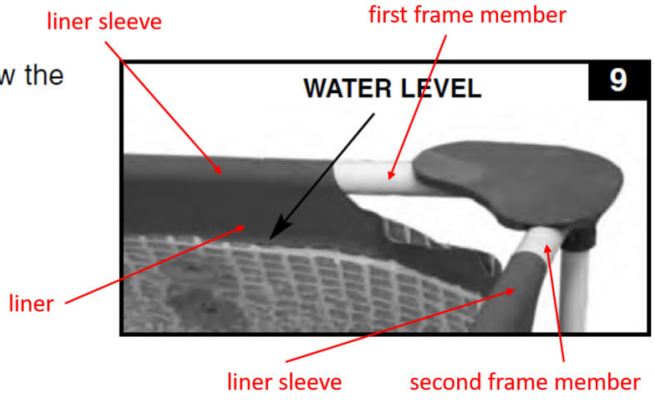
94. The Owner's Manual also calls for the horizontal beams (Ref. Nos. 1-4) to be inserted into sleeves of the liner. EX1022, p.9. When this is done, the sleeves of the liner surround the first and second horizontal beams (and therefore the liner is positioned around the first and second frame members) as follows:



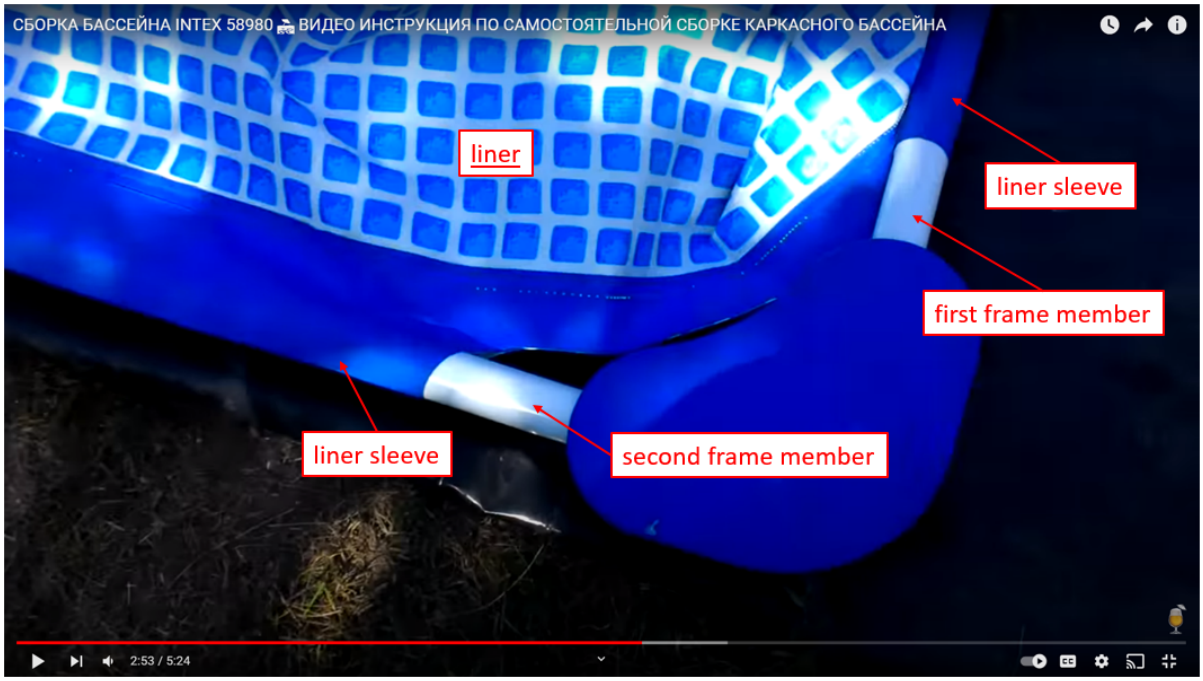
EX1022, p.9 (annotated)

BESTWAY EX. 1002; Pg 71
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11. Fill the pool with water up to just below the sleeve line. (see drawings 9).



EX1022, p.10 (annotated)



EX1023 at 2:53

8. Element [1.9]

95. The Intex Pool discloses "wherein a width of the vertical joint portion accounts for at least 50% of a width between the first and second pins."

BESTWAY EX. 1002; Pg 72
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96. As explained above in Ground 1, this Element renders claim 1 indefinite because the Width Limitation fails to inform, with reasonable certainty, those skilled in the art about the scope of the invention. However, even if the Width Limitation *could* be defined, below I have considered various measurements of the Intex Pool's "corner joint" and connected components, and am certain that Element [1.9] is disclosed by the Intex Pool under various possible interpretations.

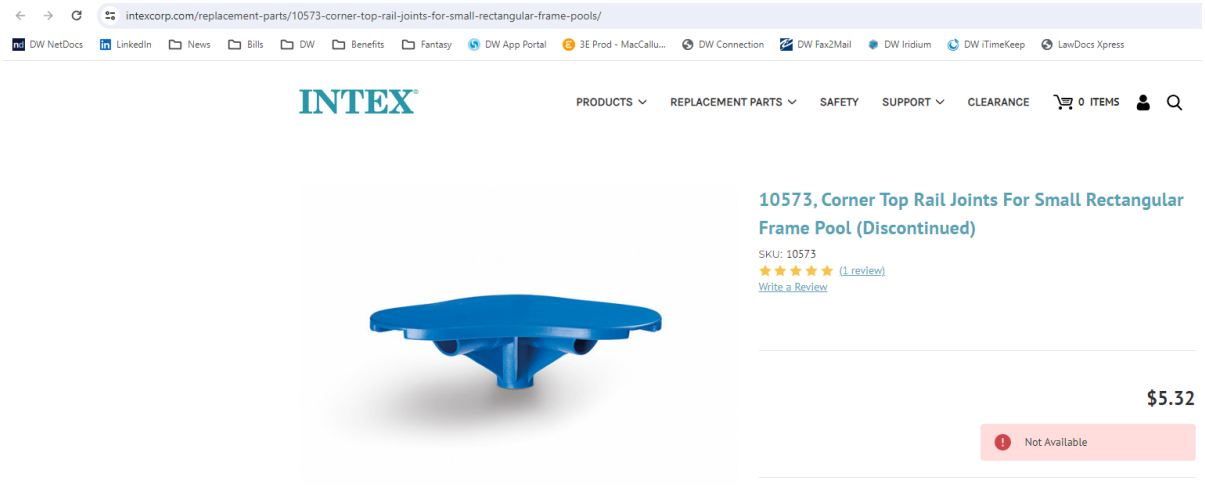
97. I have received and inspected two different physical samples of Intex Pool's "corner joint," and measured various dimensions of them. In particular, one physical corner joint I inspected is from a physical Intex Pool. This Intex Pool was ordered through Intex's virtual storefront on Amazon and provided to me. EX1032. This physical Intex Pool came with an Owner's Manual that identifies the part number of the corner joint as part number 10573. This matches the "corner joint" in Ref. No. 5, and part number 10573 in the Owner's Manual of the Intex Pool that I explained in Element [1.4] above:

REF. NO.	DESCRIPTION	86-5/8" x 59" x 23-5/8" (220cm x 150cm x 60cm)	102-1/2" x 63" x 25-5/8" (260cm x 160cm x 65cm)	118" x 78-3/4" x 29-1/2" (300cm x 200cm x 75cm)	177-1/4" x 86-5/8" x 29-1/2" (450cm x 220cm x 75cm)
		SPARE PART NO.			
1	HORIZONTAL BEAM (A)	10947	10948	10949	10951
2	HORIZONTAL BEAM (B)	10952	10953	10954	10956
3	HORIZONTAL BEAM (C)	10947	10958	10959	10961
4	HORIZONTAL BEAM (D)	10952	10963	10964	10966
5	CORNER JOINT (WITH CORNER SEAT)	10573	10573	10573	10573

EX1022, p.6 (annotated)

BESTWAY EX. 1002; Pg 73
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98. Intex no longer sells part number 10573. It is listed as "discontinued" on Intex's website: https://intexcorp.com/replacement-parts/10573-corner-top-rail-joints-for-small-rectangular-frame-pools/:



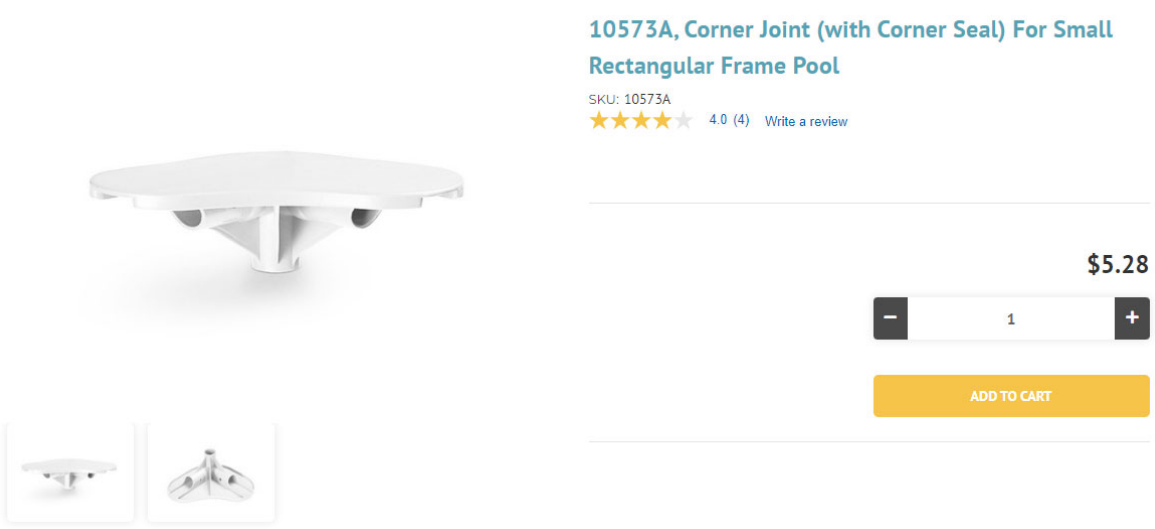
Substitute Part List

SKU	Product Name
10573A	Corner Joint (with Corner Seal) For Small Rectangular Frame Pool

EX1029

However, as shown above, that website lists part number 10573**A** as a "substitute" part. Intex's part number 10573**A** is currently available for sale here: https://intexcorp.com/replacement-parts/corner-joint-with-corner-seal-for-small-rectangular-frame-pool/:

BESTWAY EX. 1002; Pg 74
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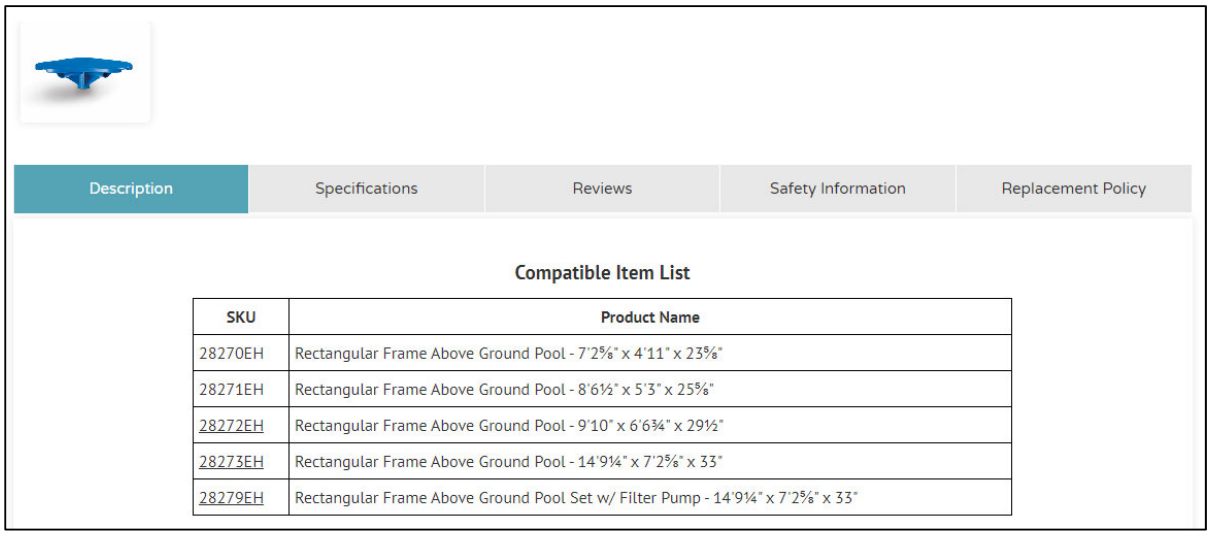


EX1030

99. I received a physical sample of this corner joint part number 10573A as well. I inspected and measured this physical part. This corner joint 10573A appears to be structurally identical to the corner joint 10573 other than a change in color from blue (10573) to white (10573A). Other than a color change from blue to white, there is no difference between original part number 10573 and substitute part number 10573A. I have both a white corner joint and a blue corner joint in my possession, and I can visually confirm they are structurally identical other than color. An Intex representative confirmed the same, indicating that the only reason for the change in part numbers from 10573 to 10573A was due to a change in color of the part, from blue to white. EX1027. Exhibit 1027 is a true and accurate copy of a transcript between myself and an Intex representative via live chat on their website. The Intex representative also confirmed that part number 10573A is the same as part number

BESTWAY EX. 1002; Pg 75
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10573. *Id*. Moreover, the Intex websites list both part numbers 10573 and 10573A as compatible with the same frame pools, including SKU 28271EH, which is the Intex Pool as indicated by the dimensions:

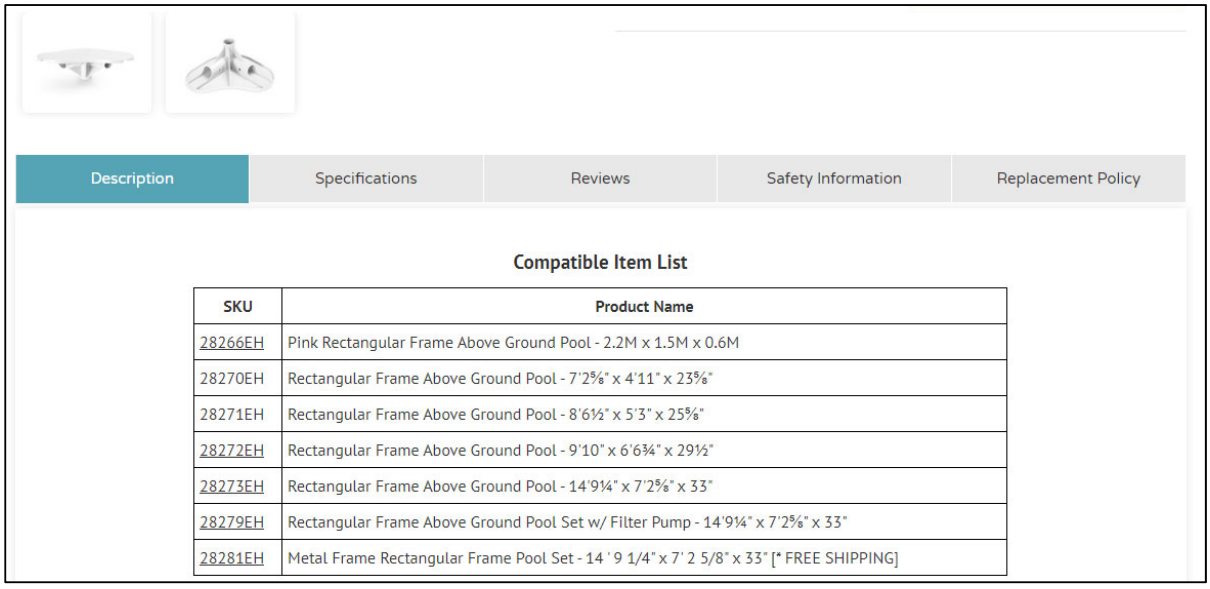


Description | Specifications | Reviews | Safety Information | Replacement Policy

Compatible Item List

SKU	Product Name
28270EH	Rectangular Frame Above Ground Pool - 7'2⅝" x 4'11" x 23⅝"
28271EH	Rectangular Frame Above Ground Pool - 8'6½" x 5'3" x 25⅝"
28272EH	Rectangular Frame Above Ground Pool - 9'10" x 6'6¾" x 29½"
28273EH	Rectangular Frame Above Ground Pool - 14'9¼" x 7'2⅝" x 33"
28279EH	Rectangular Frame Above Ground Pool Set w/ Filter Pump - 14'9¼" x 7'2⅝" x 33"

EX1029



Description | Specifications | Reviews | Safety Information | Replacement Policy

Compatible Item List

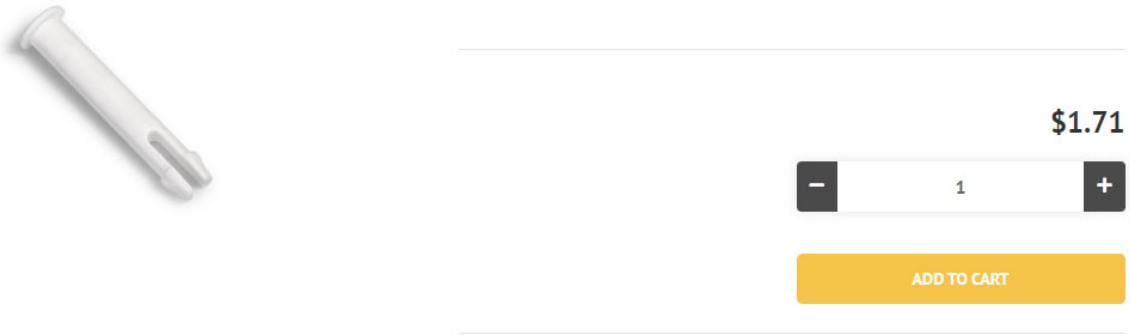
SKU	Product Name
28266EH	Pink Rectangular Frame Above Ground Pool - 2.2M x 1.5M x 0.6M
28270EH	Rectangular Frame Above Ground Pool - 7'2⅝" x 4'11" x 23⅝"
28271EH	Rectangular Frame Above Ground Pool - 8'6½" x 5'3" x 25⅝"
28272EH	Rectangular Frame Above Ground Pool - 9'10" x 6'6¾" x 29½"
28273EH	Rectangular Frame Above Ground Pool - 14'9¼" x 7'2⅝" x 33"
28279EH	Rectangular Frame Above Ground Pool Set w/ Filter Pump - 14'9¼" x 7'2⅝" x 33"
28281EH	Metal Frame Rectangular Frame Pool Set - 14 ' 9 1/4" x 7' 2 5/8" x 33" [* FREE SHIPPING]

EX1030

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This of course means that the pins, when inserted through the corner joint 10573A would be in the same location as if they were inserted through the corner joint 10573. In other words, all of my measurements herein would apply to both corner joint 10573 and corner joint 10573A since they are the same part other than color.

100. I have also received physical samples of the pins (part number 10574) described in Elements [1.5]-[1.6] above. These pins came with the physical sample of the Intex Pool that I have in my possession. I also have some pins that were purchased through Intex's website and are in fact still currently available on Intex's website listed as "Pins For Small Rectangular Frame Pool," which corresponds to the Intex Pool.



EX1031

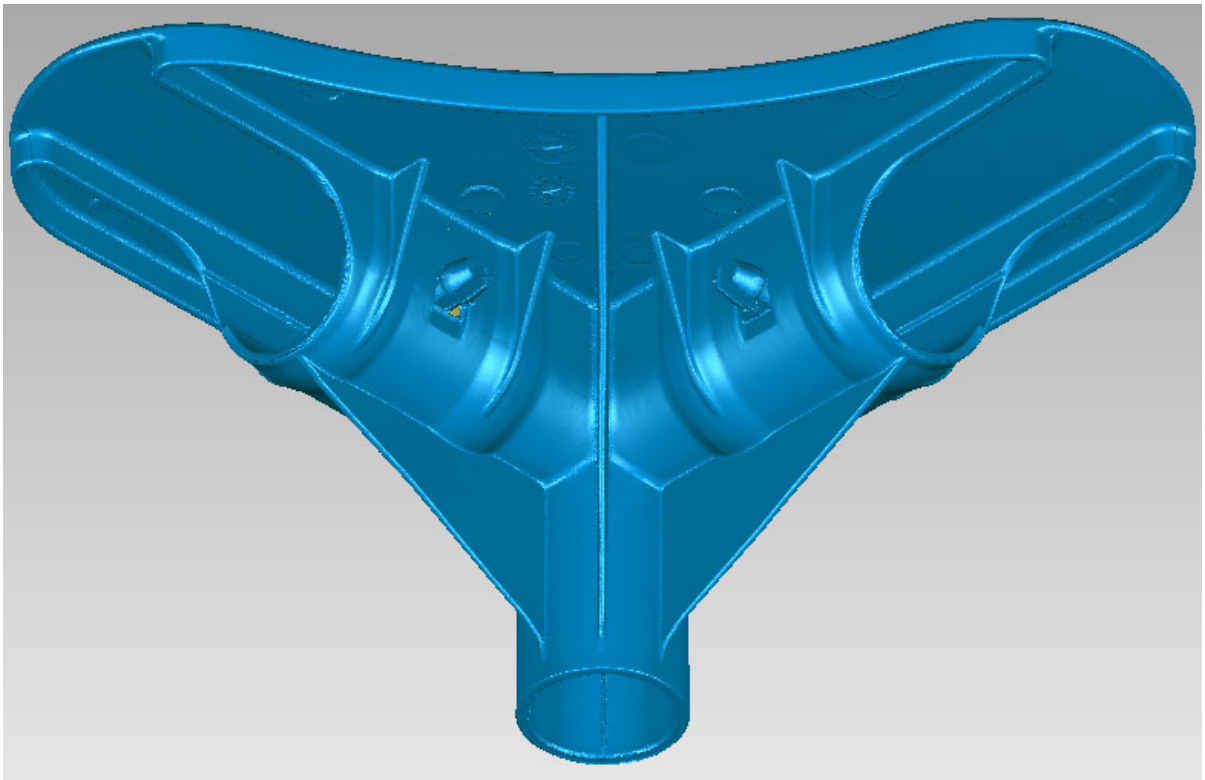
101. I have performed various measurements on these physical parts. To do so, I utilized a HandySCAN BLACK™ Elite, a high-precision three-dimensional

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laser scanner designed for professional use in metrology. This type of 3D scanner is typical in my field, and allows users like myself to determine various dimensions of a scanned physical part. It has an accuracy of up to 0.025mm. After scanning the parts, the geometry of the physical parts was exported to Geomagic Control, which is a comprehensive 3D inspection and metrology software. This software allows me to measure the distance between any two locations on the scanned part. For example, I can click any two locations on the part, and determine the distance between those two parts.

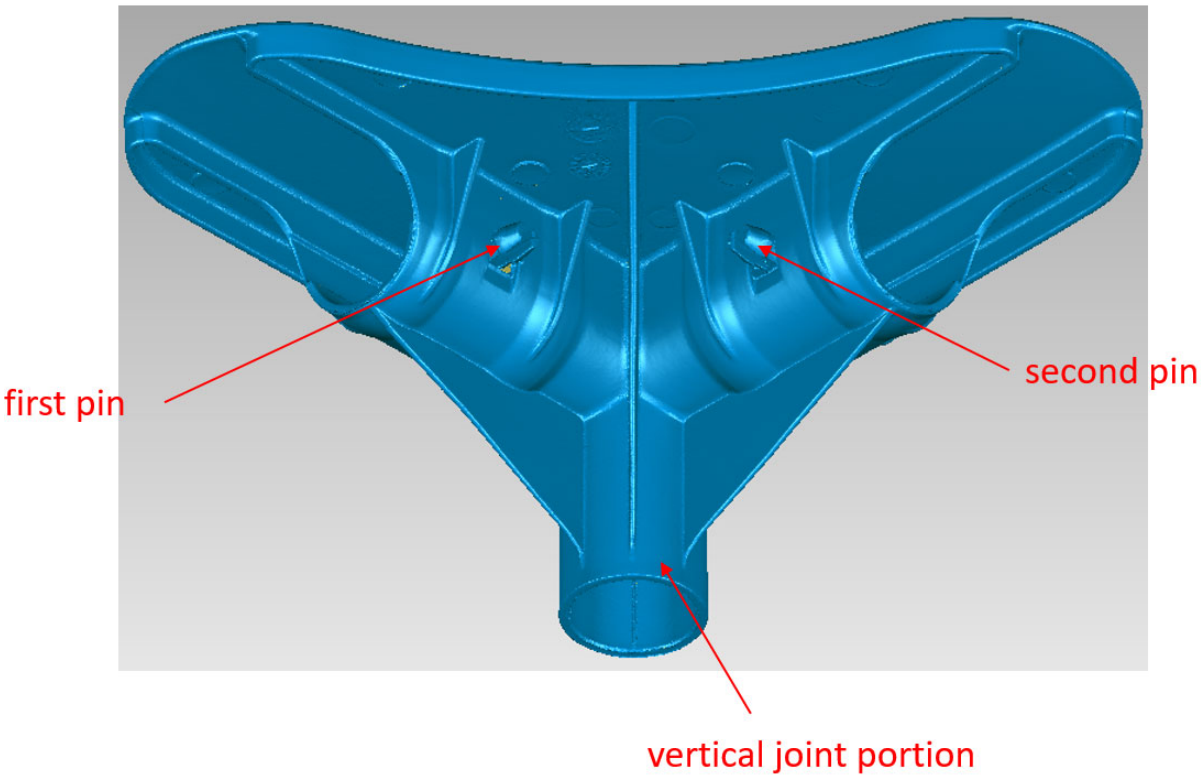
102. An example of the Intex Pool's corner joint (part number 10573) with pins inserted (part number 10574) that I scanned using the HandySCAN BLACK™ Elite is shown below:

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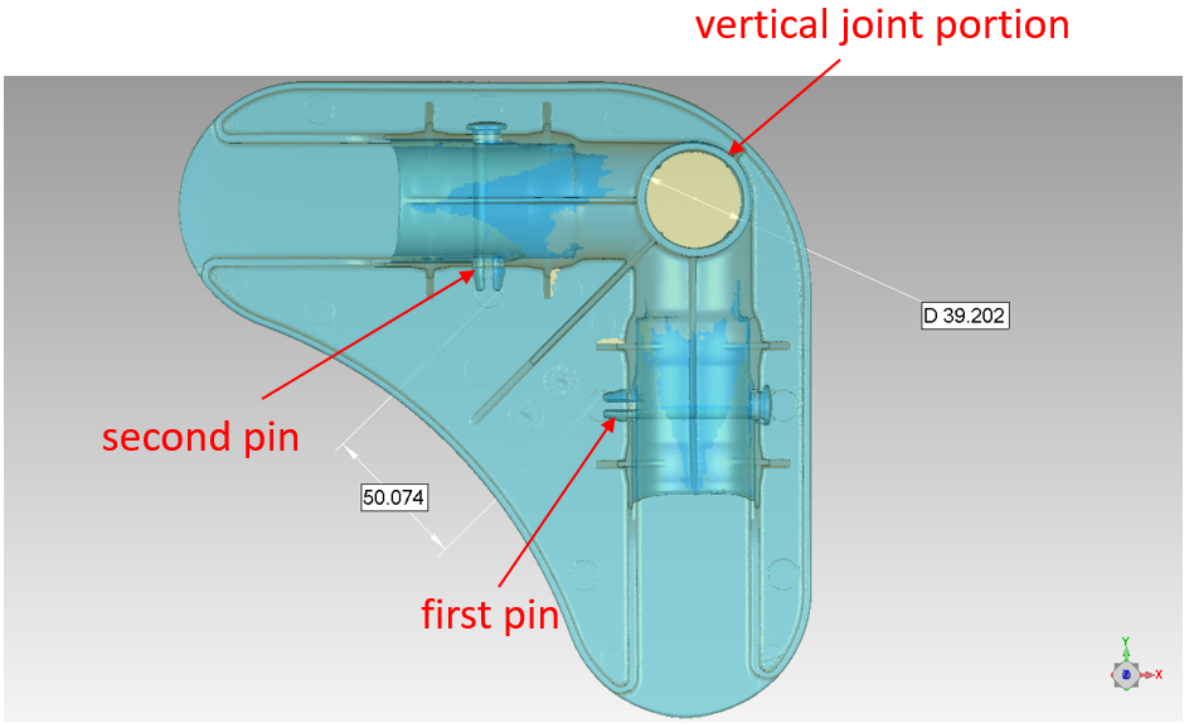
103. Below I have labeled the first pin, the second pin, and the vertical joint portion. *See* Elements [1.5]-[1.7] above.

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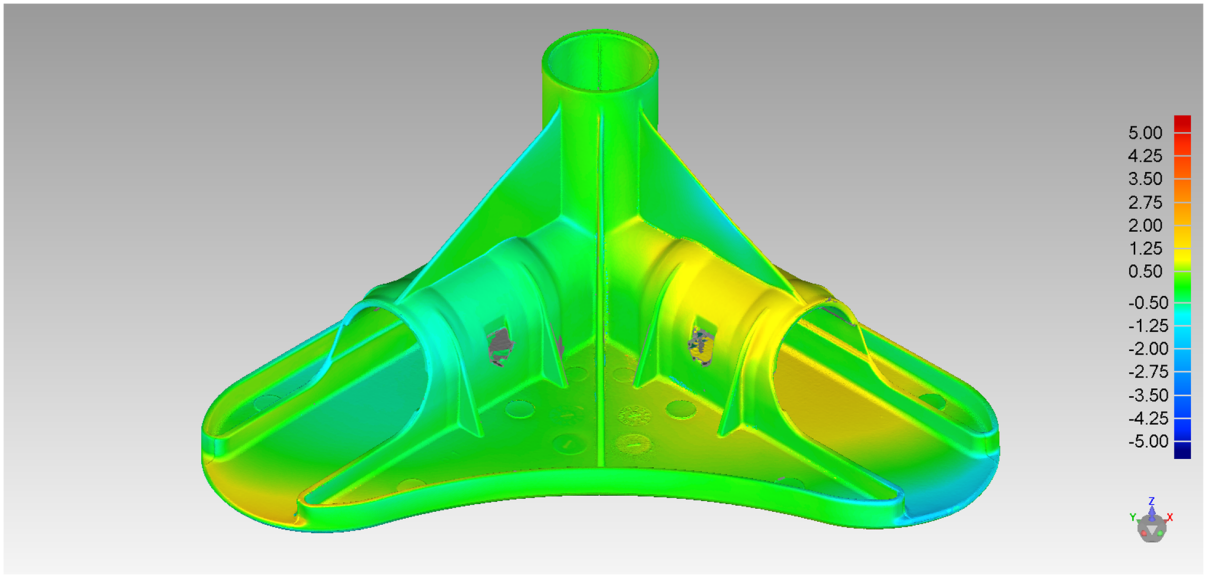
104. Using this software, I measured the width of the vertical joint portion of this corner joint to be 39.2 mm. I also confirmed this measurement with visual inspection and manual measurement. I also measured the distance between the two pins (*i.e.*, the distance between surfaces of the pins that face one another) to be 50.1 mm, which I also confirmed with visual inspection and manual measurement. This measurement was taken from the inner ends of the pins (*i.e*, the ends of the pins that face toward the inside of the pool). Below is an image showing my measurements:

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105. I confirmed that the replacement sample part (part number 10573A) measures essentially the same as the original part (part number 10573), with slight variances on the order of a millimeter, likely due to manufacturing tolerances and not a purposeful change for different structure. For example, below is an overlay of the two connectors (part numbers 10573 and 10573A) measured using the software explained above, with the scale bar in mm showing the differences between the two:

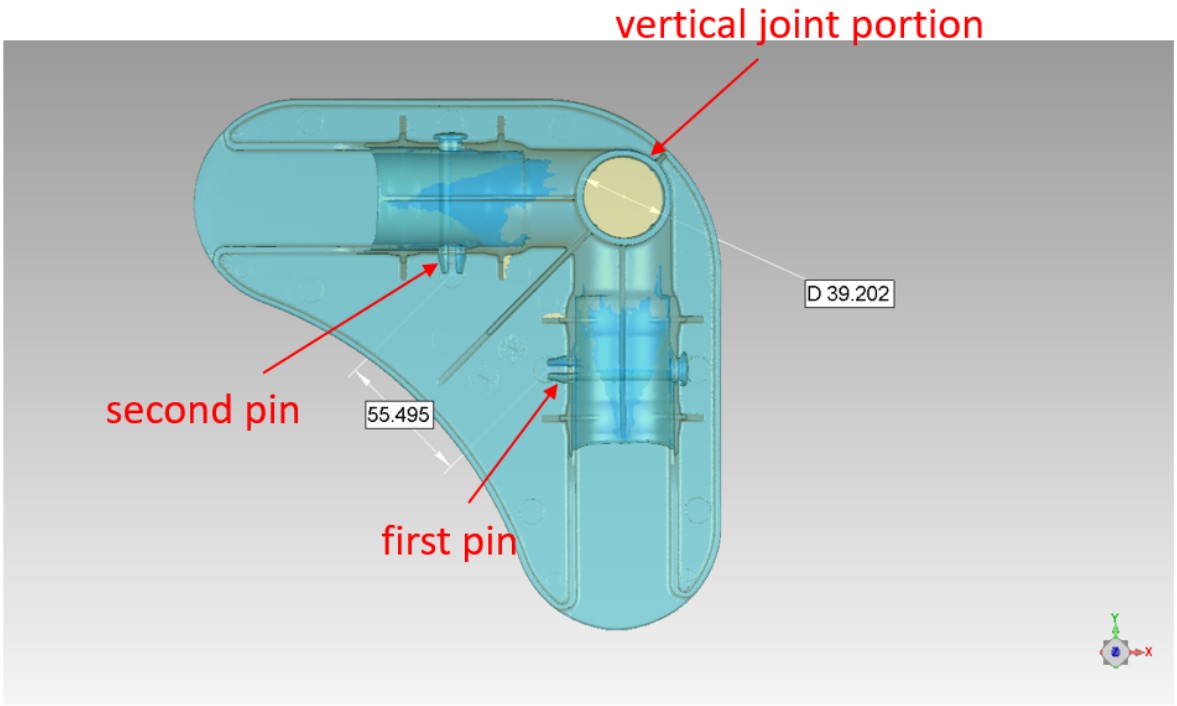
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106. Since the width of the vertical joint portion is 39.2 mm, and the width between the first and second pins is 50.1 mm, the width of the vertical joint portion accounts for at least 50% (namely, 78.2%) of the width between the first and second pins.

107. I also conducted a similar measurement, except this time measuring the distance between the tips of the pins aligned with the center axes of the pins. As shown below, I measured this distance to be 55.5 mm. Again, this measurement was taken from the inner ends of the pins (*i.e*, the ends of the pins that face toward the inside of the pool).

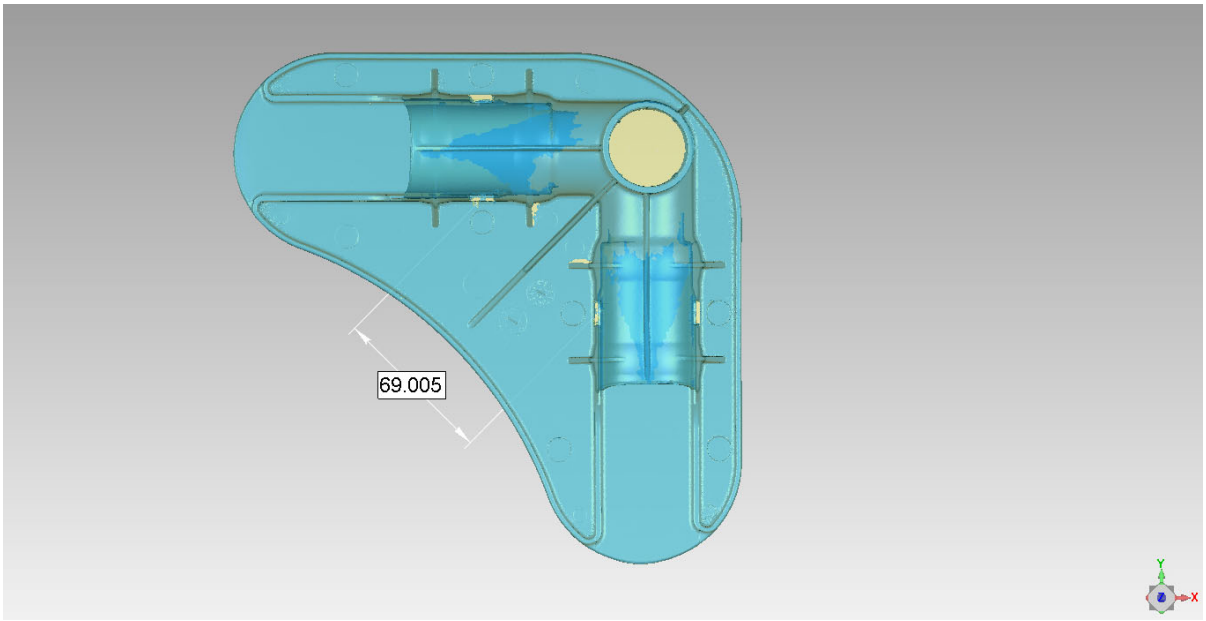
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108. With this measurement, since the width of the vertical joint portion is 39.2 mm, and the width between the first and second pins is 55.5 mm, the width of the vertical joint portion accounts for at least 50% (namely, 70.6%) of the width between the first and second pins.

109. I also conducted a similar measurement, except this time with the pins removed and measuring the distance between the centers of the pinholes that the pins extend through. As shown below, I measured this distance to be 69.0 mm. Again, this measurement was taken from the inner pinholes (*i.e*, the pinholes that are located toward the inside of the pool).

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110. With this measurement, since the width of the vertical joint portion is 39.2 mm, and the width between the pinholes for the first and second pins is 69.0, the width of the vertical joint portion accounts for at least 50% (namely, 56.8%) of the width between the pinholes for the first and second pins.

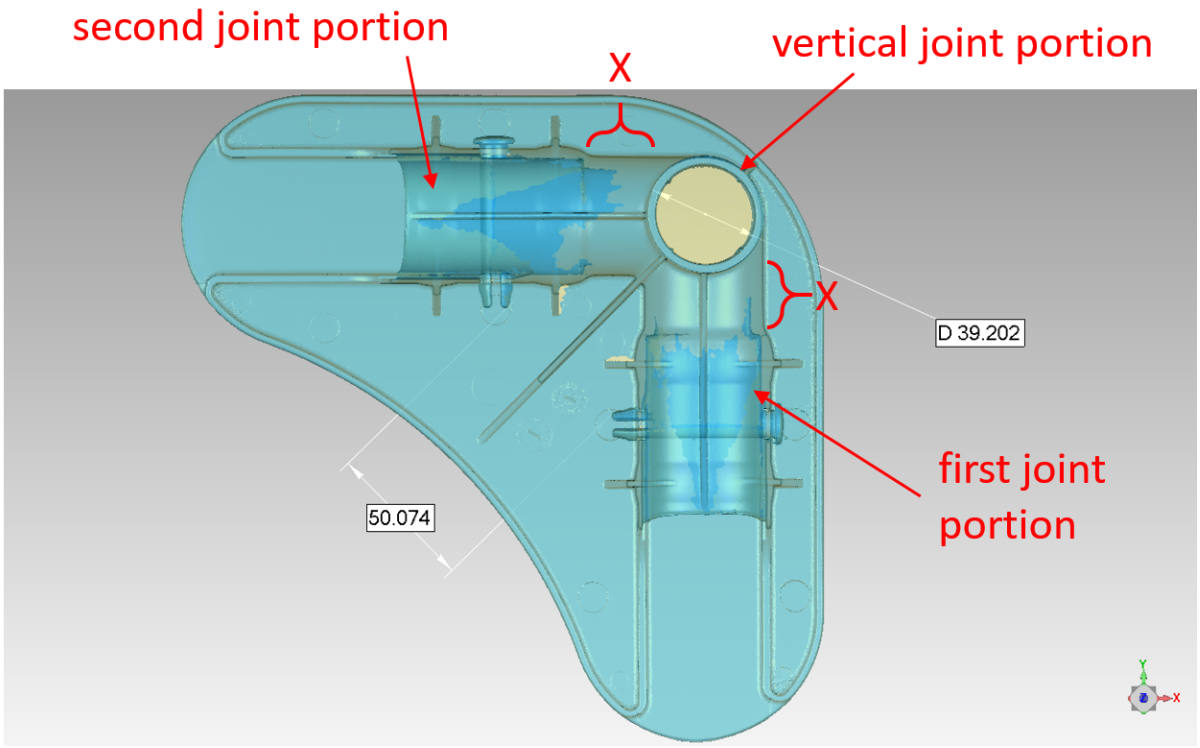
111. To the extent the Intex Pool does not teach or disclose the limitations of Element [1.9], these limitations would have been an obvious matter of design choice to a POSA. The location of the pinholes (and thus the pins) is simply a matter of choice, and has no effect on the assembly or strength of the connection, so long as the same amount of the horizontal frame members is received by the corner joint. So long as the frame joint provides sufficient strength, whether the pinholes are located closer or further away from the vertical frame joint portion has no impact on the structural integrity of the pool. In other words, so long as the frame joint provides

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sufficient strength, the pool would perform the exact same if the pins were moved closer or further away from the vertical joint portion.

112. It would also have been obvious to design the corner joint of the Intex Pool to be smaller in order to reduce the amount of materials needed for the formation of the part, thereby reducing material costs. Reducing costs is a ubiquitous design incentive in almost any field, including consumer goods and frame pools. In order to reduce the size of the Intex Pool's corner piece (part no. 10573/10573A), a POSA would have immediately considered reducing the overall width of the corner piece. Doing so would involve shortening the horizontal joint portions while maintaining the same amount of the horizontal frame members being received by the corner joint (e.g., maintaining the same pinhole locations on the horizontal frame members), which would involve bringing the pin locations closer and closer to the vertical joint portion. Referring to the image below, it would have been obvious to shorten (*i.e.*, reduce the length of) the areas labeled "X" along the first and second joint portions to remove excess material.

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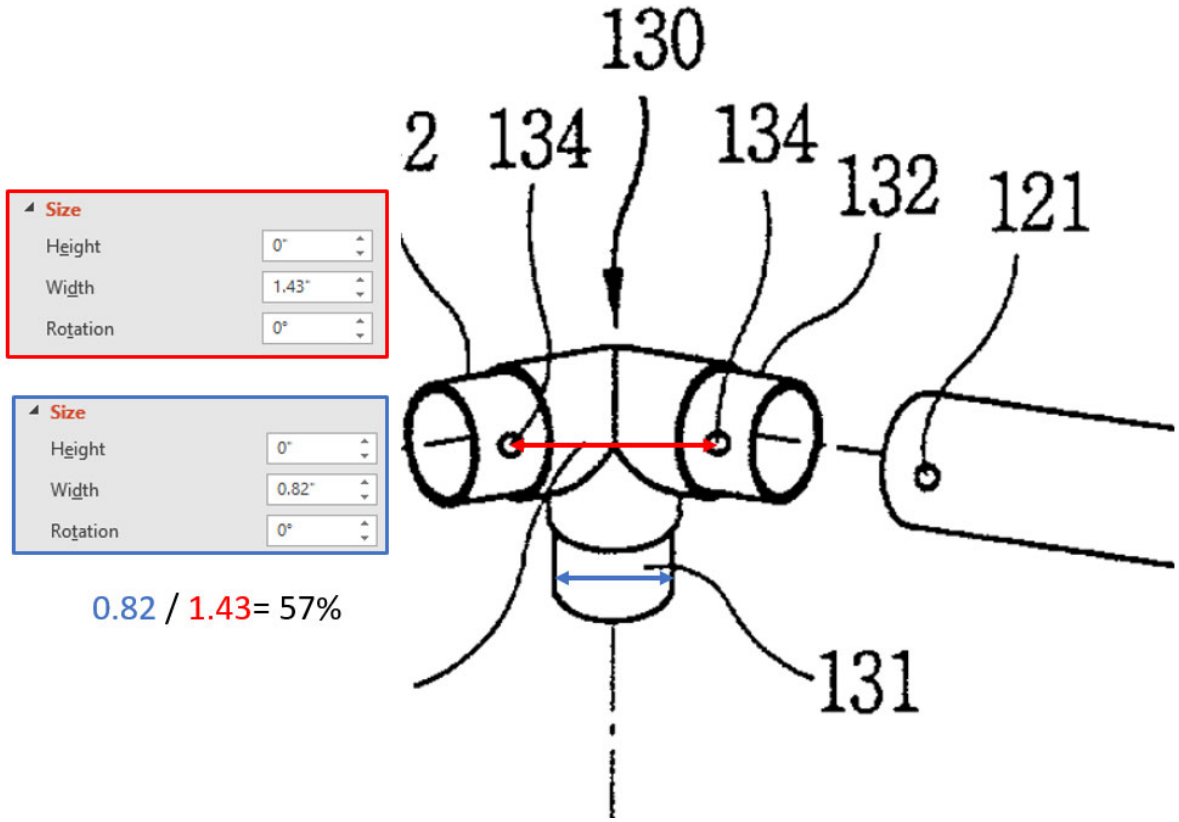
This would result in less material being used for the corner piece without requiring a change in any of the diameters of the horizontal frame members or vertical frame members. Further, when the first and second frame members (poles) are inserted into the first and second joint portions, the same amount of pole insertion into the first and second joint portions would take place (and thus the structural integrity of the frame pool would not be impacted), and the ends of the poles would simply be closer to the vertical joint portion. Through routine experimentation to use as little material as possible without compromising structural integrity of the corner piece, a POSA would naturally arrive at a corner piece that meets the limitations of Element [1.9].

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113. Reducing the overall length of the corner joint (and thus the width between the pins) is a matter of design choice as it has no bearing on the structural integrity of the frame pool and would not perform any differently. So long as the overall diameter of the frame members does not change, and the pinhole location on the frame members does not change, the pool would maintain its structural integrity.

114. Lee illustrates that these dimensional relationships exist in the prior art. For example, as I explained above in Ground 1, Lee specifically discloses a corner piece for a frame pool that has a width of the vertical joint portion being 57% of the width between the pins. This is shown again below. It would have been obvious to a POSA to shorten the size of the first and second joint portions similar to the dimensions illustrated in Lee in order to reduce material and save costs for the reasons set forth above.

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EX1009, Fig. 3 (annotated)

115. The Intex Pool therefore discloses the limitations of Element [1.9], or alternatively, it would have been obvious to modify the Intex Pool's corner joint by shortening the length of the first and second frame joint portions (and thereby shortening the width between the pins) in order to reduce materials and save costs.

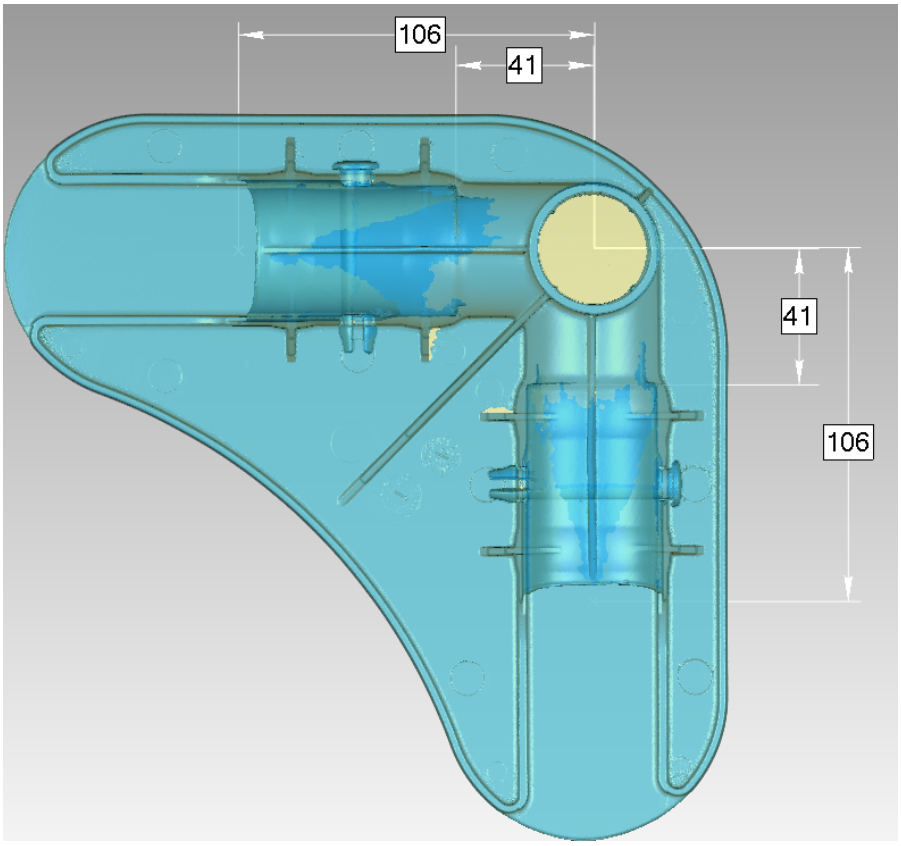
B. Claim 9

116. The Intex Pool discloses "wherein the vertical joint portion is centered between the first and second joint portions to form a T-shaped frame joint."

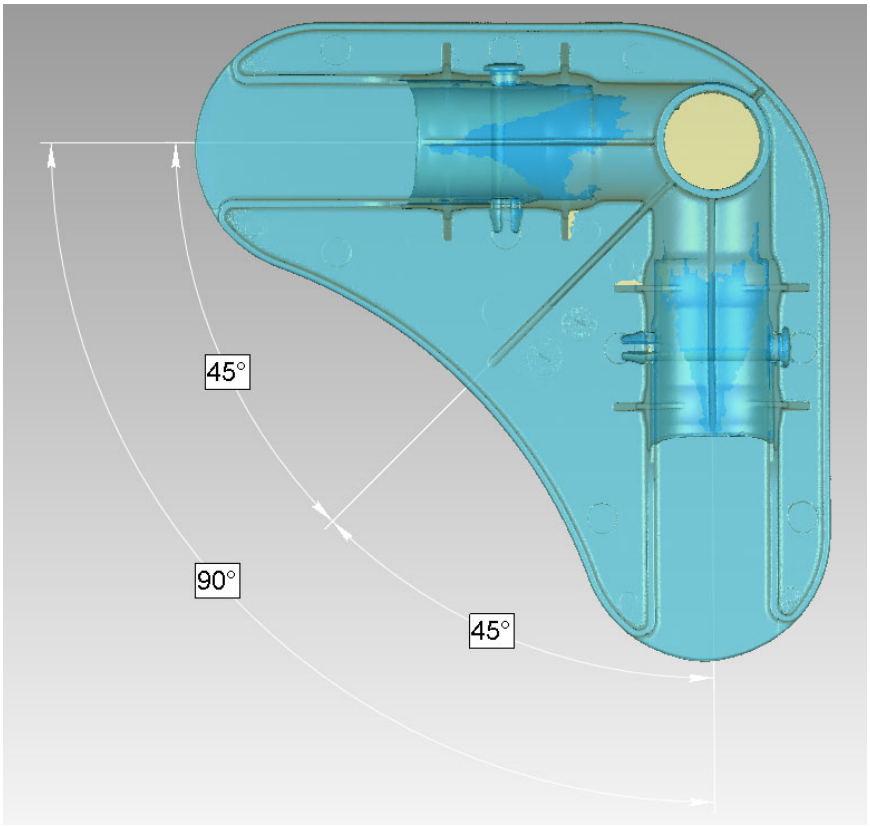
117. I have inspected the Intex Pool's corner joint, and have measured the vertical joint portion to be in the middle between the ends of the first and second

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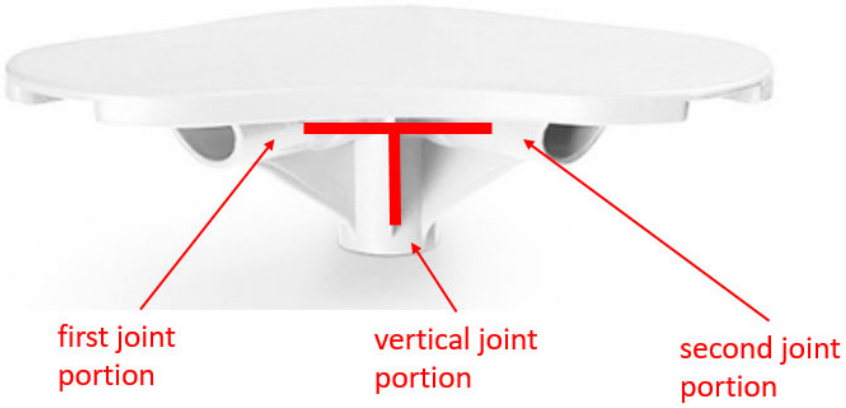
joint portions. In particular, the distance from the center of the vertical joint portion to each of the ends of the first and second joint portions is identical. Moreover, the vertical joint portion is in the precise center of the 90-degree turn between the first and second joint portions. This creates a T-shaped frame joint that connects the first frame member, the second frame member, and the vertical frame member.



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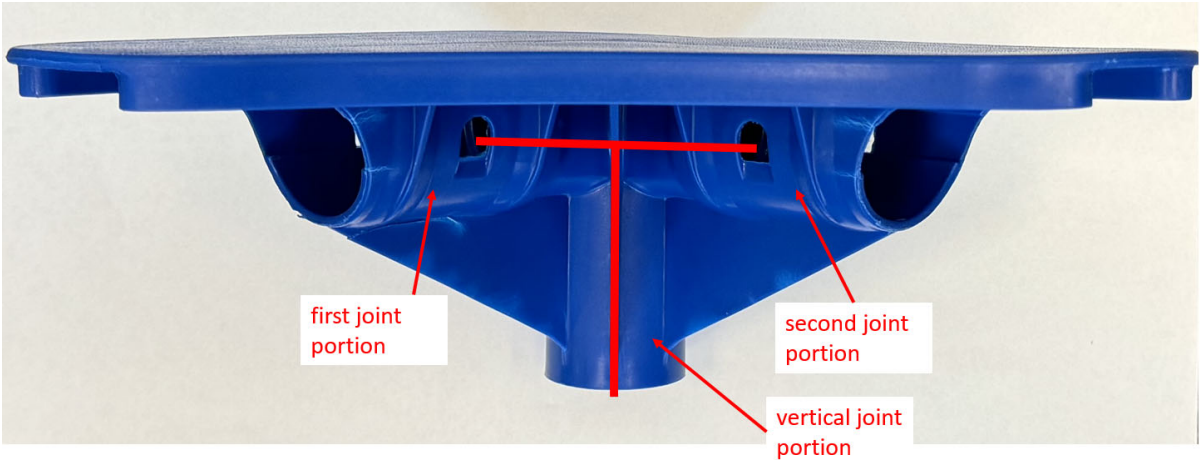


118. My own visual inspection and Intex's website and product picture shows such a relationship as well. I have put a red "T" to indicate the T-shaped nature of the corner joint.



EX1030, annotated

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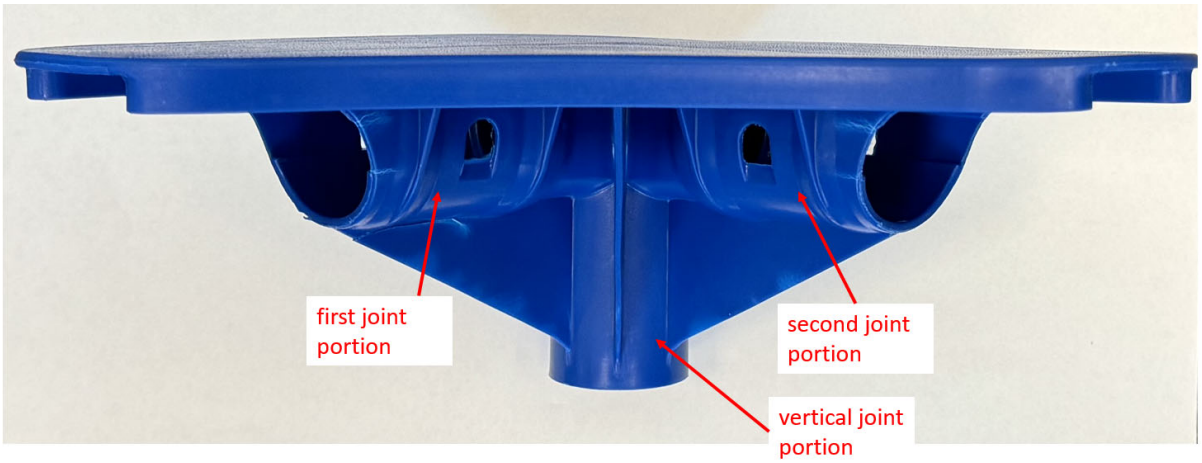


The above is a photograph of the corner joint with my own annotations in red.

C. Claim 11

119. The Intex Pool discloses "wherein the vertical joint portion is integrally formed with the first and second joint portions as a single piece."

120. Based on my personal inspection of the Intex Pool's corner piece (part no. 10573/10573A), it is a single plastic piece. As shown below, all labeled components of this corner piece are integrally formed as a single piece of plastic:



The photograph above is of the Intex Pool's corner joint, with my annotations in red.

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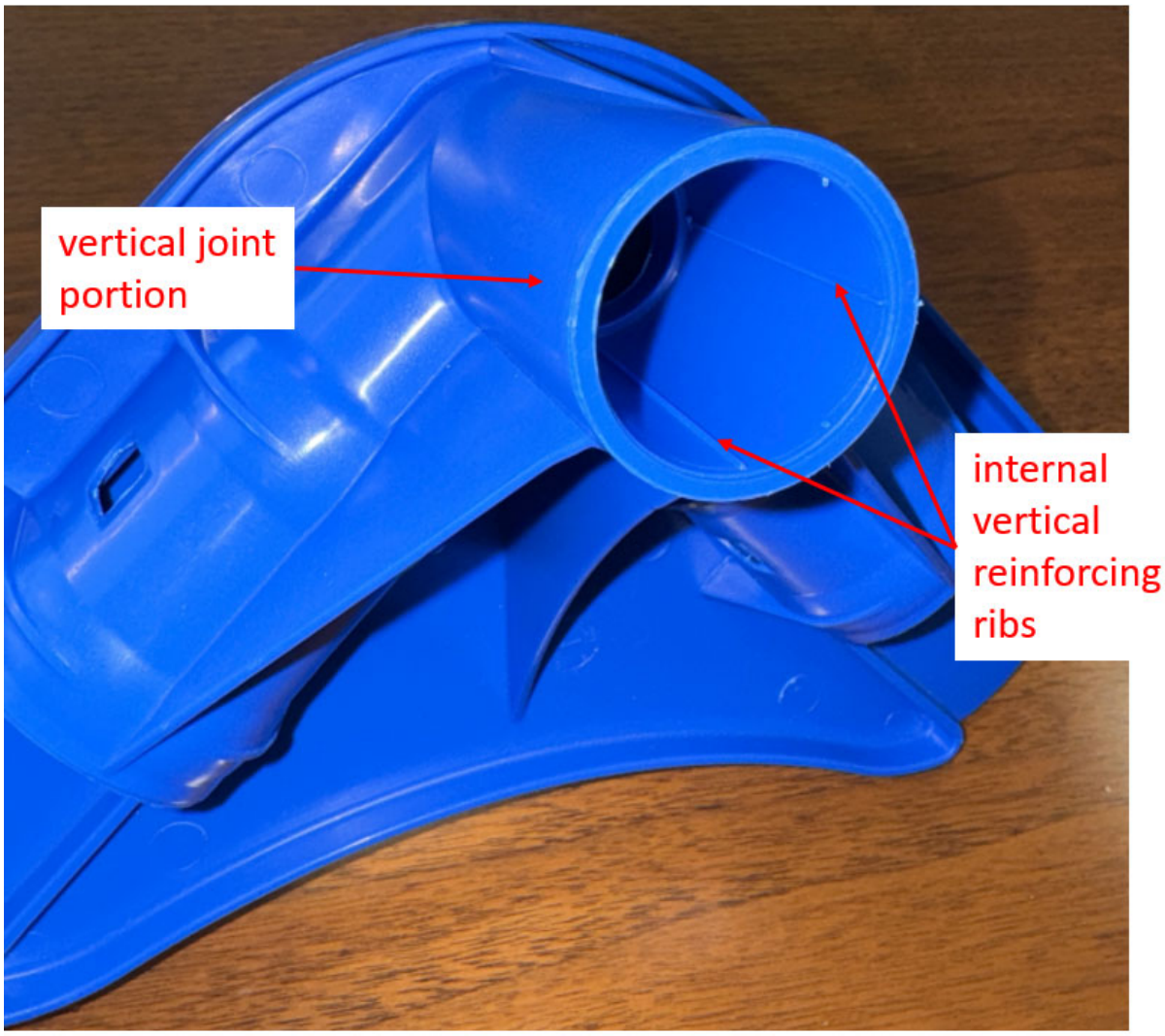
D. Claim 12

121. The Intex Pool discloses "wherein the vertical joint portion includes at least one internal vertical reinforcing rib."

122. Regarding this term, the '512 specification teaches that the vertical joint portion "may include one or more internal vertical reinforcing ribs to help support the base 41 within the T-shaped joint." EX1001, 4:46-48.

123. The "corner joint" (part no. 10573/10573A) of the Intex Pool has reinforcing ribs within the vertical joint portion, as shown in the picture below. These ribs protrude radially inwardly toward the interior of the vertical joint portion to provide direct points of contact with the connecting vertical frame member to help support the vertical frame member and its connection with the corner joint. This allows the corner joint to resist the same force levels with less material. In other words, interior diameter of the vertical joint portion would have to be reduced in order to get the same fit that the ribs provide, except with more material. These ribs are also configured to accommodate tolerance issues between the vertical joint portion and the connecting vertical support member. The ribs also reinforce the connection between the corner joint and the vertical frame member by resisting rotation of the vertical frame member within the corner joint. The ribs also extend vertically along the internal surface of the vertical joint portion and are therefore "internal vertical reinforcing ribs."

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The above is a photograph of the Intex Pool's corner joint, with my annotations in red.

E. Claim 13

124. The Intex Pool discloses "wherein at least one of the first joint portion and the second joint portion includes an internal reinforcing rib."

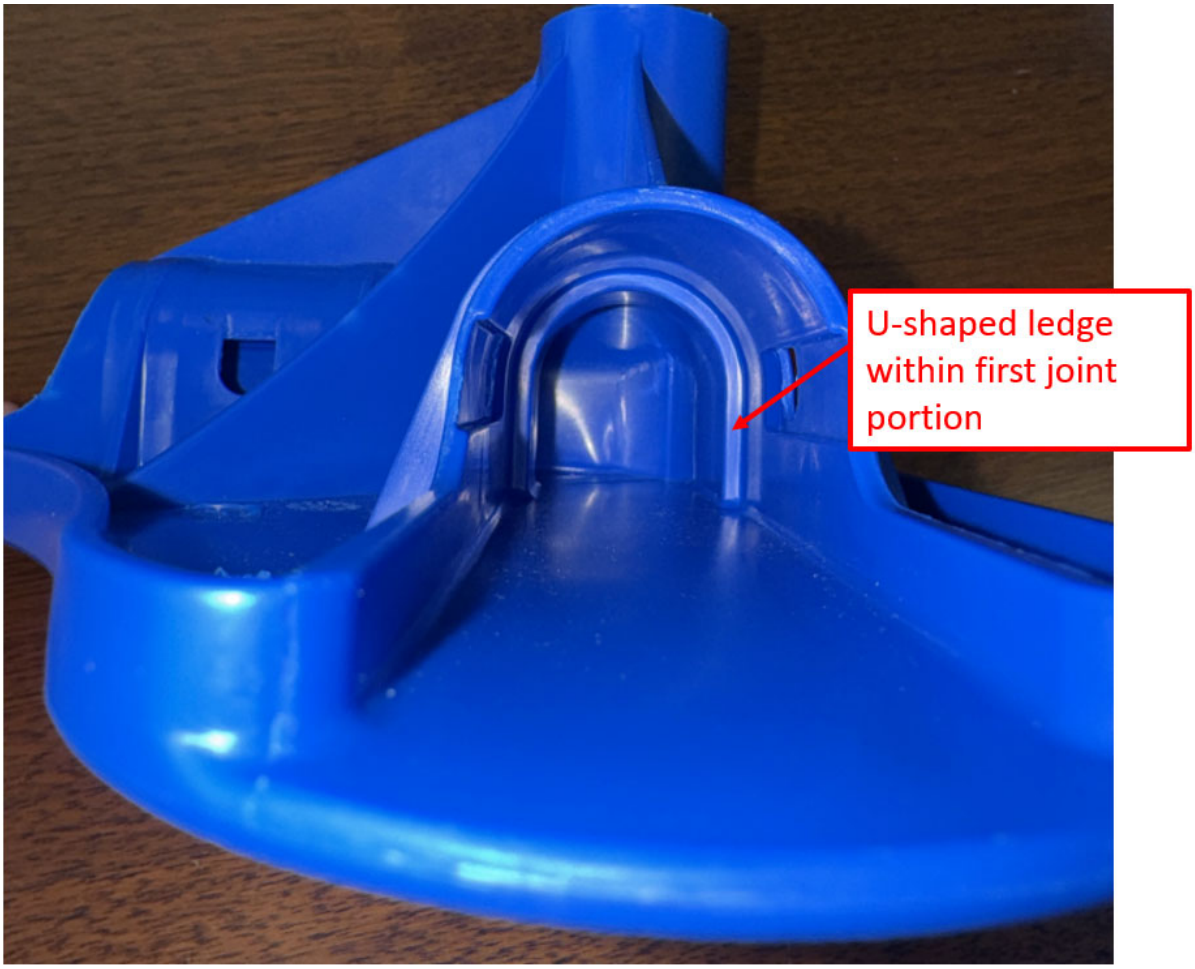
125. Regarding this term, the '512 specification teaches that internal horizontal reinforcing ribs 11 help support the coupling assembly. EX1001, 4:14-

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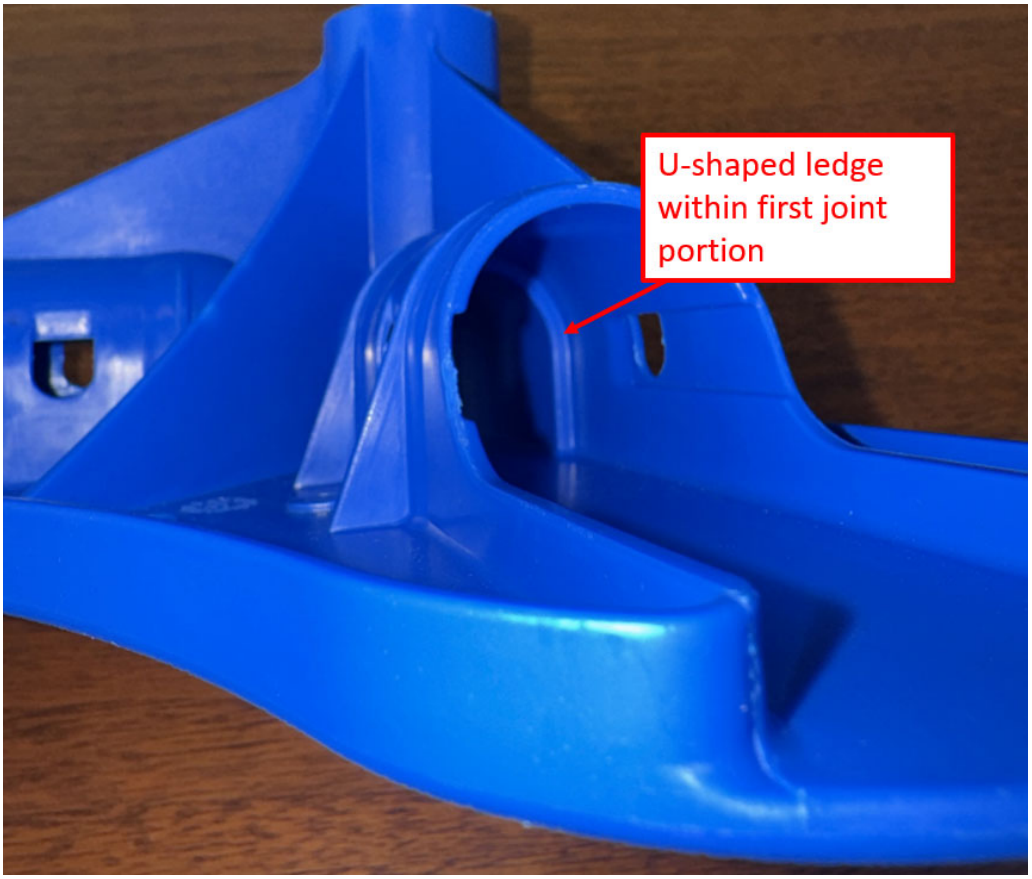
17. This assures the pin 33 of the coupling assembly maintains alignment with the corresponding hole 35 in the frame joint.

126. The "corner joint" (part no. 10573/10573A) of the Intex Pool has a reinforcing ribs within the first and second joint portions, as shown below. This rib, a U-shaped ledge of raised material, reduces the internal diameter of the corner joint so as to abut the end of the horizontal frame member when it is inserted into the corner joint, preventing further insertion of the horizontal frame member and supporting the connection with the corner joint. The rib directly contacts the end of the horizontal frame member to maintain alignment between the pinhole of the horizontal frame member and the pinhole of the corner joint. The rib also extends horizontally (*e.g.*, in a direction parallel to the horizontal frame members, away from the camera in the first image below) along the internal surface of the horizontal joint portions and is therefore an "internal vertical reinforcing rib."

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The photographs above are of the Intex Pool's corner joint, with my annotations in red.

127. Alternatively, it would have been obvious to incorporate the internal vertical reinforcing ribs (see claim 12) into the first and second joint portions of the corner joint in order to similarly reinforce and support the connection between the corner joint and the first and second frame members. This would be a mere duplication of components to provide a support to the horizontal frame members that is similarly provided by the internal vertical reinforcing ribs. These ribs, when incorporated into the first and second joint portions, would extend along the

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direction of the length of the first and second joint portions, just as the internal vertical reinforcing ribs of claim 12 extend along the length of the vertical joint portion. This would support the horizontal frame members in similar fashion. As explained above regarding Claim 12, the internal vertical reinforcing ribs protrude radially inwardly toward the interior of the vertical joint portion, and are configured to accommodate tolerance issues between the vertical joint portion and the connecting vertical support member; providing these same ribs within the first and second (horizontal) joint portions would be a mere duplication of components to provide a similar support to the horizontal frame members.

F. Claim 14

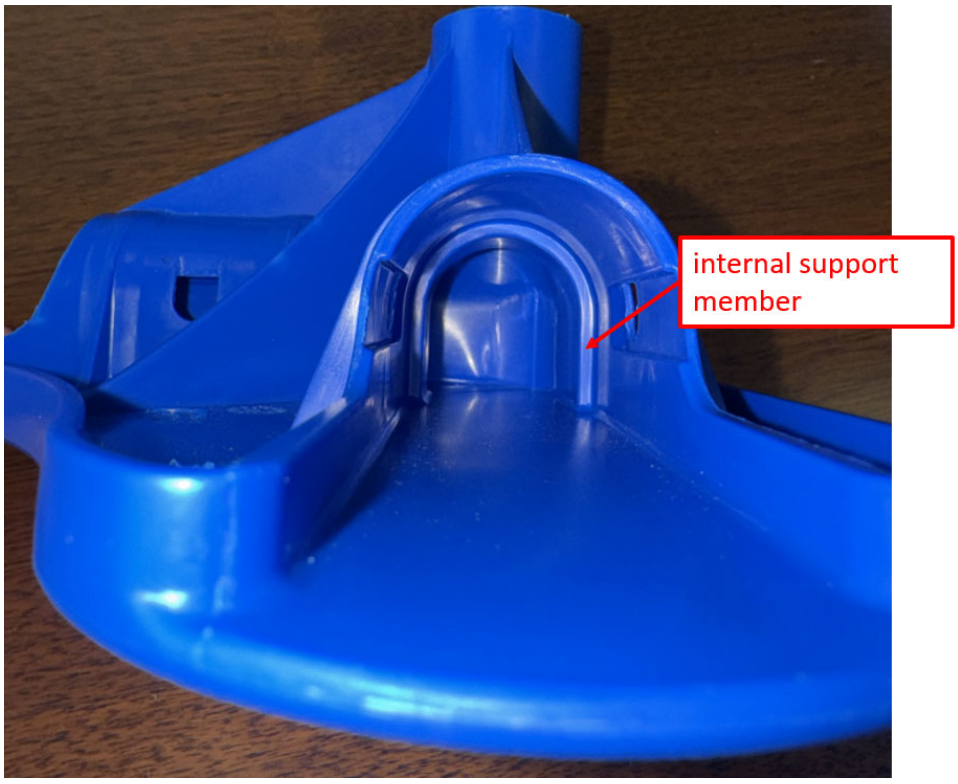
128. The Intex Pool discloses "wherein at least one of the first joint portion and the second joint portion includes an internal support member."

129. Regarding this limitation, the '512 specification teaches each horizontal joint portion may include "an internal horizontal support member 5 to help support base 31 within the T-shaped joint 10." EX1001, 4:14-17. This assures the pin 33 of the coupling assembly maintains alignment with the corresponding hole 35 in the frame joint.

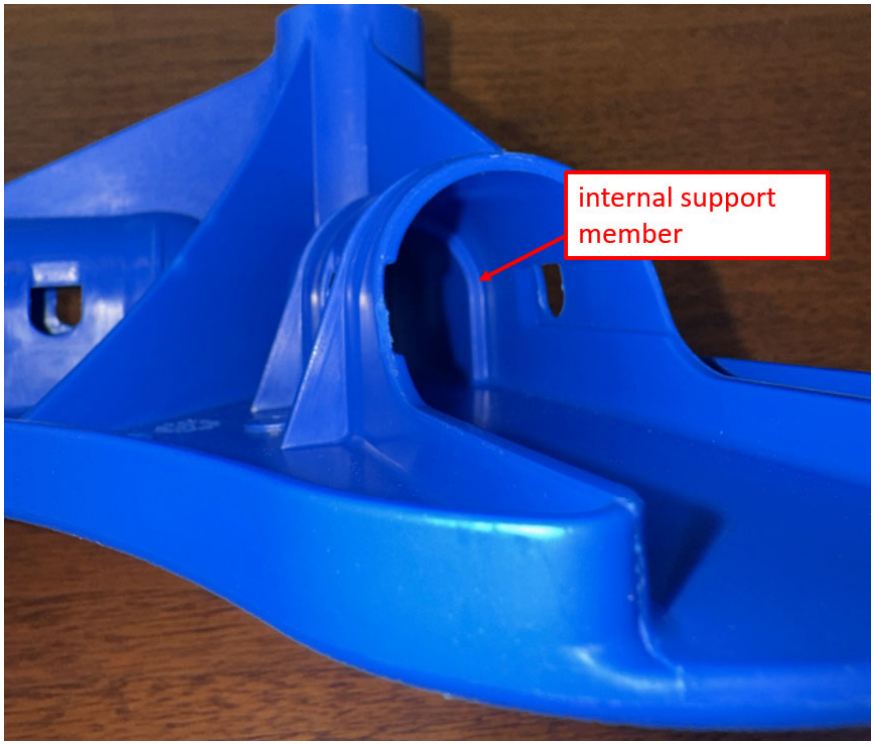
130. The "corner joint" (part no. 10573/10573A) of the Intex Pool has a U-shaped ledge that abuts the horizontal frame members when they are inserted into the corner joint, thereby preventing further insertion of the horizontal frame

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members. The U-shaped ledge is also positioned at a location within the corner joint so that when the horizontal frame member is fully inserted into the corner joint and abuts the U-shaped ledge, the openings in the horizontal frame members align with the openings in the corner joint. This U-shaped ledge is labeled below as "an internal support member" because it is internal to the frame joint and supports the horizontal frame members when they are inserted into the corner joint. In particular, it abuts the horizontal frame member, thereby supporting the frame member from a lateral position.



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The photographs above are of the Intex Pool's corner joint with my annotations in red.

G. Claim 15

1. Element [15.0]

131. See Element [1.0] above. Also, the Owner's Manual provides step-by-step instructions for assembling an above-ground pool. EX1022.

2. Element [15.1]

132. Regarding "a first joint portion of a frame joint," see Element [1.4] and [1.5] above.

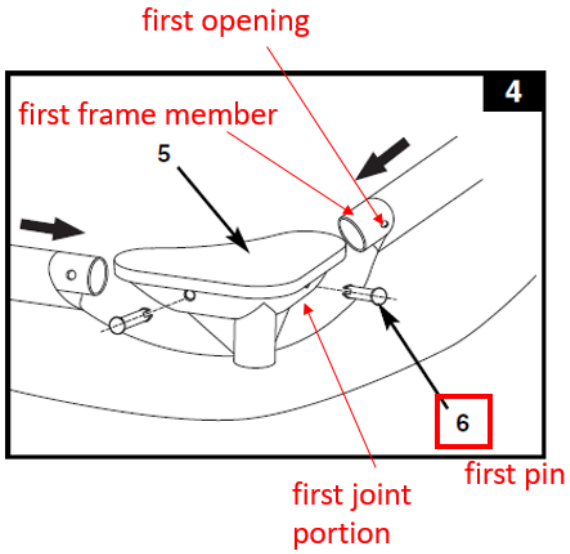
133. Regarding "a first frame member," see Element [1.1] above.

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134. Regarding "a first pin configured to engage a first opening of the first frame member," see Elements [1.1] and [1.5] above.

135. The Intex Pool discloses coupling the first joint portion of the frame joint to the first frame member with a first pin configured to engage the first opening of the first frame member, as shown below and described above regarding Elements [1.4] and [1.5].

4. Connect the corner joints **(5)** to the horizontal beams at 4 corners. Secure the joints with the pins **(6)** by inserting them into the pre-drilled holes (see drawing 4).



EX1022, p.9 (annotated)

3. Element [15.2]

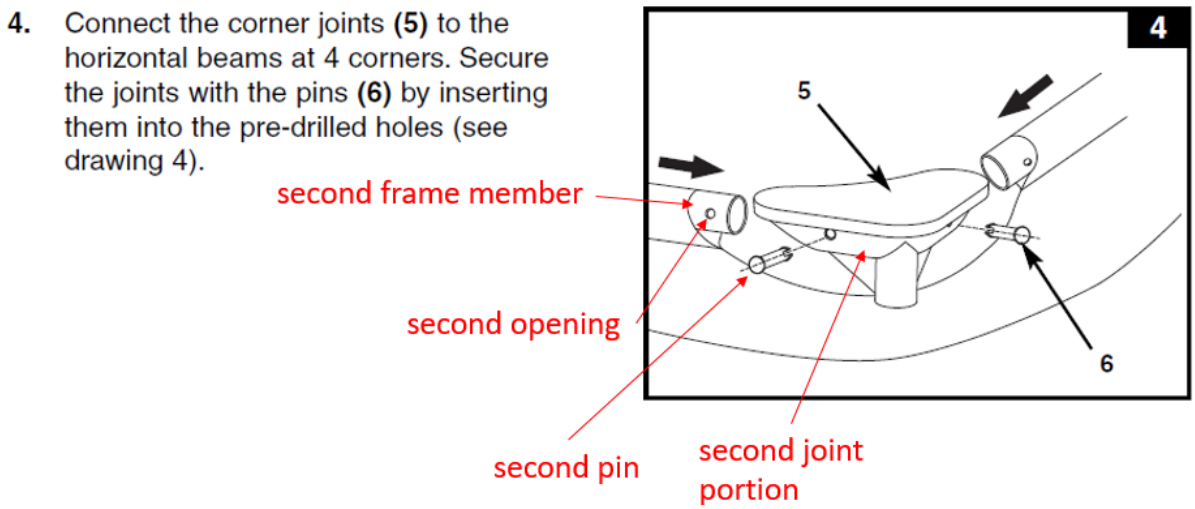
136. Regarding "a second joint portion of the frame joint," see Element [1.6] above.

137. Regarding "a second frame member," see Element [1.2] above.

138. Regarding "a first pin configured to engage a first opening of the first frame member," see Elements [1.2] and [1.6] above.

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139. The Intex Pool discloses coupling the second joint portion of the frame joint to the second frame member with a second pin configured to engage the second opening of the second frame member, as shown below and described above regarding Elements [1.4] and [1.6].



EX1022, p.9 (annotated)

4. Element [15.3]

140. Regarding "a vertical joint portion of the frame joint," see Element [1.7] above.

141. Regarding "a vertical frame member," see Element [1.3] above.

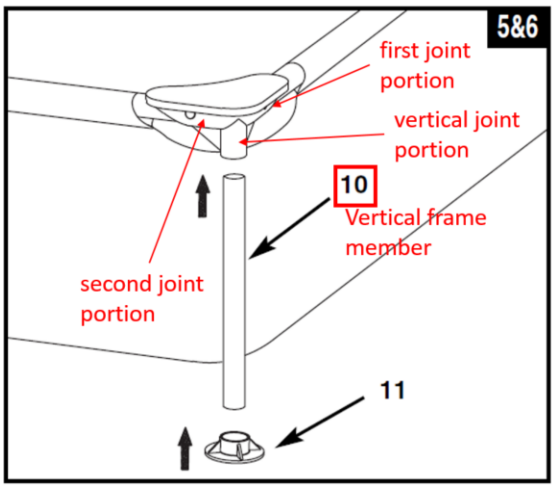
142. The Intex Pool discloses coupling the vertical joint portion of the frame joint to the vertical frame member as shown below and described above regarding Element [1.7].

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5. Connect the vertical corner legs **(10)** to the corner top rail joints **(5)** (see drawings 5 & 6).

6. Attached the leg's end cap **(11)** to the bottom of the vertical legs **(10)** (see drawings 5 & 6).

.



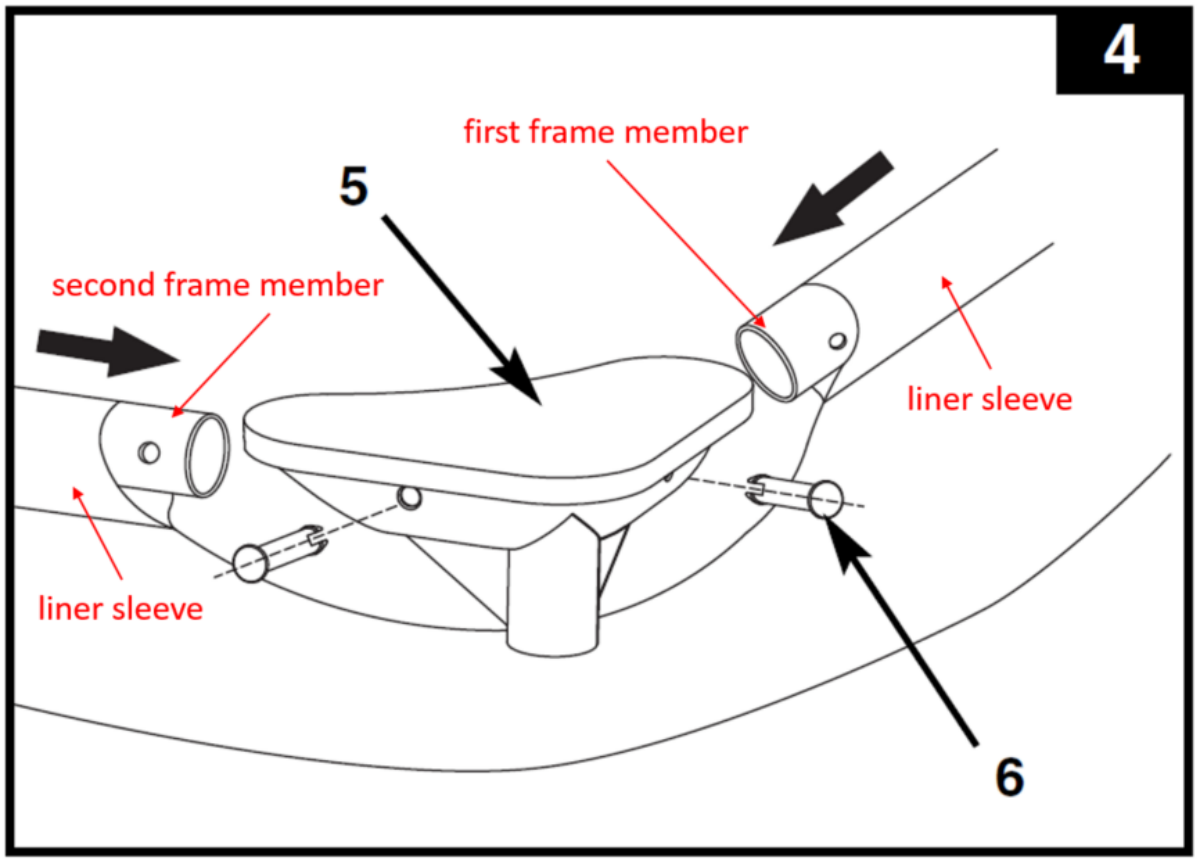
EX1022, p.9 (annotated)

Alternatively, to the extent Element [15.3] requires coupling the vertical joint portion to the vertical frame member *with a pin*, it would have been obvious to redesign the Intex Pool to include such a pin. All that would be required would be a pinhole in the vertical frame member, a pinhole in the vertical joint portion, and a pin. Such a redesign would be mere duplication of components (*i.e.,* pins and pinholes) to provide a reasonable expectation of success (*e.g.*, additional structural support in the connection between the vertical frame member and the corner joint and prevent those components from coming apart).

5. Element [15.4]

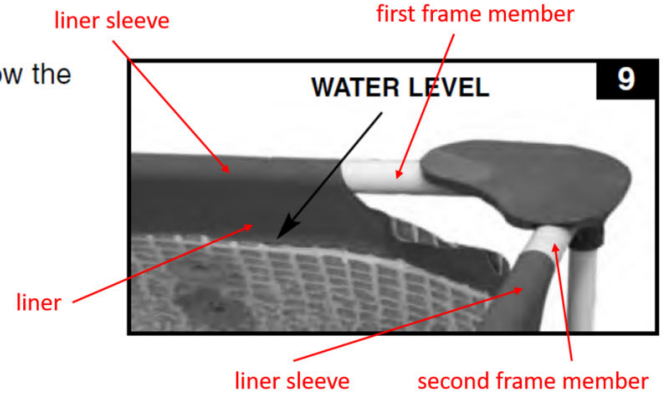
143. See Element [1.8] above. As described there and shown in the Figures below, the Intex Pool discloses positioning a liner around the first and second frame members:

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EX1022, p.9 (annotated)

11. Fill the pool with water up to just below the sleeve line. (see drawings 9).



EX1022, p.10 (annotated)

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6. Element [15.5]

144. See Element [1.9] above. There is no practical difference between a width of "at least 50%" in Element [1.9] and a width that is "a majority" in Element [15.5]. To the extent there is any difference in these terms, my measurements of the Intex Pool's corner joint as described above regarding Element [1.9] disclose the limitations of claim [15.5]. In other words, my measurements would apply to Element [1.9]'s "at least 50%" limitation and Element [15.5]'s "a majority" limitation.

H. Claim 17

145. See claim 11 above. As explained there, the "corner joint" (part no. 10573/10573A) of the Intex Pool is a single, integral, plastic piece.

XIII. GROUND 4: CLAIMS 4-6, 10, 12 AND 18 WOULD HAVE BEEN OBVIOUS OVER THE INTEX POOL IN VIEW OF LIU

146. Claims 4-6, 10, and 18 would have been obvious over the Intex Pool in view of Liu. Below I set forth my reasons.

A. Motivation to Combine the Intex Pool and Liu

147. Assembling the Intex Pool requires a user to perform the following steps: (1) slide the horizontal beam into the corner joint, (2) rotate the horizontal beam so that its pinholes align with the pinholes in the corner joint, (3) while maintaining alignment between all of the holes, press a pin through the holes. This is evident by the Owner's Manual, as is shown generally at 2:08-2:48 of the

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YouTube video (EX1023). Relevant screenshots of this video showing the assembly are shown below:



EX1023 at 2:09



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EX1023 at 2:19



EX1023 at 2:21



EX1023 at 2:27

BESTWAY EX. 1002; Pg 106
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EX1023 at 2:40



EX1023 at 2:46

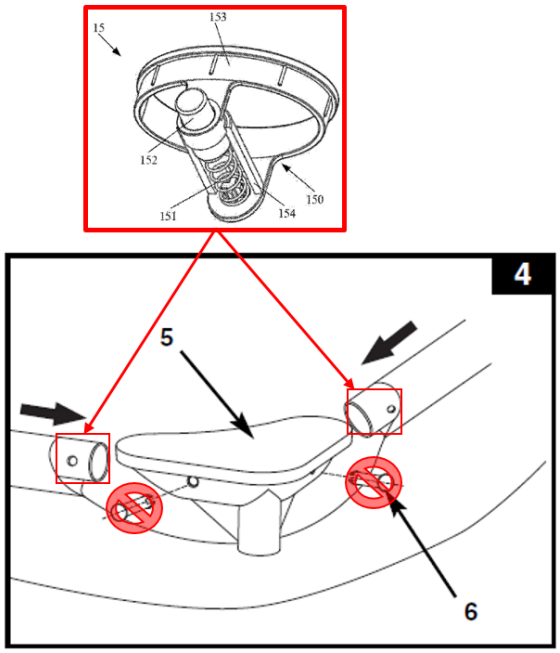
BESTWAY EX. 1002; Pg 107
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148. Liu simplifies the assembly between frame member and T-shaped connector with a "spring-loaded latch 15." Referring to FIGS. 4 and 7 of Liu (below), the latch 15 is fitted within the end 121 of the vertical support member 12, and a spring-biased pin 152 extends outwardly through an aperture 122 of the vertical support member 12. EX1006, [0091]-[0095]. During assembly, a user simply slides the vertical support member 12 within the vertical tubular member 131 of the T-shaped connector 13 until the pin 152 "snap-lock[s]" the T-shaped connector 13 to the vertical support member 12 by passing through an aperture 135 of the T-shaped connector 13.

149. A POSA would have found it obvious to combine Liu's teachings of a "spring-loaded latch" with the Intex Pool. Specifically, it would have been obvious to a POSA to replace the Intex Pool's pin attachment mechanism with the Liu's spring-loaded latch 15. Below shows the locations where the spring-loaded latch 15 would be located in the combination, and the pins (6) of the Intex Pool being removed. The image in the red box is the spring-loaded latch 15 of Liu, and the image below is from the assembly instructions of the Owner's Manual of the Intex Pool.

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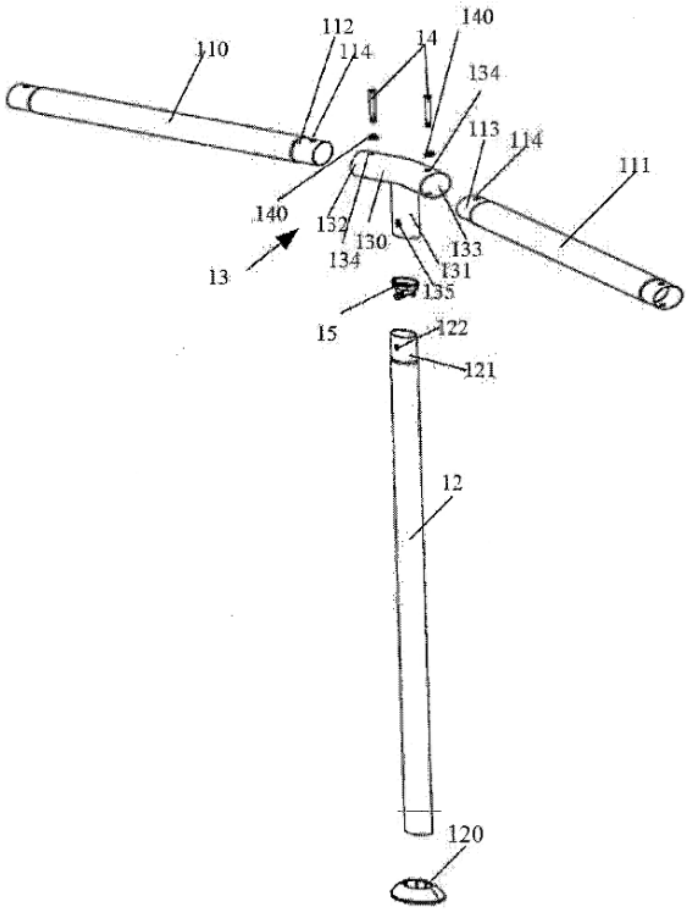
4. Connect the corner joints **(5)** to the horizontal beams at 4 corners. Secure the joints with the pins **(6)** by inserting them into the pre-drilled holes (see drawing 4).



EX1009, Fig. 7 and EX1022, p.9 (annotated)

150. Given that both references are analogous, reside the same field of endeavor, and are reasonably pertinent to problems associated with assembling above-ground pools, a POSA would have been motivated to make this combination for numerous reasons. First, Liu discloses both pins and spring-loaded latches as suitable methods for attaching frame members to the T-shaped connector. For example, Liu's Figure 4 illustrates pins 14 for connecting with the horizontal support members 110, 111, and spring-loaded latch 15 for connecting with the vertical support member 12.

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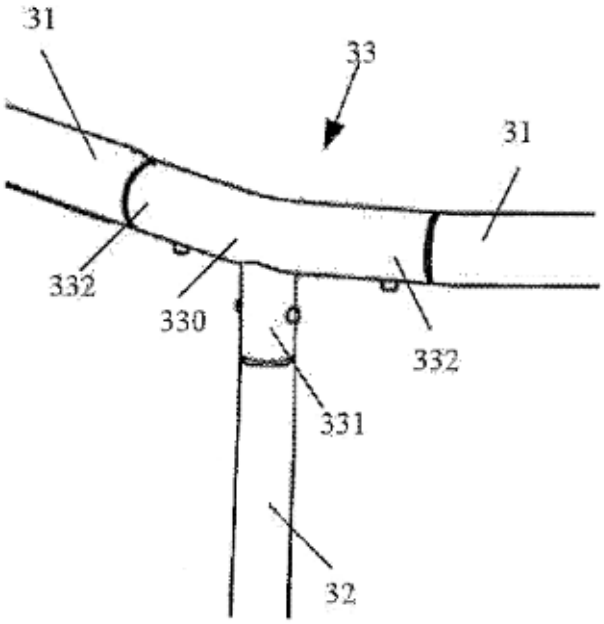


EX1007, Fig. 4

151. Meanwhile, a POSA would understand Liu's Figure 30 to disclose (or at a minimum, suggest) a pin for connecting with the *vertical* support member 32, and spring-loaded latches for connecting with the *horizontal* support members 31. Looking at Figure 30, the pins that connect the T-shaped connector 33 to the horizontal support members 31 extend out of only one side of the T-shaped connector 33 (i.e., the bottom), while the pin that connects the T-shaped connector

BESTWAY EX. 1002; Pg 110
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33 to the vertical support member 32 extends out of both sides of the tubular member 331.



EX1006, Fig. 30

This is the opposite configuration of Figure 4, where the spring-loaded latch would only be visible as extending through one side (not both) of the T-shaped connector. This indicates to me that Figure 30 illustrates a spring-loaded latch being used to connect the horizontal support members 31 to the T-shaped connector 33, while a conventional pin is used to connect the vertical support member 32 to the T-shaped connector 33. This teaches or at least suggests to a POSA that the pins and spring-loaded latches are interchangeable, suitable methods for attaching the frame members to the T-shaped joint. A POSA would understand that spring-loaded

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latches – like those in Liu – are well known and well accepted substitutes for pin connectors

152. Second, replacing the Intex Pool's pins with Liu's "spring-loaded latch" would simplify assembly. As explained above, during assembly of the Intex Pool, a user needs to maintain alignment between four different apertures (two in the horizontal beam, two in the corner joint) and then push a pin through all four apertures. This requires a degree of coordination that might be difficult for some users. Misalignment between the holes can occur by way of the horizontal frame members rotating while the user attempts to insert the pin. Likewise, once the pin is inserted into the first set of holes, the user must be sure to continue pressing the pin in a perfect angular orientation so that it passes through the final pair of holes. Further, with individual pins that must be separately inserted, a person could be prone to dropping and/or losing a pin during assembly. In contrast, with a spring-loaded latch, once the frame member's aperture is aligned with the corner joint's aperture, the pin automatically passes through the corner joint's aperture, thereby "snap locking" the two components. EX1006, [0090], [0094]-[0095]. This creates an easier assembly, which is an explicit goal of Liu. *Id*. at [0009].

153. Third, it would have been an extremely simple modification to substitute the Intex Pool's pin connections with Liu's spring-loaded latches. Liu's spring-loaded latch 15 can simply be inserted into the horizontal beams due to its

BESTWAY EX. 1002; Pg 112
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"annular outer wall 153" that can be "shaped to match or otherwise complement the cross-section" of the beam it fits into. EX1006 at [0094]. Moreover, the apertures at the Intex Pool's corner joint and horizontal beams would not need to be modified in size because the detent pin 152 of the spring-loaded latch 15 can be sized to have the same diameter as the pins that the Intex Pool already comes with. A POSA would have therefore found it straightforward to replace the pin attachments of the Intex Pool with Liu's spring-loaded latches. The combination would have involved a simple substitution of one known element (the Intex Pool's pin connections) with another (Liu's spring-loaded latches) to obtain predictable results (a simplified, snap-lock assembly).

154. Fourth, Liu's spring-loaded latch 15 automates a portion of the manual assembly of the Intex Pool. As explained above, Liu's spring-loaded latch 15 automatically biases its detent pin 152 through the aligned apertures of the beam and the corner joint. This automatic pin actuation would replace the manual assembly of the Intex Pool, which involves manually pressing the pin through corresponding openings while maintaining alignment of the openings.

155. Fifth, both the Intex Pool and Liu are in the field of above-ground pools. The Owner's Manual provides assembly instructions, and YouTube Videos show the actual assembly taking place. EX1022, p. 9; EX1023. Liu sets out to disclose "an above ground pool having a sturdy support frame that is easy to assemble."

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EX1006 at [0009]. Thus, both references are analogous, reside in the same field of endeavor, and are reasonably pertinent to problems associated with assembling above-ground pools.

156. Sixth, the general knowledge of a POSA and common sense would lead a POSA to make such a combination. Spring-loaded detent pins are so common in many industries, from airline luggage, to tent poles, to sports nets. Anyone that travels with airline luggage knows detent pins help a user extent the handle away from the bag.

B. Claim 4

1. Element [4.0]

157. The combination of the Intex Pool with Liu discloses "wherein the first joint portion includes a first coupling assembly including the first pin, a first base, and a first helical spring supported by the first base."

158. Liu discloses a "spring-loaded latch 15" which reads on the claimed "coupling assembly." This spring-loaded latch 15 has a "pin boss 150" that "houses a spring element 151 and a detent pin 152." EX1006, [0093]. As shown below, the spring 151 is helical, and is supported by a base of the spring-loaded latch 15, which I have labeled.

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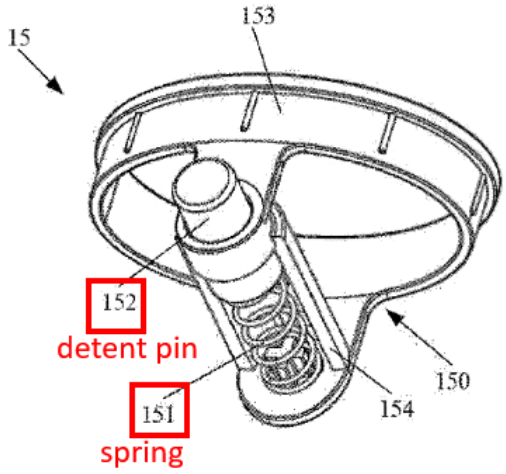


FIG. 7

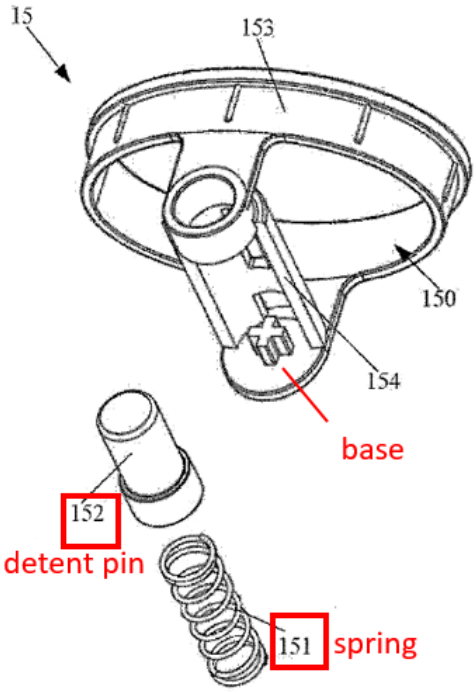


FIG. 11

EX1006, Figs. 7 and 11 (annotated)

159. Liu therefore teaches Element [4.0]. When Liu's spring-loaded latch 15 is incorporated into the first horizontal beam of the Intex Pool, the spring-loaded latch 15 (*i.e.*, coupling assembly) would be fitted within the first frame member and inserted into the first joint portion during assembly. Thus, when assembled, the first joint portion of the Intex Pool's corner joint would include the spring-loaded latch.

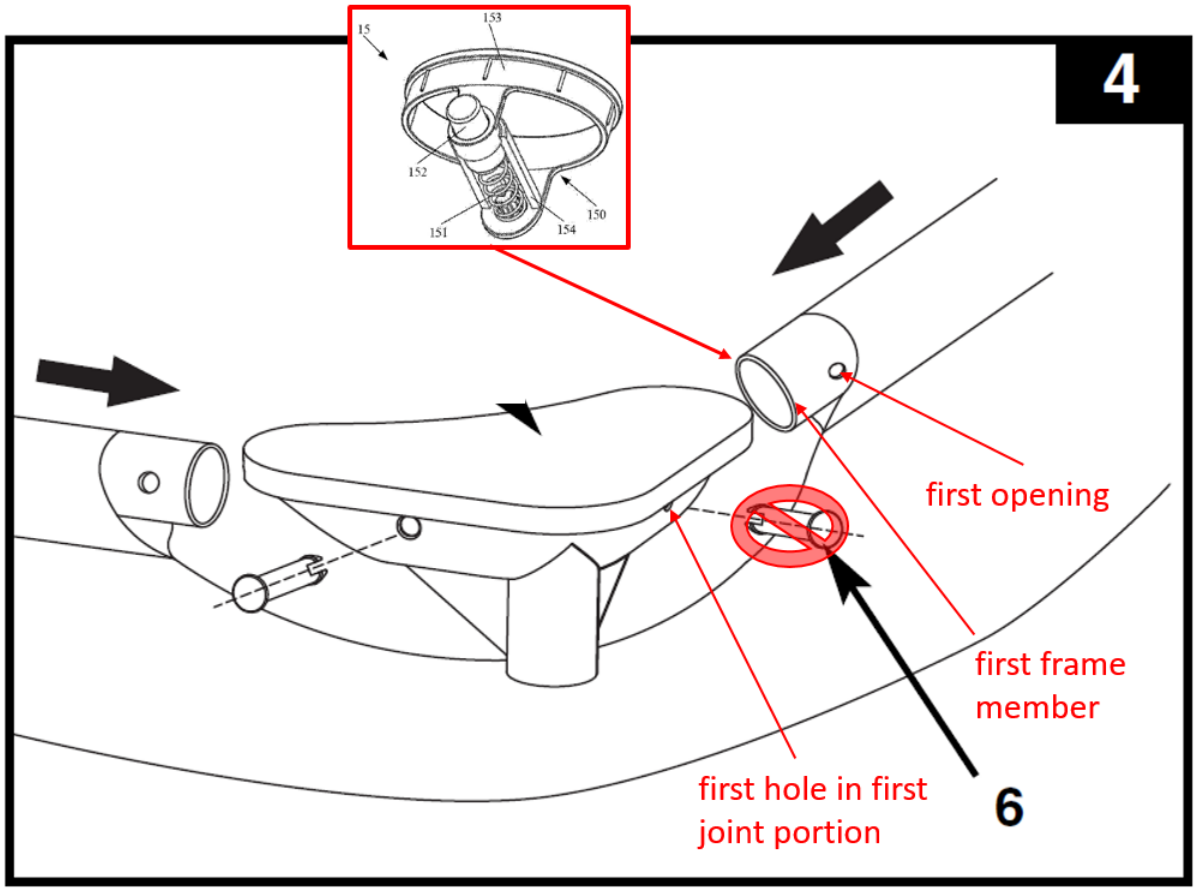
BESTWAY EX. 1002; Pg 115
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2. Element [4.1]

160. The combination of the Intex Pool with Liu discloses "the first pin being biased outward through a first hole in the first joint portion by the first helical spring to engage the first opening of the first frame member."

161. Liu states that "[t]he aperture 135 on the vertical tubular member 131 may be aligned with the aperture 122 on the vertical support member 12, so that the detent pin 152 passes through the apertures 122 and 135 to, for example, snap-lock the T-shaped connector 13 to the vertical support member 12." EX1006, [0095]. The "snap-lock" is performed by way of the detent pin being "outwardly biased by the spring element to engage the aperture [of the vertical support member 12]." EX1006, [0018]. Therefore, when combined with the Intex Pool and fitted into the horizontal beams, the detent pin would be outwardly biased through the hole in the horizontal beam and the hole in the corner joint to snap-lock the two components together.

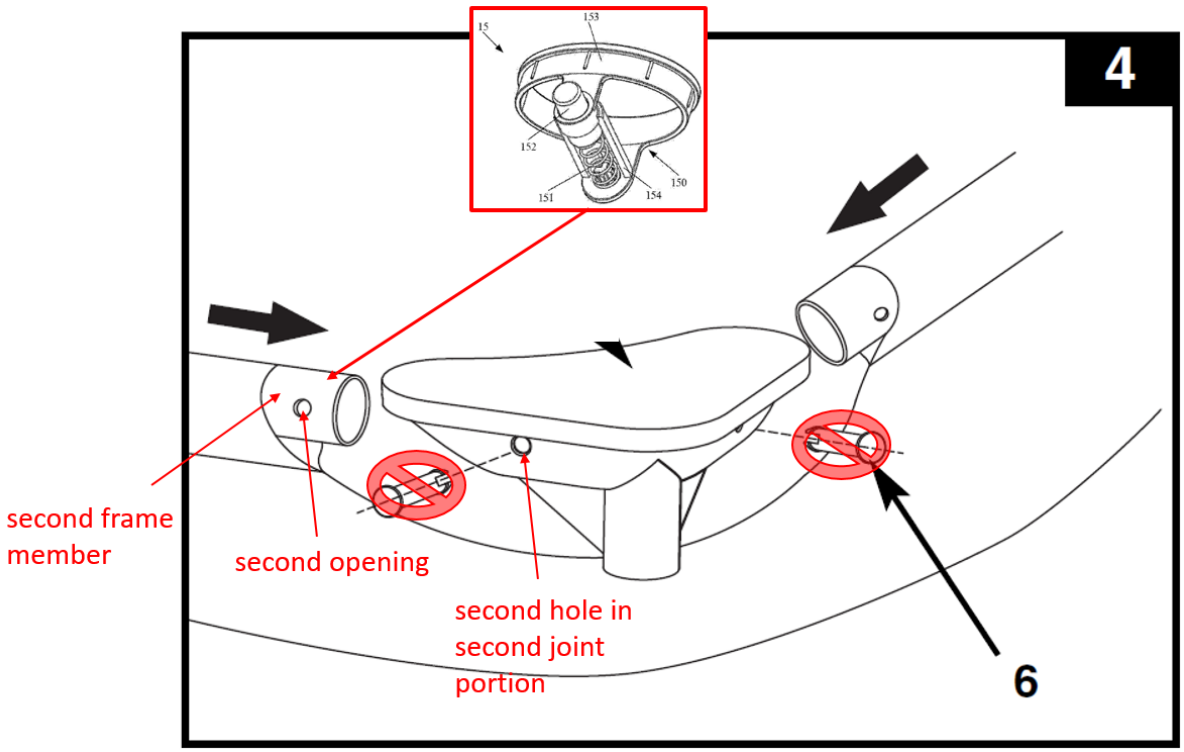
BESTWAY EX. 1002; Pg 116
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C. Claim 5

162. The combination of the Intex Pool with Liu discloses the limitations of claim 5. See claim 4 above. Claim 5 is merely a repeat of claim 4, except utilizing a second coupling assembly to couple the second joint portion to the second frame member. As shown below, the same spring-loaded latch would be inserted into the second frame member, with its spring-biased pin 152 extending through the second opening of the second frame member and through the second hole in the second joint portion.

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D. Claim 6

163. The combination of the Intex Pool with Liu discloses "wherein the width of the vertical joint portion accounts for about 70% of a width between the first and second pins."

164. As explained above in Element [1.9], I have measured a physical sample of the corner joint of the Intex Pool. There, I explained that the corner joint has a relationship between the vertical joint portion and the width between the pins such that the width of the vertical joint portion accounts for 70.6% when measured from the center axes of the pins. 70.6% is about 70%.

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E. Claim 10

165. The combination of the Intex Pool with Liu discloses "wherein the first and second joint portions form an obtuse angle."

166. The Intex Pool is rectangular, and each corner joint (i.e., frame joint) has a right angle formed between the first and second joint portions. However, a POSA would have found it obvious to modify the angle between the first and second joint portions of the Intex Pool's corner joint in order to create a different pool shape. A POSA would have understood that above-ground frame pools come in many shapes and sizes, and this was well-known prior to the '512 Patent. For example, the Intex Catalogs show above-ground frame pools that are both round and rectangular. *See, e.g.*, EX1016, pp.11-15; EX1017, pp.12-15. Pool sellers certainly understand that some customers might like rounded pools for their yards, while others might like rectangular pools. Liu also disclosed this, illustrating frame pools having a "substantially circular" shape (EX1006, [0088], Fig. 1, 12), a "rectangle" shape (*id*., [0099], Fig. 13, 28), and a "substantially elliptical" shape (*id*., [0117], Fig. 29, 34). Selecting one of these shapes of pools would be a simple choice of aesthetic desires, layouts of a person's yard, etc. Liu's different shaped pools are shown below:

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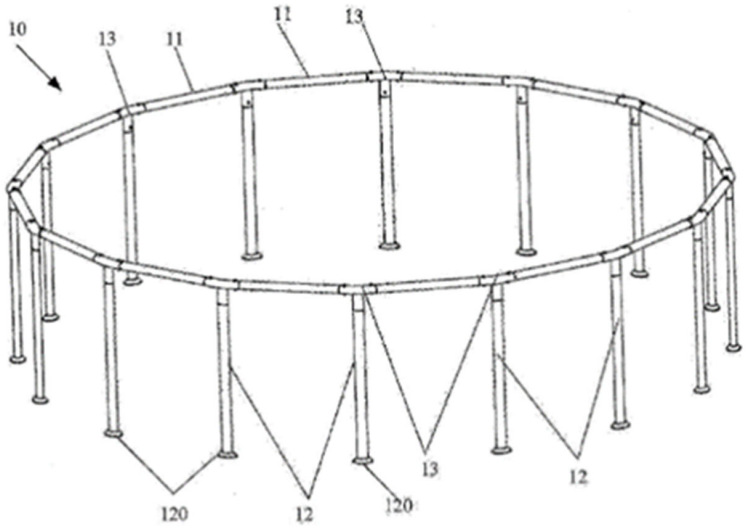


FIG. 1

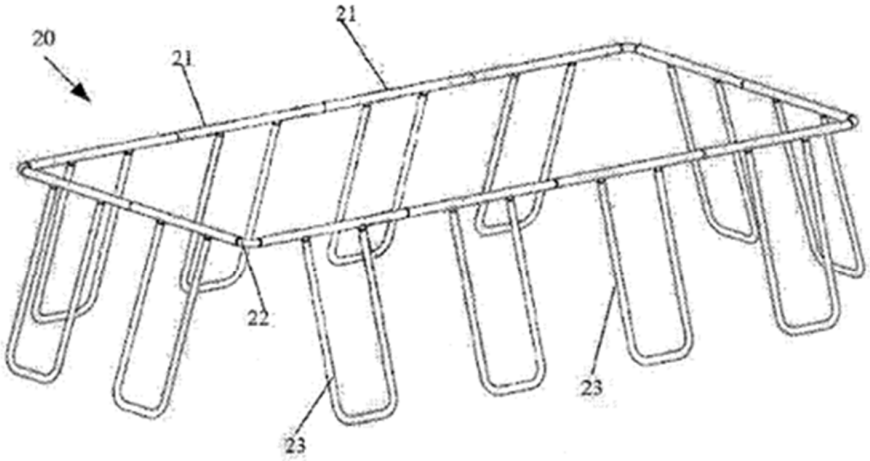


FIG. 13

BESTWAY EX. 1002; Pg 120
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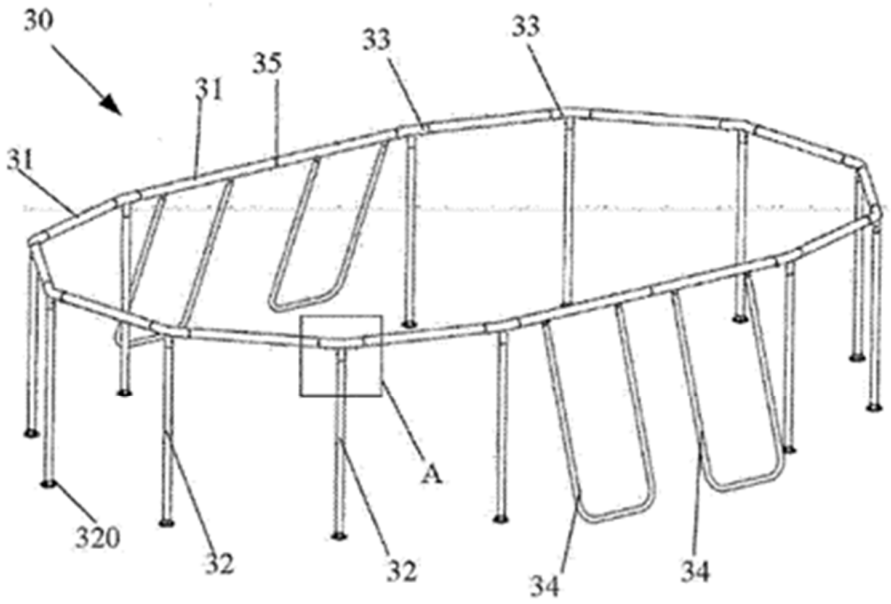


FIG. 29

167. It was also well known that the angle of the frame joint portions (that connect the frame members) would vary to achieve the desired shape and size of the pool. The figures of Liu illustrate frame joints with an angle between the joint portions being 180 degrees, 90 degrees and various oblique angles therebetween.

168. As shown in these figures, the joints between the horizontal support members (11, 31) can be right angles, or oblique, depending on the desired shape of pool. Therefore, in order to create a pool of a different shape, it would have been obvious to a POSA to modify the Intex Pool's corner joint such that the angle between its first and second joint portions is an obtuse angle rather than a right angle. It would have been obvious to try doing so, given a finite number of identified,

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predictable potential solutions that could have been pursued with a reasonable expectation of success.

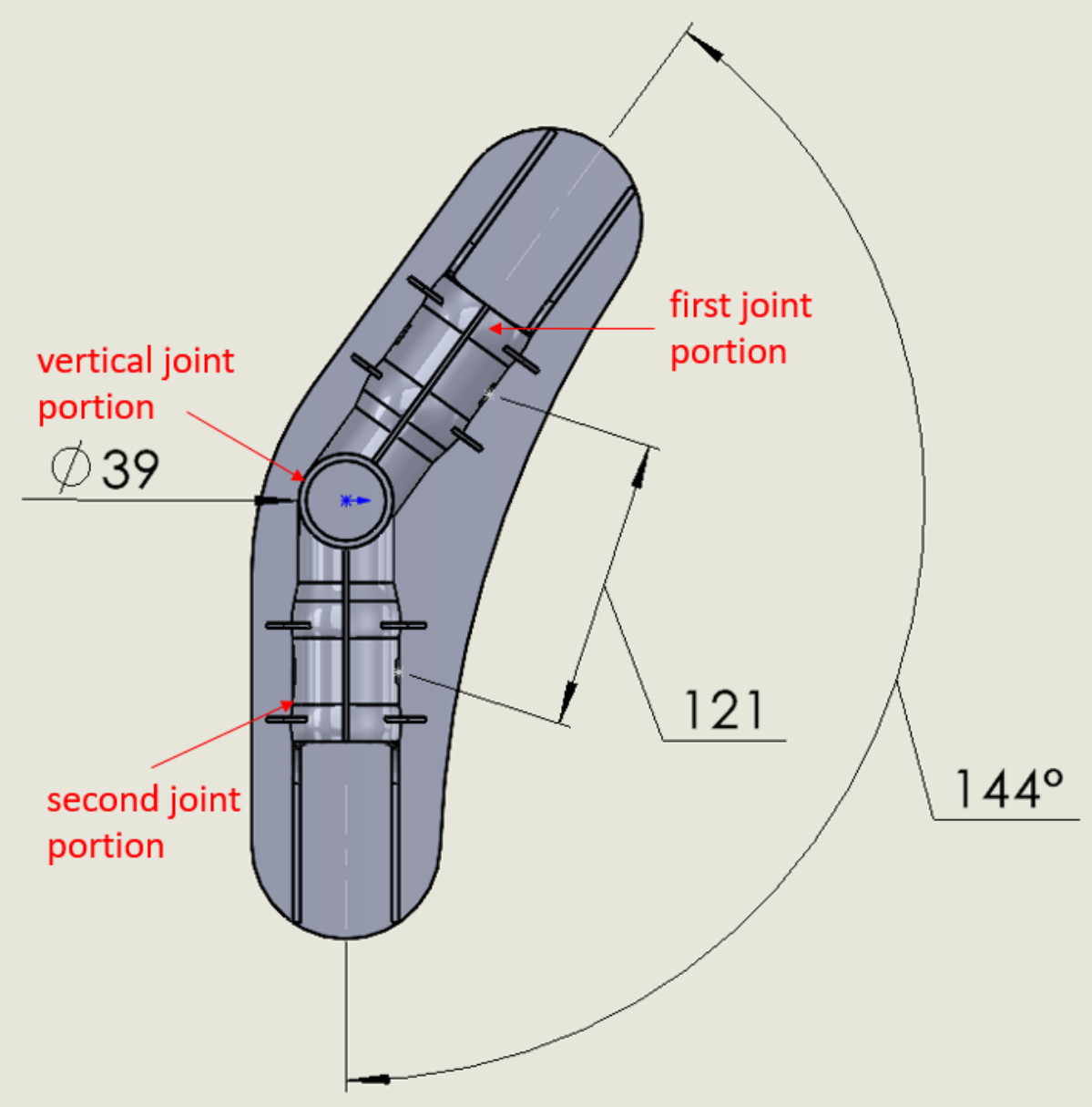
169. As the Intex Pool has 10 vertical support members and 10 pole connectors (EX1023-1025), a POSA would have naturally considered creating a round pool with 10 vertical support members and 10 pole connectors. In fact, Intex sold a pool with 10 vertical support members and 10 pole connectors:



EX1015, p.29

170. General geometrical principles dictate that the angle between the first and second joint portions of these 10 T-shaped joints would be 144 degrees. Lee explains these general geometric principals, wherein the angle is equal to 180-360/n°, where n is the number of horizontal or vertical frame members in the frame pool. EX1009. It would be a simple redesign of the Intex Pool's corner joint to form a 144 degree angle between the first and second joint portions. It would involve merely changing the relative orientations of the first and second joint portions. Below is an example of such a redesign:

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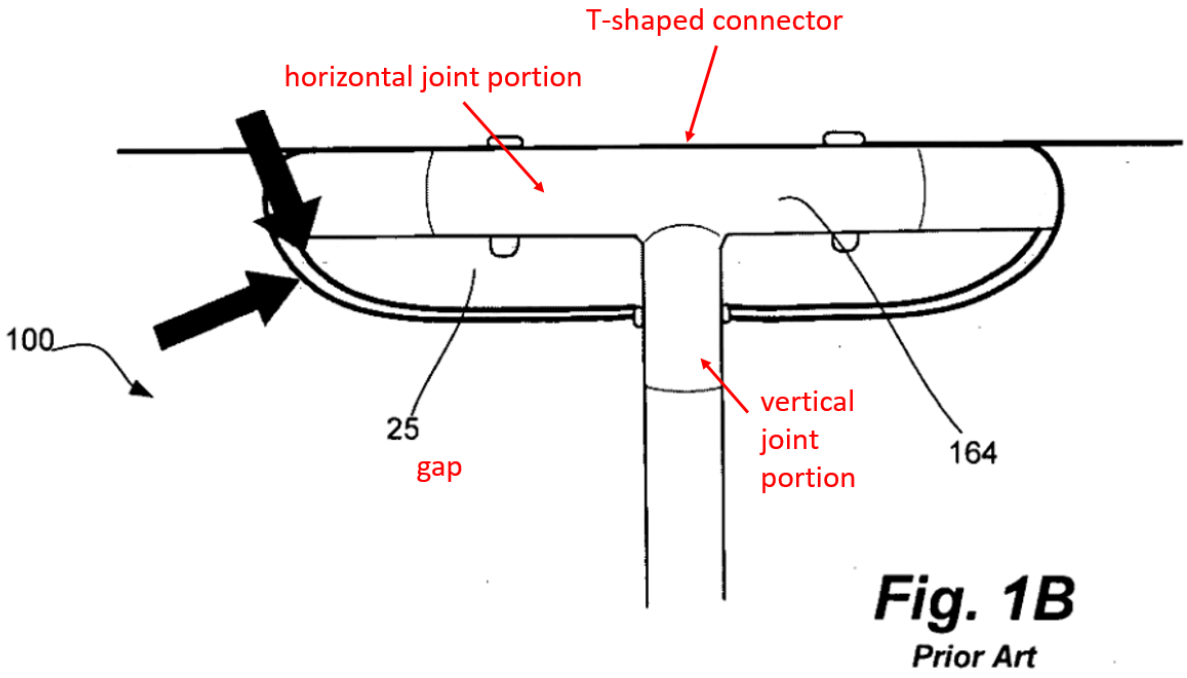
171. To the extent this modified joint did not meet the Width Limitation, it would have been obvious to modify the joint to move the pin locations inward closer to the vertical joint portion as the location of the pins is an obvious design choice so long as the pins remain accessible (e.g., are not concealed by the liner) and their placement does not affect the strength or integrity of the connection to the first and

BESTWAY EX. 1002; Pg 123
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second (horizontal) frame members. The proposed placement of the pins does not affect the strength or integrity of the connection to the first and second (horizontal) frame members. Moving the horizontal frame members closer to the vertical joint portion would reduce the bending moment of the corner joint, thereby reducing stress on the corner joint. The bending moment is a measurement of rotational force acting on the corner joint that would result from the weight of the water in the pool pressing against the liner. The weight of the water would cause the corner joint to experience forces from the vertical joint portion and the horizontal joint portions due to the vertical frame members and horizontal frame members experiencing water pressure horizontally. If the horizontal frame members are moved inwardly toward the vertical joint portion, the lever arm for these forces acting on the corner joint is reduce, which means the moment arm is shorter, thereby reducing the bending moment experienced by the corner joint. And, moving the frame members inward toward the vertical frame member would also move the pins closer to the vertical frame member in order to maintain the pinhole locations on the horizontal frame members. The bending moment experienced by each pin would also therefore be reduced. This ultimately leads to less stress on the corner joint. Further, there is nothing critical or unexpected about the Width Limitation range (*i.e.*, "at least 50%") that would support the proposition that moving the pins inward toward the vertical joint portion would not have been obvious to a POSA.

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172. Additionally, a POSA would have been motivated to move the pins inwardly closer to vertical joint portion to help minimize the size of the corresponding opening in the liner and thus the amount of water than can escape the pool. Indeed, there was a known problem in the prior art of water escaping through these holes or gaps in the liner near the T-shaped joints that was already recognized in the prior art. For example, Cheng (annotated below) explains that "frame-pools have gaps 25 near an angle in the horizontal support members 164" to access the T-shaped joints. EX1007, [0004]. "As a result, when a splash of water travels towards the gap 25, water can exit the pool via the gap 25. This may result in a loss of water that would, otherwise, not exit the pool." *Id.*, [0004].



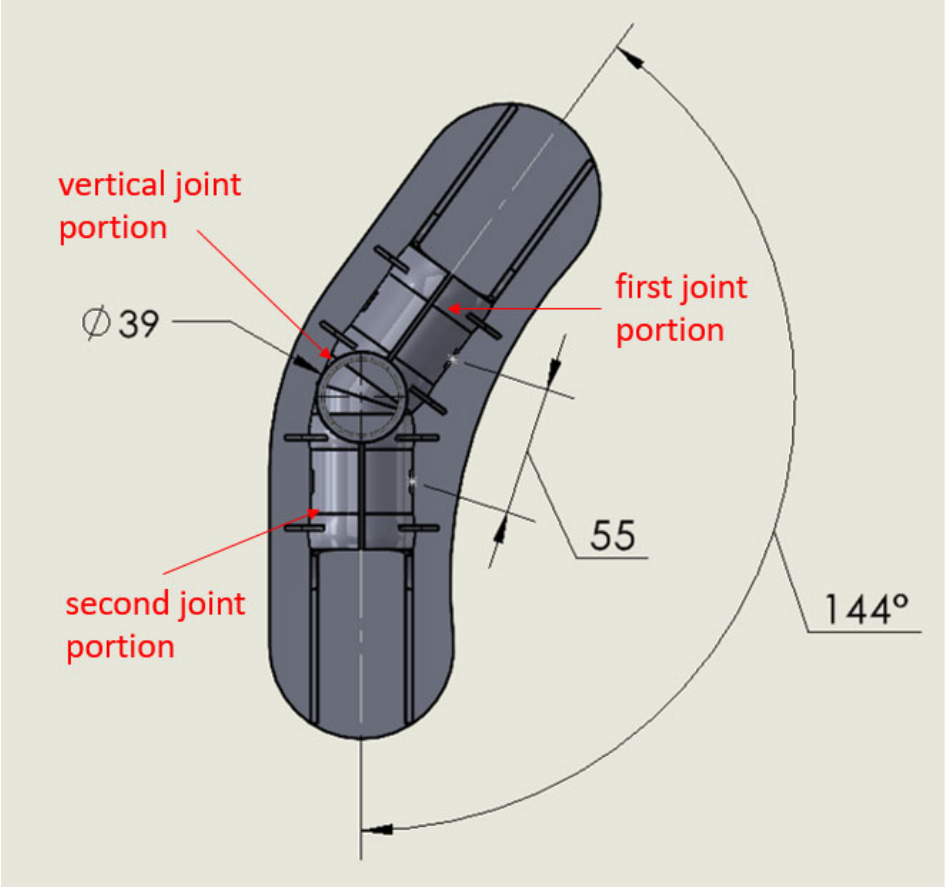
EX1007, Figure 1B.

BESTWAY EX. 1002; Pg 125
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173. Cheng solves the problem of excess water splashing with a "splash guard 200" that covers this gap between the frame members and the liner. However, a POSA would have also immediately recognized that reducing the size of the gap in the liner would be another way to reduce the amount of water that splashes through the gap. The smaller the gap is, the less water is lost through the gap. In other words, reducing the distance between the pins would have allowed for a smaller gap in the liner while still maintaining accessibility to the pins. Shrinking the size of these gap without also shrinking the width between the pins could result in the pins being concealed by the liner. This would create an undesirable pool liner that prevents accessibility to the pins of the T-shaped connectors.

174. To this end, below is a schematic of a simple redesign of the Intex Pool's corner joint similar to the redesign above except with pinholes moved as close to the vertical joint portion in order to reduce the overall width of the corner joint.

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To maintain its structural integrity, this redesigned corner joint (a) preserves the diameter of the vertical joint portion, (b) conserves sufficient distance between the pinholes and the vertical joint portion such that the location of the horizontal frame member's pinholes would not change, and (c) maintains the same length of horizontal frame member that is inserted into the corner joint[1]. The result is a corner joint having a distance between the center axes of the pinholes measuring 55mm,

[1] In other words, the amount of horizontal frame members that is contained within the corner joint remains the same.

BESTWAY EX. 1002; Pg 127
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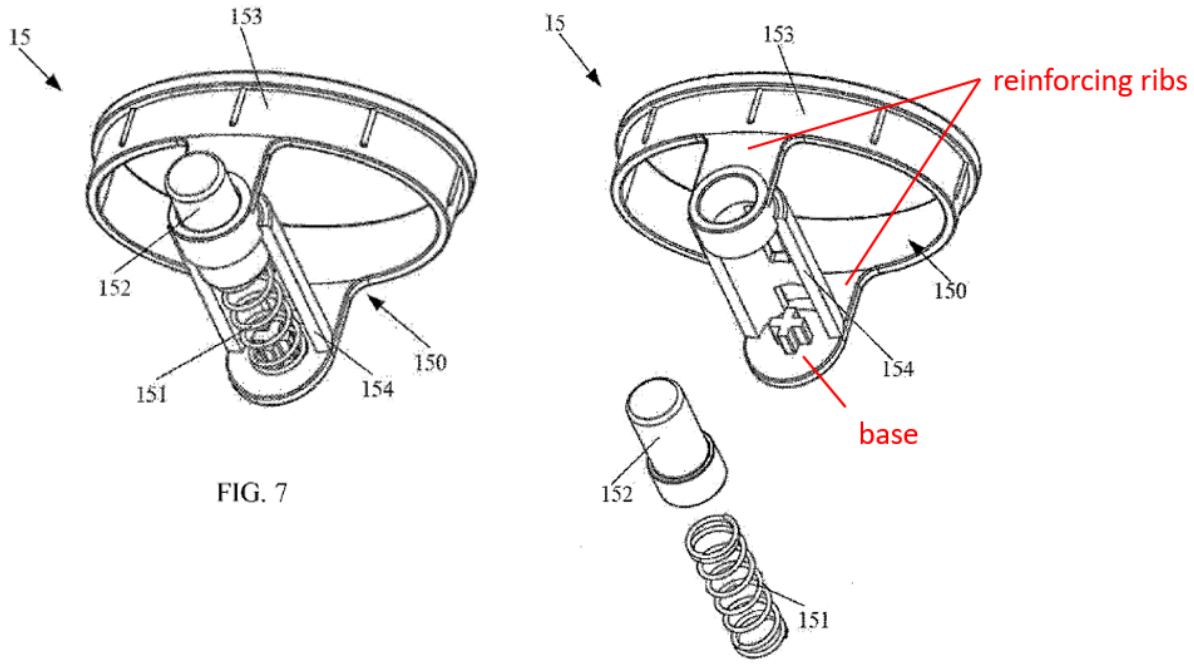
yielding the width of the vertical joint portion to be 70.1% of the distance between the pins.

175. Moreover, given the desire to reduce costs by shortening the size of the T-shaped connector, the overall length of the first and second joint portions would be shortened, which would move the pins closer together. Given that an above-ground pool uses multiple connectors with each pool, even minor reductions in material usage can lead to significant cost savings. See Element [1.9] above, paragraph 112. A POSA may not want to reduce the diameter of the horizontal and vertical joint portions of the T-shaped connector, as it would require a corresponding reduction in diameter of the frame members that it receives, and could potentially impact the structural integrity of the frame pool. Instead, a POSA would immediately consider reducing the overall length of the T-shaped connector by shortening the first and second frame joints without affecting the amount of each frame member that is received therein. Doing so, the width of the vertical joint portion would remain greater than 50% of the width between the pins. For example, the redesigned 144-degree corner joint above would have less material (and thus less cost) than simply changing the angle of the original corner joint (part number 10573) and doing nothing else.

F. Claim 12

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175A. The '512 Patent discloses "one or more vertical reinforcing ribs 21 to help support base 41 [of coupling assembly 4] within the T-shaped joint 10." EX1001, 4:46-49. Similarly, Liu's spring-loaded latch 15 includes reinforcing ribs (labeled below) that connect to and support the base that contacts the end of the spring 151.



EX1001, Figs. 7, 11 (annotated)

It would have been obvious to incorporate Liu's spring-loaded latch 15 into the Intex Pool's corner joint to connect the corner joint to a vertical frame member. *See* Element [15.5] above. Such a redesign would be mere duplication of components (*i.e.*, spring-loaded latch 15 and pinholes) to provide a reasonable expectation of success (*e.g.*, additional structural support in the connection between the vertical

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frame member and the corner joint to prevent those components from coming apart). When the spring-loaded latch 15 is incorporated into the Intex Pool to connect the vertical joint portion to the vertical frame member, the vertical joint portion of the corner joint includes the support ribs labeled above.

G. Claim 18

1. Elements [18.0] and [18.1]

176. To the extent the Intex Pool does not teach these limitations, Liu does. See Ground 4, Claims 4-5 above. When the spring-loaded latch 15 of Liu is incorporated into the Intex Pool's corner joint to replace the pins, the combination discloses these limitations.

177. Liu discloses a "spring-loaded latch 15" having a "pin boss 150" that "houses a spring element 151 and a detent pin 152." EX1006, [0093]. "The detent pin is configured to lock the vertical tubular member and the vertical support member together." *Id*., [0036]. Specifically, "the detent pin 152 [is] snap-fitted into the aperture 122 on the end 121 of the vertical support member 12 under the elastic force of the spring element 151." *Id*., [0094]. The pin 152 would be depressed against this elastic force in order to fit the pin 152 and the vertical support member 12 into the vertical tubular member 131 of the T-shaped connector 13. The pin 152 would remain depressed in the vertical tubular member 131 until "[t]he aperture 135 on the vertical tubular member 131 [aligns] with the aperture 122 on the vertical

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support member 12, so that the detent pin 152 passes through the apertures 122 and 135 to, for example, snap-lock the T-shaped connector 13 to the vertical support member 12." *Id.*, [0095]. In other words, when the apertures 122 and 135 are aligned, the detent pin 152 is released into engagement with both the vertical support member 12 and the T-shaped connector 13.

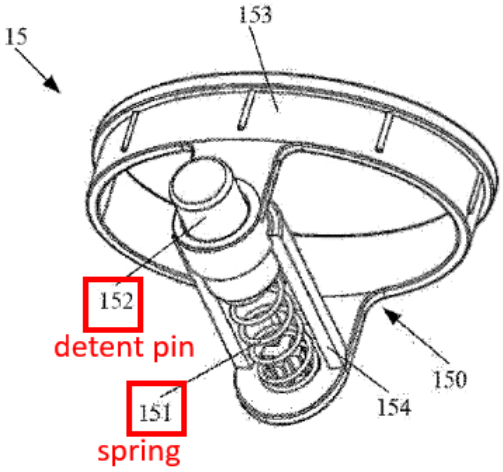


FIG. 7

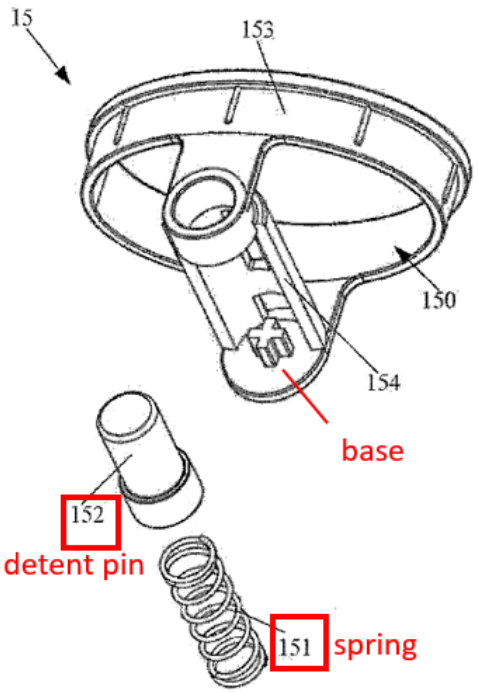


FIG. 11

EX1006, annotated

XIV. GROUND 5: CLAIMS 1, 4-6, AND 9-18 WOULD HAVE BEEN OBVIOUS UNDER 35 U.S.C. §103 OVER LIU IN VIEW OF CHENG AND HUNTER

A. Claim 1

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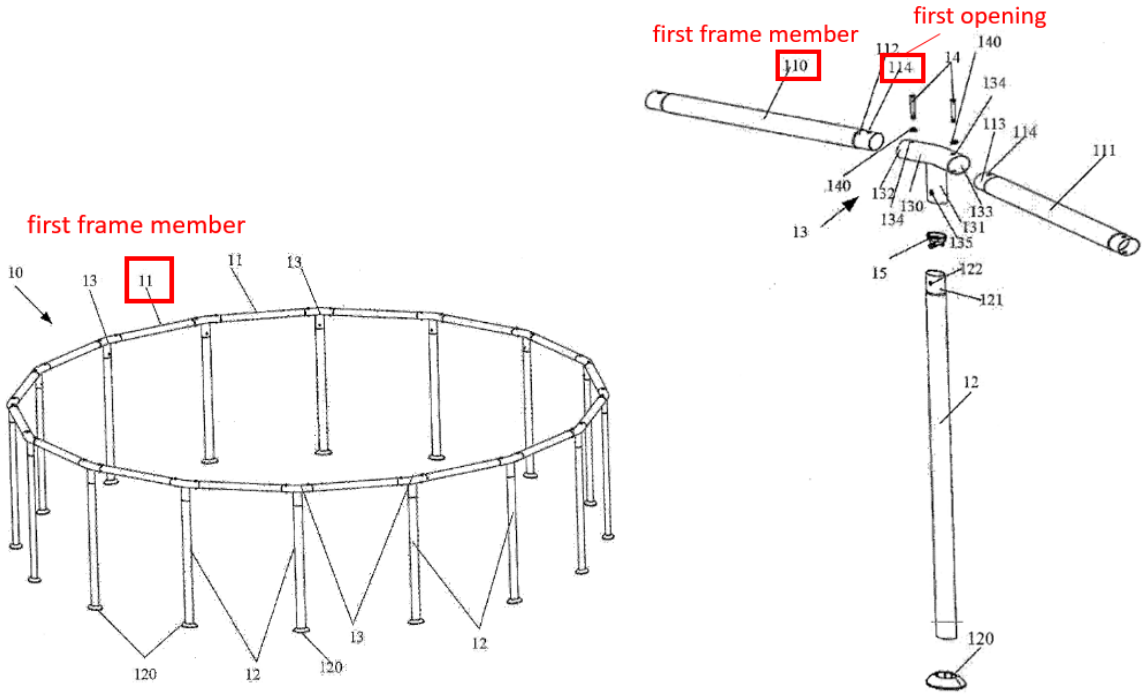
1. Element [1.0]

178. Liu discloses an "above ground pool." EX1006, Title, Abstract.

2. Element [1.1]

179. Liu discloses a first frame member including a first opening.

180. For example, Liu's above ground pool 100 has a support frame 10. EX1006, [0084], Fig. 1. The support frame 10 includes "a plurality of horizontal support members 11" including "a first horizontal support member 110." *Id*., [0085], [0089]. A "set of positioning holes 114 is provided on the end 112 of the first horizontal support member 110." *Id*., [0089]-[0090].



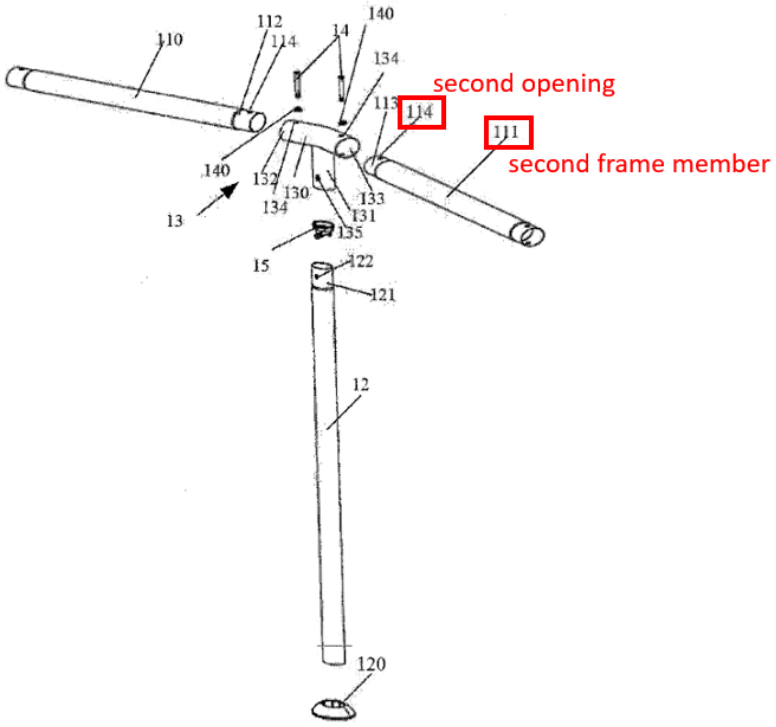
EX1006, Figs. 1, 4 (annotated)

3. Element [1.2]

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181. Liu discloses a second frame member including a second opening.

182. For example, Liu's support frame 10 also includes a second horizontal support member 111, and a "set of positioning holes 114 is provided on… the end 113 of the second horizontal support member 111. *Id*., [0089]-[0090].



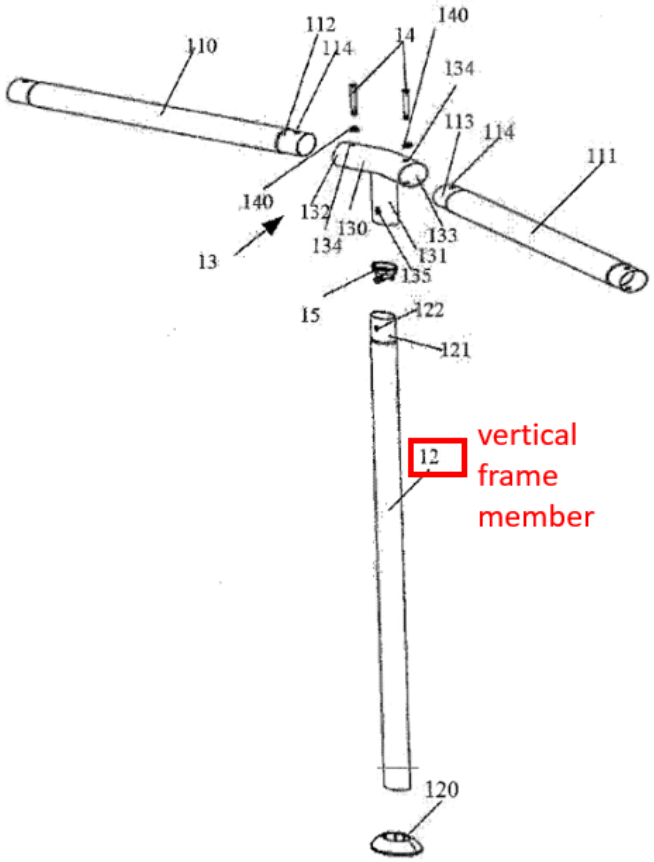
EX1006, Fig. 4, annotated

4. Element [1.3]

183. Liu discloses a vertical frame member.

184. For example, Liu's support frame 10 also includes "a plurality of vertical support members 12." *Id*., [0085].

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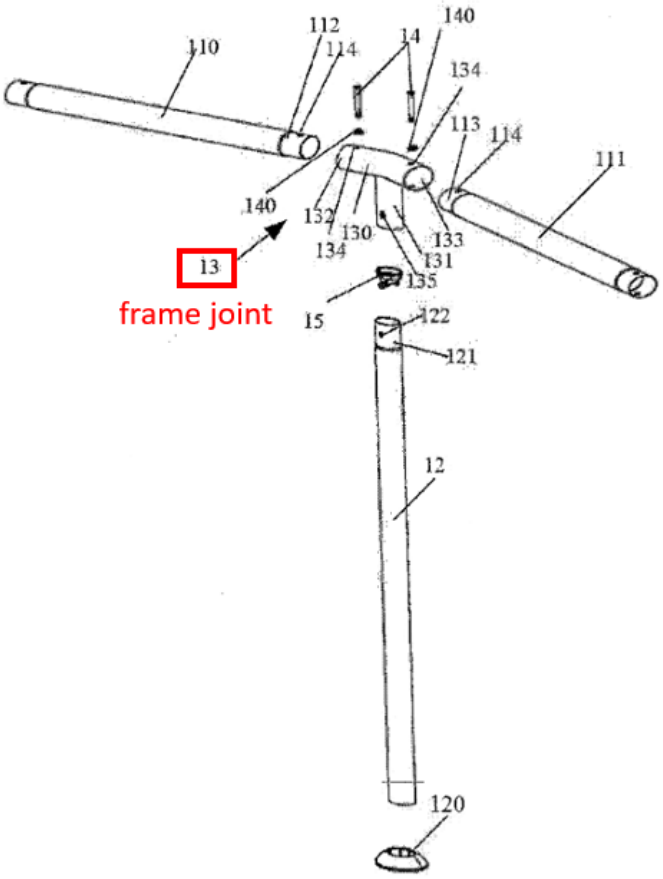
EX1006, Fig. 4, annotated

5. Element [1.4]

185. Liu discloses "a frame joint."

186. For example, Liu discloses a "T-shaped connector 13" to "couple the horizontal support members 11 and the vertical support members 12 together." *Id.*, [0085].

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EX1006, Fig. 4, annotated

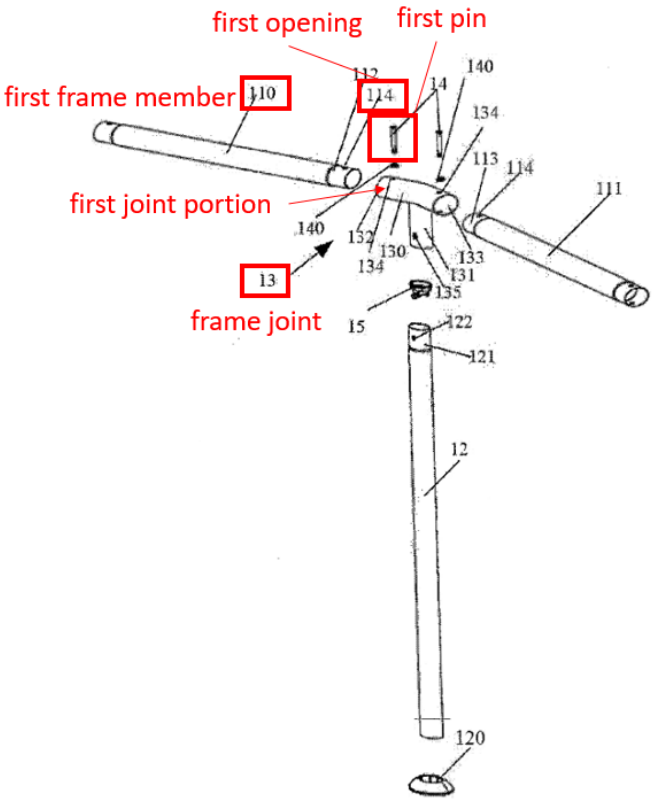
6. Element [1.5]

187. Liu discloses "a first joint portion including a first pin configured to engage the first opening thereby coupling the first joint portion to the first frame member."

188. For example, Liu teaches that its "T-shaped connector 13 includes a horizontal tubular member 130" that is "detachably coupled to an end 112 of a first corresponding horizontal support member 110" "by a retainer." *Id.*, [0087], [0089]. The retainer includes "a retaining pin 14." *Id.*, [0090]. The retaining pin 14 is

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"passed through" the "second set of positioning holes 114 (as shown in FIG. 6), so that the horizontal tubular member 130 of the T-shaped connector 13 and the corresponding horizontal support members (*i.e.*, the first horizontal support member 110 []) are, for example, snap-locked together." *Id.*



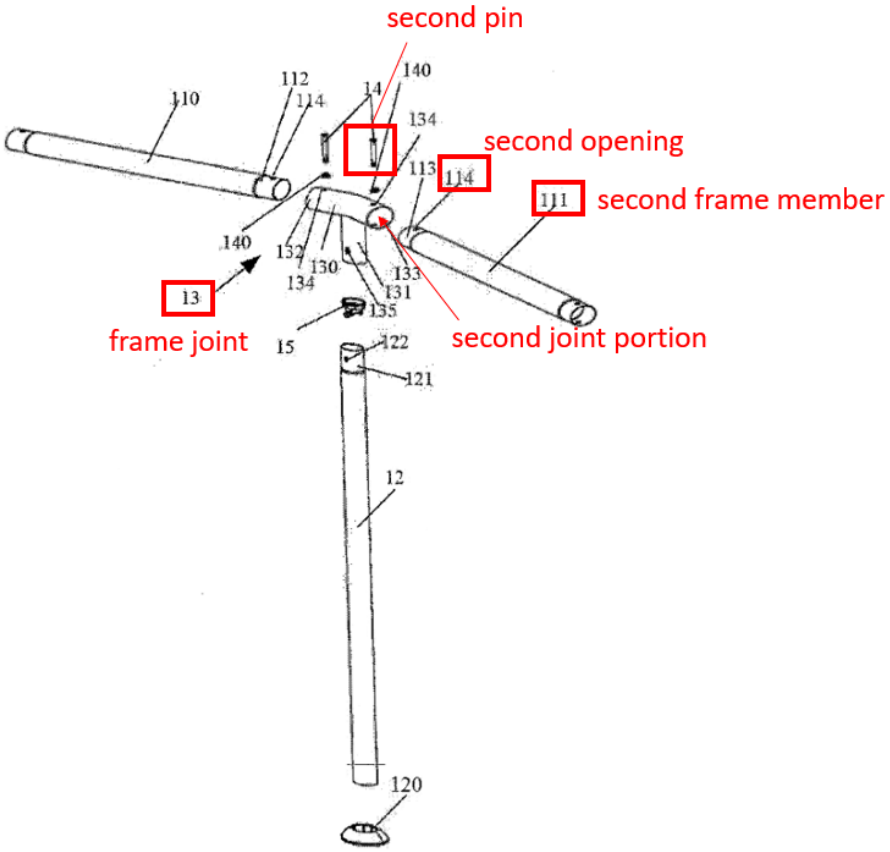
EX1006, Fig. 4, annotated

7. Element [1.6]

189. Similarly, Liu discloses "a second joint portion including a second pin configured to engage the second opening thereby coupling the second joint portion to the second frame member."

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190. For example, in Liu, another retaining pin 14 is "passed through" the "second set of positioning holes 114" of the second horizontal support member 111 "so that the horizontal tubular member 130 of the T-shaped connector 13 and the corresponding horizontal support members (i.e., … the second horizontal support member 111) are, for example, snap-locked together." *Id.*, [0090].



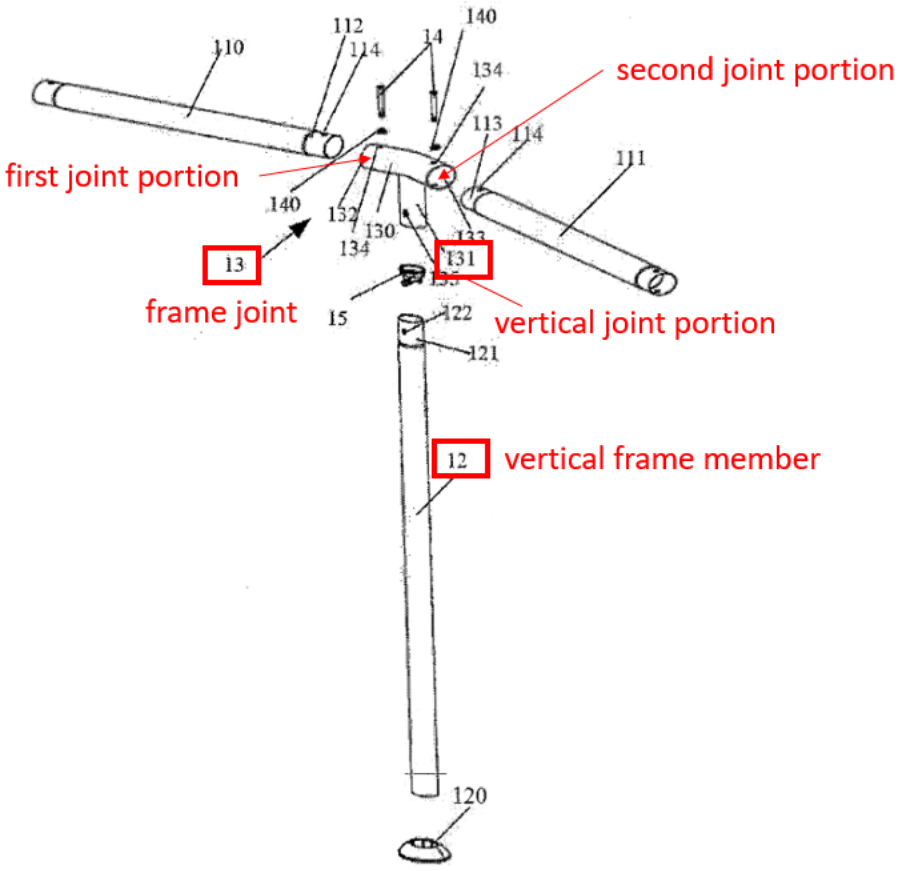
EX1006, annotated.

8. Element [1.7]

191. Liu discloses "a vertical joint portion connected to the first and second joint portions and configured to couple to the vertical frame member."

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Bestway v. Intex PGR2024-00036

192. For example, Liu discloses its T-shaped connector 13 having "vertical tubular member 131" that is "detachably connected to the corresponding vertical support member 12." *Id.*, [0091]. The vertical tubular member 131 and the horizontal tubular member 130 are part of the same T-shaped connector 13 and are therefore connected.



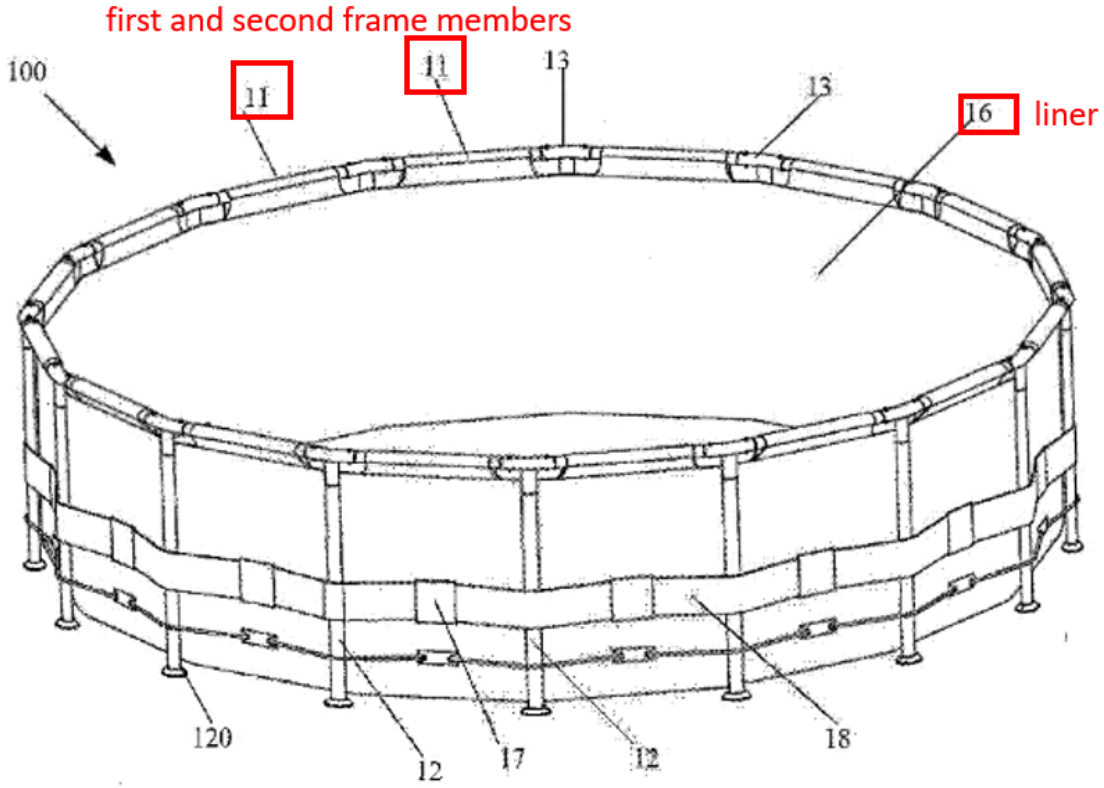
EX1006, Fig. 4, annotated

9. Element [1.8]

193. Liu discloses "a liner positioned around the first and second frame members."

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194. For example, Liu discloses its above ground pool 100 as having a "pool liner 16" that is "affixed to and supported by the support frame 10." EX1006, [0096]. "[T]he upper part of the pool liner 16 may be sheathed on the horizontal support members 11." *Id*. Therefore, the pool liner 16 is "positioned around" the horizontal support members 11.



EX1006, Fig. 12, annotated

10. Element [1.9]

195. To the extent Liu does not explicitly disclose Element [1.9], a POSA would have found it obvious to reduce the overall width of Liu's vertical support members 12 in order to reduce the size of the opening in the liner. Doing so would

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move the pins closer and closer to one another (and thus falling within the scope of Element [1.9]). A POSA would have been motivated to make such a modification for at least the following reasons.

196. First, the problem of water escaping through these holes or gaps in the liner near the T-shaped joints was well-known in the prior art. For example, Cheng discusses this problem in detail. Cheng explains that "frame-pools have gaps 25 near an angle in the horizontal support members 164" in order to access the T-shaped joints. EX1007, [0004]. "As a result, when a splash of water travels towards the gap 25, water can exit the pool via the gap 25. This may result in a loss of water that would, otherwise, not exit the pool." *Id.*, [0004]. The '512 Patent's Background acknowledges this problem in the art as well. EX1001, Background. Cheng's Figure 1B is shown below with annotations to show the gap 25 where water splashes out:

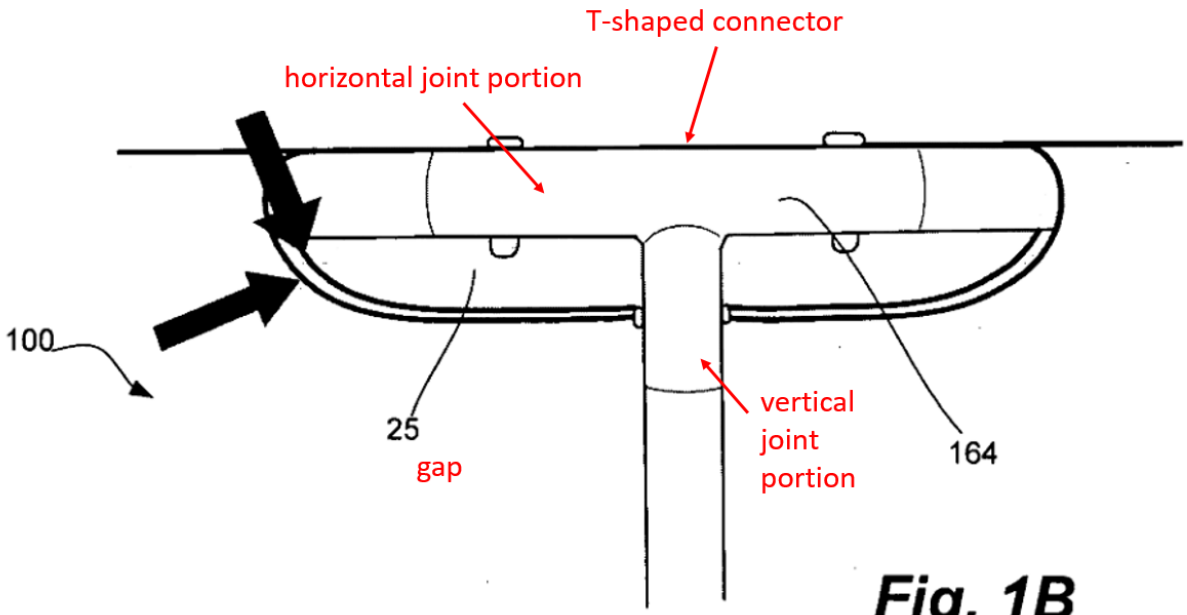


Fig. 1B
Prior Art

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Bestway v. Intex PGR2024-00036

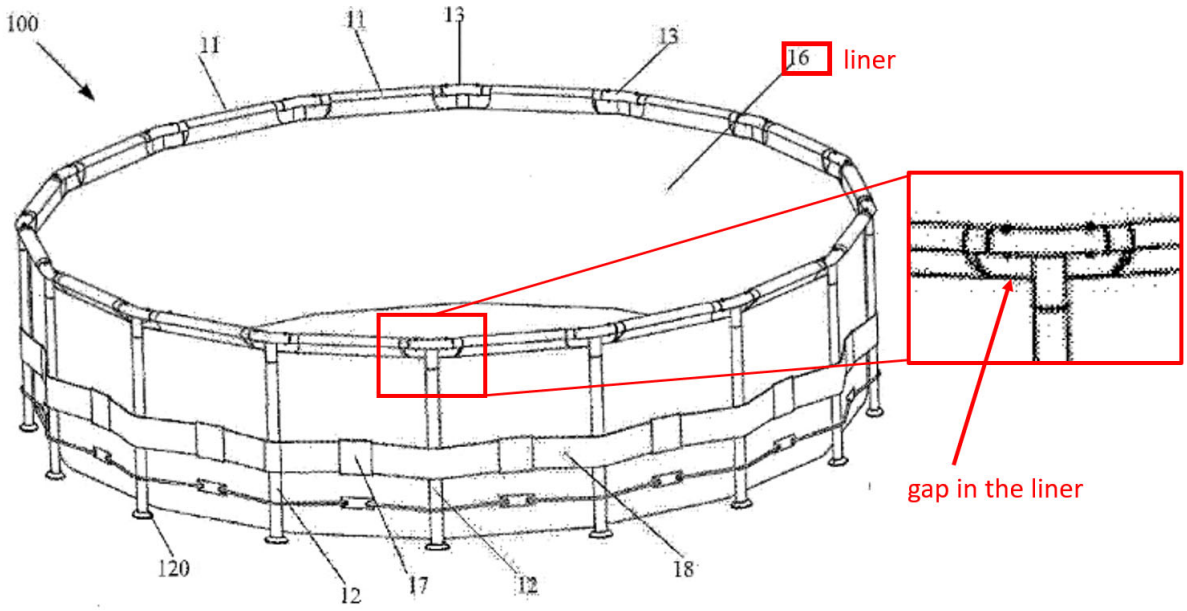
EX1007, Figure 1B, annotated

197. Cheng solves this problem in one way by providing a "splash guard 200" that covers this gap. By covering the gap 25 with a splash guard, the "splash guard 200 is adapted to reduce, if not prevent, water from splashing outside the pool 100" at the locations of these gaps 25. *Id.,* [0049].

198. However, this is just one potential solution for solving the problem of water splashing through this gap 25. A POSA would have immediately recognized that reducing the size of the gap 25 would be another way of reducing the amount of water that splashes through the gap 25 without the cost associated with installing Cheng's splash guard. A smaller gap 25 would result in less water splashing out through the gap 25. Shrinking the gap 25 as much as possible in order to minimize the amount of water splashing through the gap 25 would have been an immediate thought of a POSA to solve the problem.

199. Similar to Cheng, Liu's frame pool has gaps in the liner that expose the T-shaped connector:

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EX1006, Fig. 12 (annotated)

In order to minimize these gaps as much as possible to inhibit splashing water through these gaps, a POSA would have been motivated to reduce the overall width of the T-shaped connector while keeping the pins accessible via the gaps. In other words, reducing the overall width of the T-shaped connector (and thus the distance between the pins) would have allowed for a smaller gap in the liner while still maintaining accessibility to the T-shaped connector. Shrinking the size of these gaps without also shrinking the overall width of the T-shaped connector could result in parts of the T-shaped connector (such as the pins) being concealed by the liner. This would be undesirable, because a user needs to access these pins easily without interference from the liner. Moreover, a T-shaped connector that is larger than the liner could result in abrasive damage to the liner. Reducing the overall width of the

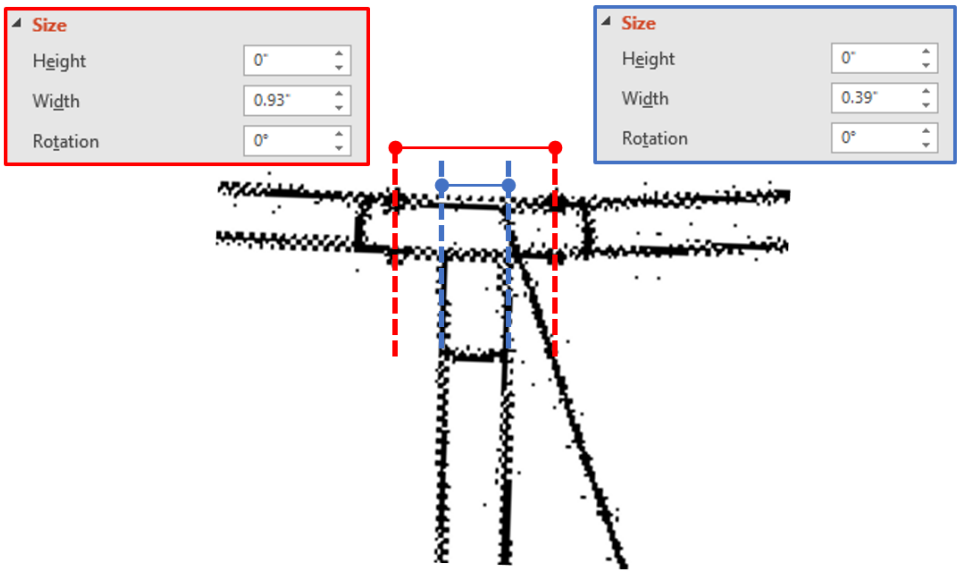
BESTWAY EX. 1002; Pg 142
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T-shaped connector would not involve changing the diameters of the frame members so as to not impact the structural integrity of the frame pool.

200. Moreover, a POSA would have understood that reducing the overall width of Liu's T-shaped connector would not require a reduction in the width of the *vertical* joint portion of the T-shaped connector. A POSA would be motivated to maintain the width of the vertical joint portion for structural integrity of the pool while reducing the overall width of the T-shaped connector (and thus the distance between the pins) to reduce the size of the gap to reduce splashing water leaving the pool.

201. Therefore, it would have been obvious to reduce the overall width of Liu's T-shaped connector (and thus the width between the pins) in order to allow for a reduction in the size of the gap in the liner in order to reduce the amount of water splashed outside of the pool. This would move the pins closer to the vertical joint portion while also assuring they remain accessible via the gaps in the liner. As can be seen from FIG. 5 (when overlaying 110 and 111 onto 130) and FIG. 6, the poles are able to be moved further in such that the pinholes would be closer together. Referring to the annotations below, the width between the pins already accounts for roughly 42% of the width of the vertical joint portion, and therefore only a slight reduction of the overall width of Liu's T-shaped connector (and thus the width between the pins) would read on Element [1.9].

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Bestway v. Intex PGR2024-00036



EX1006, Fig. 1, annotated

202. A POSA might also look to other pools (or similar structures) to learn how smaller T-shaped joints might reduce the width of the gaps in the liner, thereby improving the pool's ability to contain water.

203. Hunter discloses such a structure. Hunter is directed to a modular fence 100 for an above-ground pool. EX1008, Abstract. The fence 100 includes a plurality of linkages 114 (also referred to as a "three-way connector," a "T-connector," or a "Y-connector") connects adjacent side struts 120 to a vertical support strut 112. *Id.*, [066]-[069]. A "peg or pin 132" is "inserted" through the T-connector 114 and "into the side strut 120" to connect the T-connector 114 to the side strut 120. *Id.*, [094].

BESTWAY EX. 1002; Pg 144
Bestway v. Intex PGR2024-00036

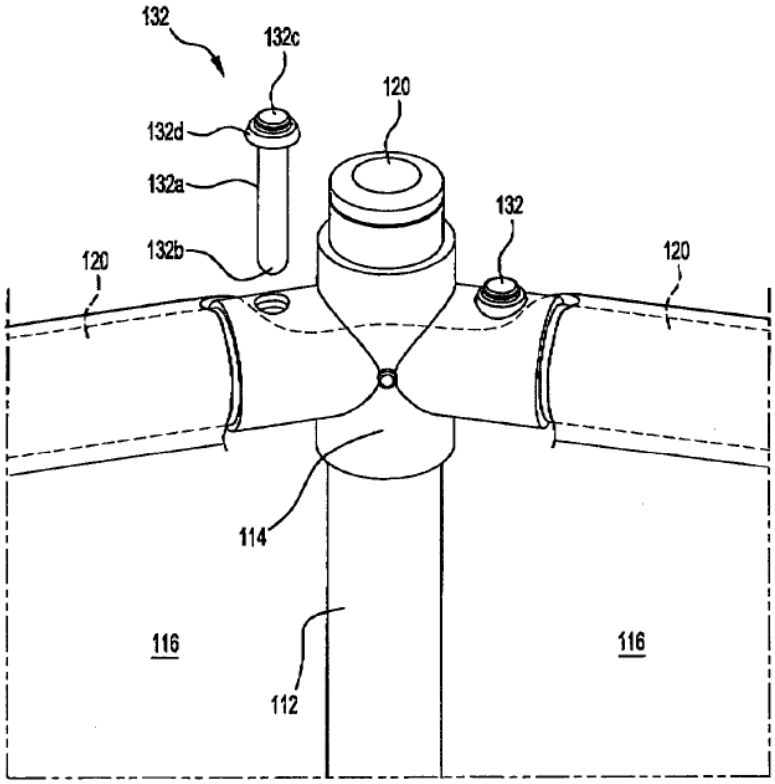


FIG. 15

EX1008., Fig. 15

204. A POSA would have immediately noticed the similarities between Hunter's T-connector 114, Cheng's T-shaped connector, and Liu's T-shaped connector 13. A POSA would have also immediately recognized the relatively small overall width of the T-connector 114, and that if it were used in place of Liu's T-shaped connector 13, it could reduce the size of the aligned gaps in the liner, thereby reducing the amount of water splashed out of the pool. A POSA would have at least considered Hunter's T-connector to determine whether its illustrated shape and dimensions would help in reducing the size of the gap in the liner. And, a POSA would understand how to incorporate the locations of the pins of Hunter without

BESTWAY EX. 1002; Pg 145
Bestway v. Intex PGR2024-00036

impacting the structural integrity of the joint. A POSA would understand how to modify Hunter's T-connector 114 so that it can withstand the forces of the water in the pool, such as by including reinforcement or strengthening ribs, thickening the material of the T-connector, and the like.

205. By simple visual inspection of Hunter's Fig. 15, a POSA would have immediately understood the width of the vertical joint portion of the T-connector 114 to be "at least 50%" of the width between the pins 132. I can see this without performing any measurements – it is easily apparent to me.

206. Nonetheless, a simple measurement (shown below) confirms that the width of the vertical joint portion accounts for roughly 61% of the width between the pins 132. Here, I once again used the same PowerPoint measurement techniques that I described above. As shown below, the width between the center of the pins (red) is 2.0 inches, while the width of the vertical joint portion (blue) is 1.2 inches, yielding a 61% ratio. This ratio would be even higher if the width between the pins was measured from the surfaces of the pins that face one another (*i.e.*, the distance of the void between the pins).

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Bestway v. Intex PGR2024-00036

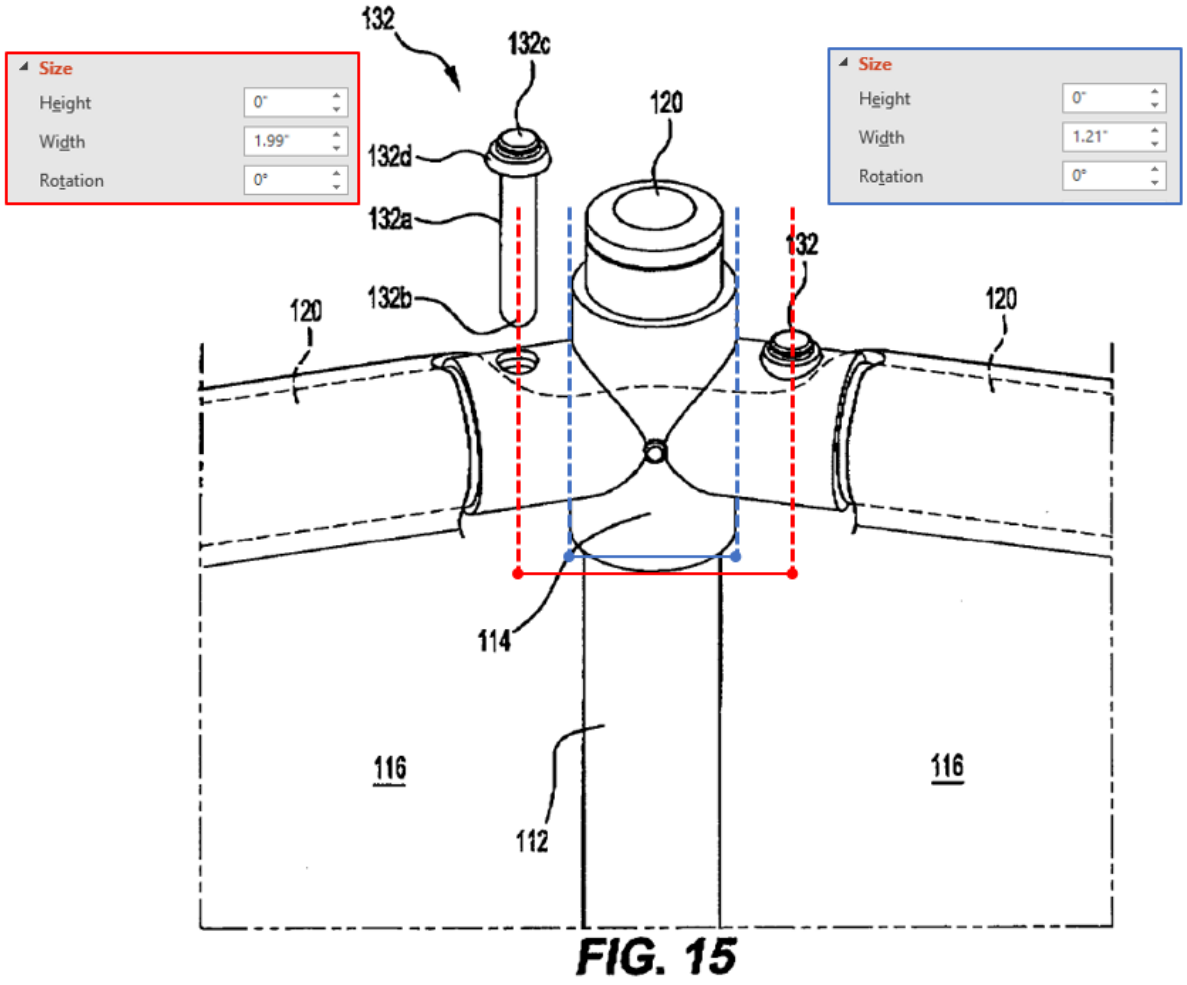


FIG. 15

EX1008, Fig. 15, annotated

207. It would have been obvious to reduce the width of Liu's T-shaped connector 13 to be more of the size of Hunter's T-connector 114 in order to allow for a smaller gap in the liner, thus resulting in less water splashing through the gap in the liner. With Hunter's T-connector 114 in mind, routine experimentations and modifications of Liu's T-shaped connector 13 would naturally lead a POSA to try reducing the width of the T-shaped connector 13 to reduce the overall size of the hole in the liner. These routine experimentations and modifications would also

BESTWAY EX. 1002; Pg 147
Bestway v. Intex PGR2024-00036

include assuring the T-shaped connector maintains the ability to withstand the forces of the water in the pool, such as by including stiffening ribs or thickening the T-connector material.

208. Hunter is analogous art to Liu and Cheng. It describes advantages of above-ground pools, including their ability to be disassembled and stored away. EX1008, [002]-[004]. Hunter's fence is assembled in similar fashion as a frame pool, and is modular so it can be disassembled and stored away just like an above-ground pool. *Id*., [005]-[006]. The fence can be sold together along with an above-ground pool as part of a kit. *Id*., [009], Claim 19. Hunter is therefore analogous art in that it is in the same field of endeavor (*e.g*., above-ground pools and associated structures). Hunter would have logically commended itself to an inventor's attention in considering the problem of reducing the size of the T-shaped joint.

B. Claim 4

1. Element [4.0]

209. Liu discloses "wherein the first joint portion includes a first coupling assembly including the first pin, a first base, and a first helical spring supported by the first base." Alternatively, this limitation would have been an obvious alteration of Liu.

210. For example, as explained in Ground 4 (Claim 4), Liu discloses a "spring-loaded latch 15" fitted within the end 121 of the vertical support member

BESTWAY EX. 1002; Pg 148
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12. EX1006 at [0091], [0094]. The latch 15 has a helical spring 151 that biases a pin 152 outwardly through an aperture 122 of the vertical support member 12 and an aperture 135 of the T-shaped connector 13 to "snap-lock" the T-shaped connector 3 to the vertical support member 12.

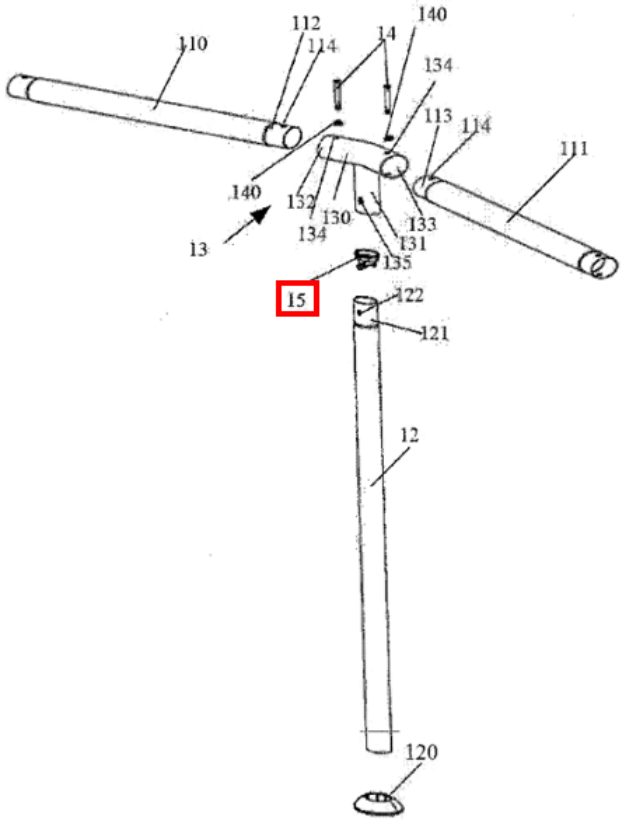


FIG. 4

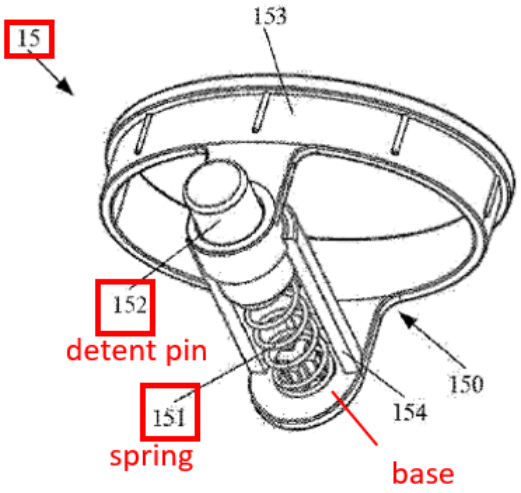


FIG. 7

EX1006, Figs., 7, 11 (annotated)

211. A POSA would have found it obvious to use the spring-loaded latch 15 (instead of pins 14) to connect the T-shaped connector 13 to the *horizontal* support members 110, 111. This would have been obvious for several reasons. Doing so would have been a simple substitution of one known element (*i.e.* pins 14) for

BESTWAY EX. 1002; Pg 149
Bestway v. Intex PGR2024-00036

another (*i.e.*, spring-loaded latch 15) to obtain a predictable result of a quick coupling between the T-shaped connector 13 and the horizontal support members 110, 111. A POSA would have had a reasonable expectation of success in interchanging the pins 14 and the spring-loaded latch 15. Moreover, the spring-loaded latch 15 would fit around the ends 112, 113 of the horizontal support members 110, 111 in the exact same way that it fits around the end 121 of the vertical support member 12. Additionally, utilizing only one type of connection (*e.g.*, spring-loaded latch 15) for all three frame members 110, 111, 12 instead of two different connections (*e.g.*, spring loaded latch 15 and pins 14) would simplify assembly and would also reduce the number of SKUs, saving costs.

212. In fact, Liu suggests the interchangeability of the pins 14 and spring-loaded latch 15. *See* Ground 4, Motivation to Combine. For example, a POSA would understand Liu's Figure 30 to disclose (or at a minimum, suggest) a pin for connecting with the *vertical* support member 32, and spring-loaded latches for connecting with the *horizontal* support members 31. Looking at Figure 30, the pins that connect the T-shaped connector 33 to the horizontal support members 31 extend out of only one side of the T-shaped connector 33 (i.e., the bottom), while the pin that connects the T-shaped connector 33 to the vertical support member 32 extends out of both sides of the tubular member 331.

BESTWAY EX. 1002; Pg 150
Bestway v. Intex PGR2024-00036

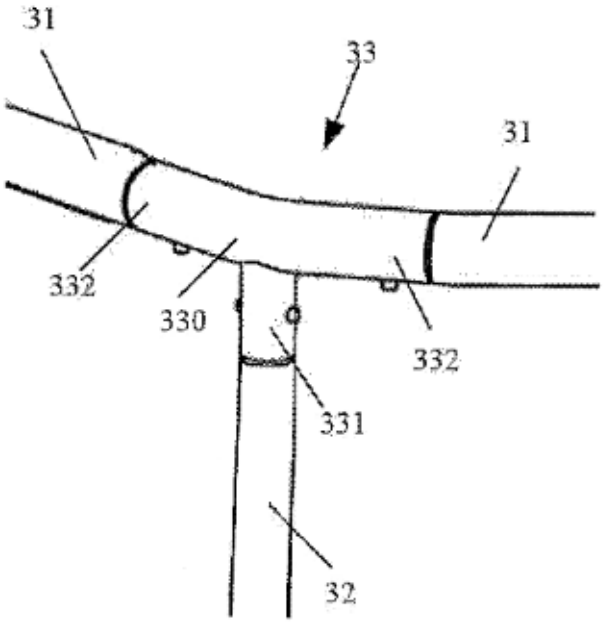


FIG. 30

EX1006, Fig. 30

This is the opposite configuration of Figure 4, where the spring-loaded latch would only be visible as extending through one side (not both) of the T-shaped connector. This indicates to me that Figure 30 illustrates a spring-loaded latch being used to connect the horizontal support members 31 to the T-shaped connector 33, while a conventional pin is used to connect the vertical support member 32 to the T-shaped connector 33. This teaches or at least suggests to a POSA that the pins and spring-loaded latches are interchangeable, suitable methods for attaching the frame members to the T-shaped joint.

BESTWAY EX. 1002; Pg 151
Bestway v. Intex PGR2024-00036

213. Below is an annotated version of Figure 4 where a POSA would find it obvious to include the first coupling assembly 15 to couple the horizontal members 110 to the T-shaped connector 13. When the spring-loaded latch 15 used to connect the T-shaped connector 13 to the first horizontal support member 110, the first joint portion includes a first coupling assembly including the spring-loaded latch 15 having the first pin, a first base, and a first helical spring supported by the first base.

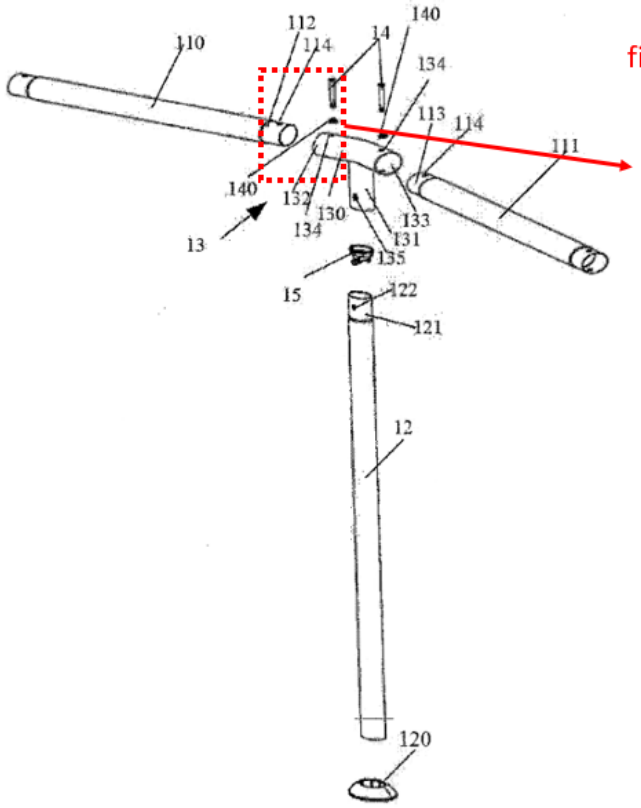


FIG. 4

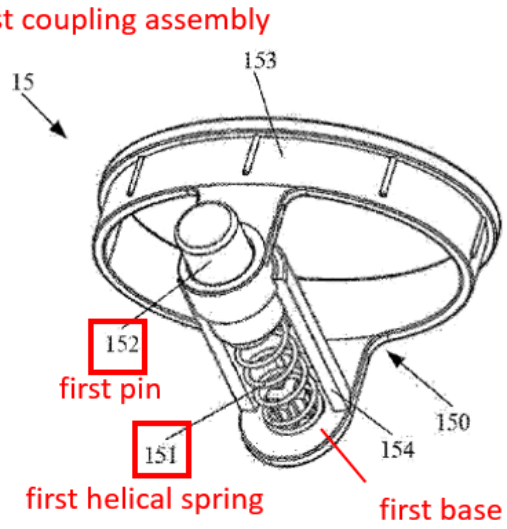


FIG. 7

EX1006, Figs. 4, 7 (annotated)

BESTWAY EX. 1002; Pg 152
Bestway v. Intex PGR2024-00036

2. Element [4.1]

214. Liu discloses "the first pin being biased outward through a first hole in the first joint portion by the first helical spring to engage the first opening of the first frame member."

215. For example, when the spring-loaded latch 15 used to connect the T-shaped connector 13 to the first horizontal support members 110, the detent pin 152 would be biased outwardly through both the positioning hole 134 of the T-shaped connector 13 and the positioning hole 114 of the first horizontal support member 110 to "snap lock" the first horizontal support member 110 to the T-shaped connector 13. EX1006, [0090], [0093].

C. Claim 5

216. Liu discloses the limitations of claim 5, or alternatively the limitations would be an obvious modification of Liu for the reasons set forth above in claim 4. Claim 5 is merely a repeat of claim 4, except utilizing a second coupling assembly to couple the second joint portion to the second frame member. As shown below, the same spring-loaded latch would be inserted into the second frame member, with its spring-biased pin 152 extending through the second opening 114 of the second frame member and through the second hole 134 in the second joint portion.

BESTWAY EX. 1002; Pg 153
Bestway v. Intex PGR2024-00036

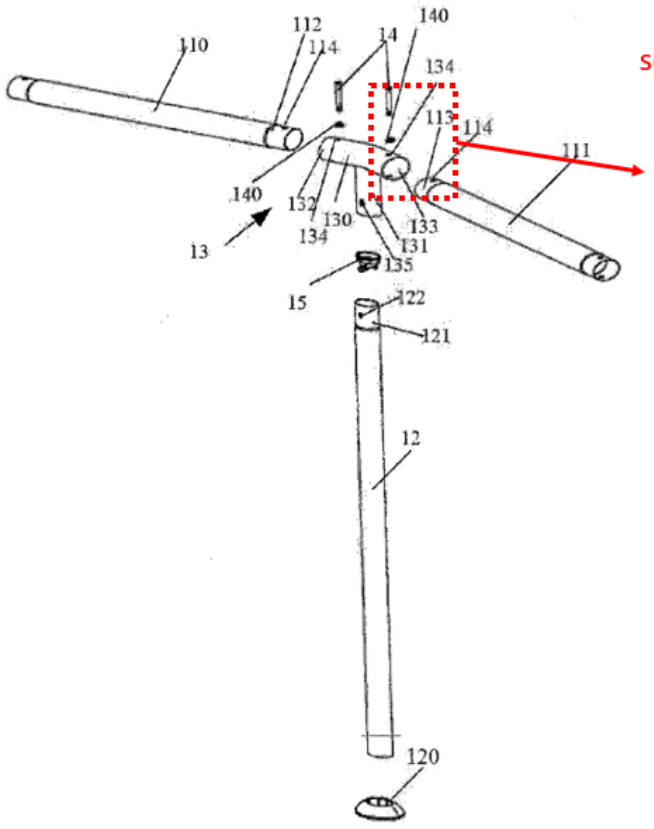


FIG. 4

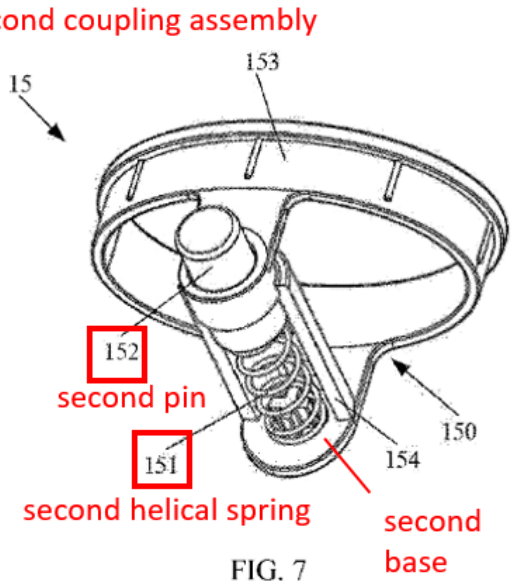


FIG. 7

EX1006, Figs. 4, 7 (annotated)

D. Claim 6

217. An obvious modification of Liu, based on the teachings of Cheng and Hunter, discloses "wherein the width of the vertical joint portion accounts for about 70% of a width between the first and second pins."

218. As explained in [1.9] above, given the recognized problem of water exiting through the gaps in the liner aligned with the T-shaped connectors, a POSA would have found it obvious to decrease the total width of Liu's T-shaped connector 13.

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Bestway v. Intex PGR2024-00036

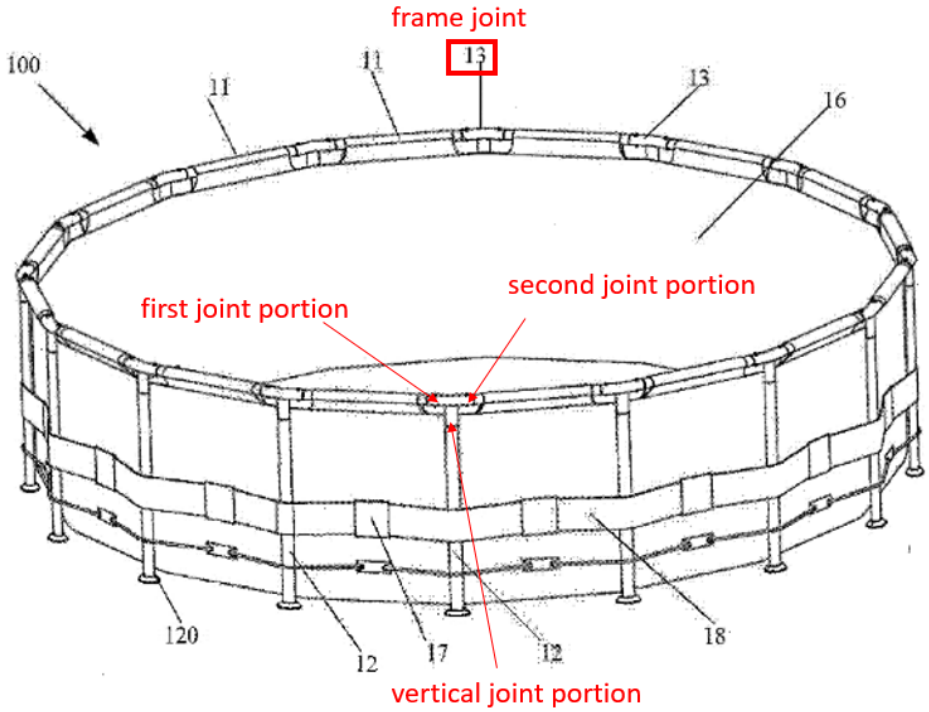
219. By simple visual inspection of Hunter's Fig. 15, a POSA would have immediately understood the width of the vertical joint portion of the T-connector 114 to be "about 70%" of the width between the pins 132. No measurement would be needed. This is especially true given the '512 Patent does not define what is meant by "about 70%."

E. Claim 9

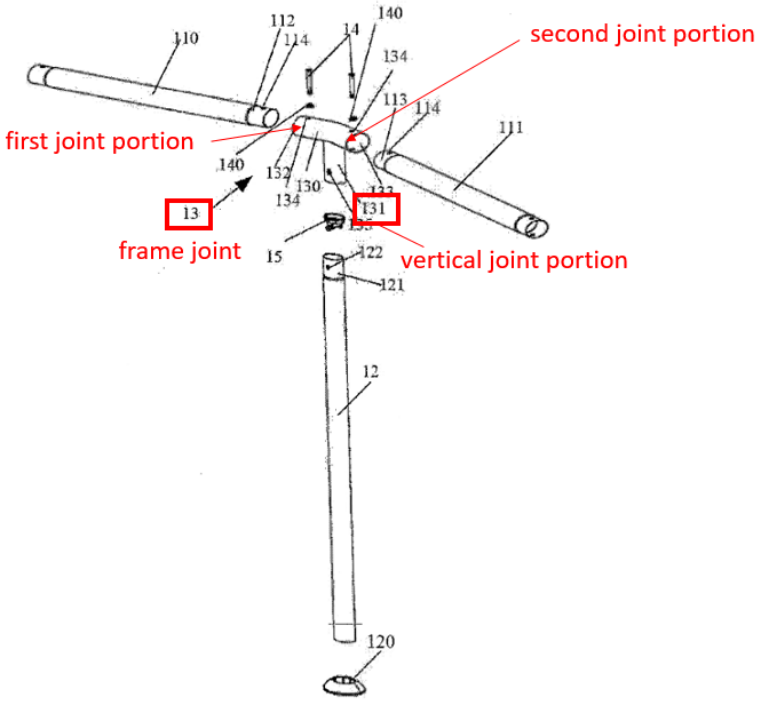
220. Liu discloses "wherein the vertical joint portion is centered between the first and second joint portions to form a T-shaped frame joint."

221. For example, Liu's T-shaped connector is named just that – as "T-shaped." Further, as shown below, for each T-shaped connector 13, the vertical tubular member 131 is centered on the horizontal tubular member 130 between the first and second joint portions.

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EX1006, Fig. 12



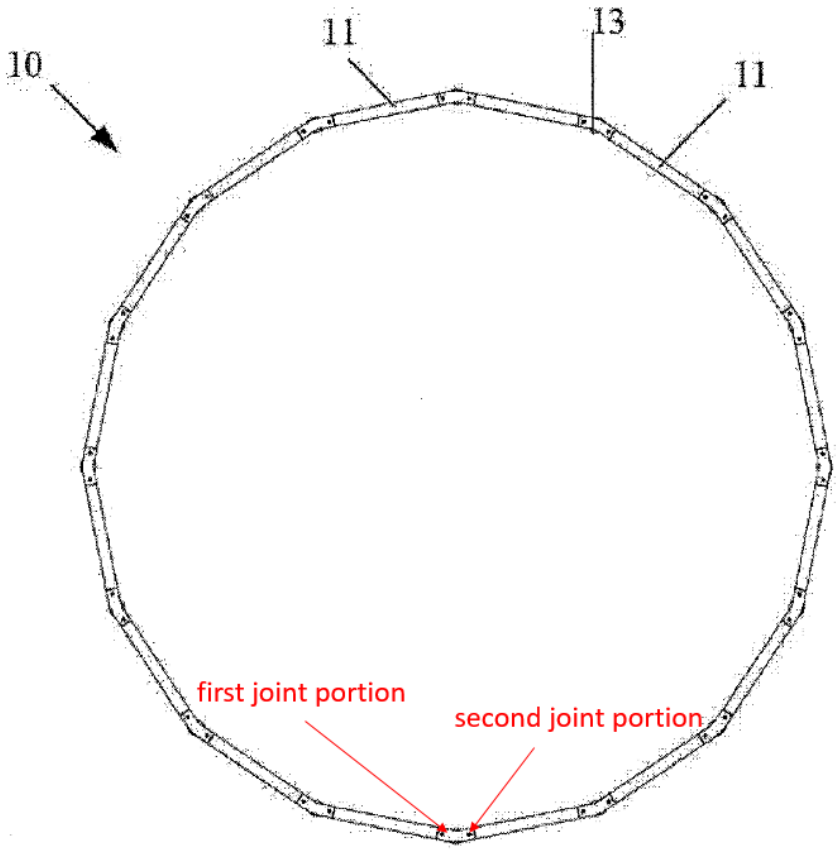
EX1006, Fig. 4 (annotated)

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F. Claim 10

222. Liu discloses "wherein the first and second joint portions form an obtuse angle."

223. For example, Liu states that "The T-shaped connectors 13 couple two neighboring horizontal support members 11 … together to form a substantially circular ring structure (as best shown in FIG. 3)." EX1006, [0088]. A POSA would understand that since the horizontal support members 11 are linear, then the first and second horizontal joint portions of the T-shaped connectors 13 must form an obtuse angle in order to form the circular ring structure. Liu's Figure 3 shows just that:



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EX1006, Fig. 3, annotated

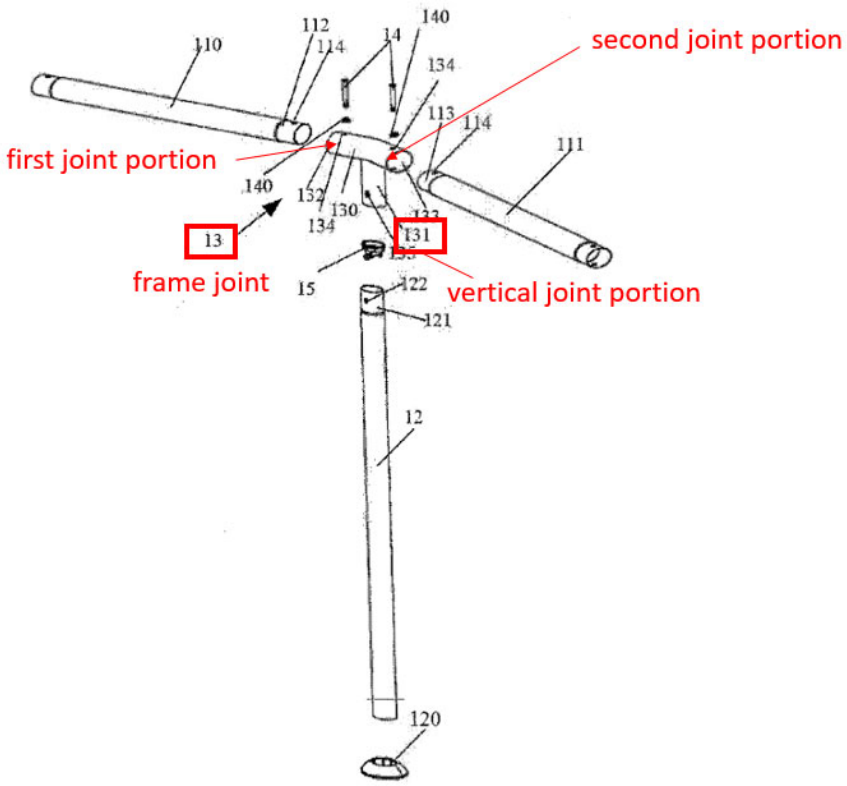
224. In fact, Lee explains the general geometrical principles that dictate the angle of the first and second joint portions. The angle between the first and second joint portions is defined by 180-360/n°, where n is the number of horizontal or vertical frame members in the frame pool. EX1009, [0059]. In Figures 1, 3, and 12, n=16 and thus the angle defined by the first and second joint portions is 157.5°, which is an obtuse angle.

G. Claim 11

225. Liu discloses "wherein the vertical joint portion is integrally formed with the first and second joint portions as a single piece."

226. For example, Liu states that the T-shaped connector 13 "may be constructed from molded… plastic." EX1006, [0131]. Furthermore, the illustrations of Liu show the T-shaped connector 13 as a single piece. For example, Liu's Figure 4 is an exploded view with every individual component separated and isolated, and the T-shaped connector 13 is a single individual piece. Therefore, the vertical joint portion is integrally formed with the first and second joint portions as a single piece.

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EX1006, Fig. 4, annotated

H. Claim 12

227. Liu discloses "wherein the vertical joint portion includes at least one internal vertical reinforcing rib."

228. For example, the spring-loaded latch 15 has ribs located at spaced intervals about the wall 153:

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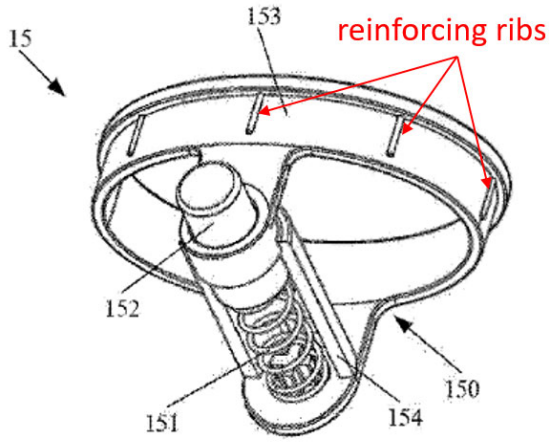


FIG. 7

EX1006, Figure 7 (annotated)

229. A POSA would immediately understand these ribs to be reinforcing ribs in that they provide structural reinforcement to the wall 153. For example, when the spring-loaded latch 15 is inserted into the vertical support member 12, these reinforcing ribs would help support the connection between the two components by inhibiting relative rotation and increasing the supporting strength of the wall 153.

230. Furthermore, Liu states that "When the spring-loaded latch 15 is fitted into the end 121 of the vertical support member 12, the annular outer wall 153 of the pin boss 150 is embedded in the interior of the end 121 of the vertical support member 12." EX1006, [0094]. Therefore, when the spring-loaded latch 15 is installed into the vertical support member 12 and connects the vertical support member 12 to the vertical tubular member 131, the vertical tubular member would surround and include these reinforcement ribs in its interior. The reinforcement ribs

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would also be oriented *vertically* (*i.e.*, parallel with the length of the vertical support member 12). In addition, adding reinforcing ribs is a common practice and well within the knowledge of a POSA.

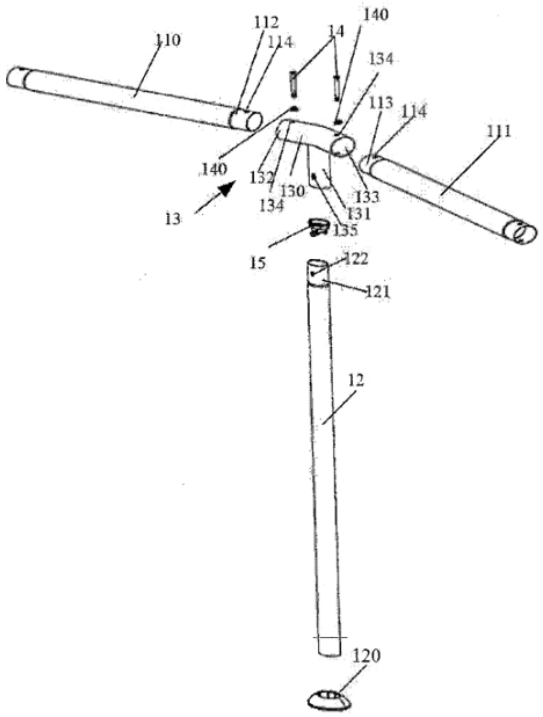


FIG. 4

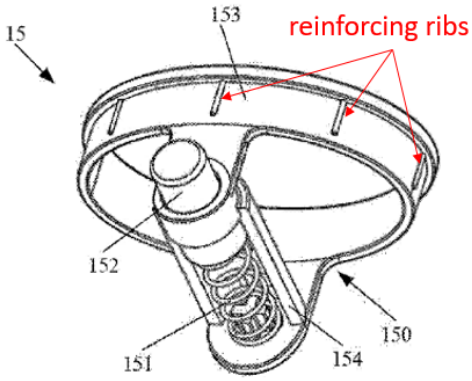


FIG. 7

EX1006, Figs. 4, 7, annotated

I. Claim 13

231. Liu discloses "wherein at least one of the first joint portion and the second joint portion includes an internal reinforcing rib." Alternatively, this limitation is an obvious variation of Liu.

232. Once again, the spring-loaded latch 15 has ribs located at spaced intervals about the wall 153, and a POSA would immediately understand these ribs

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to be reinforcing ribs in that they provide structural reinforcement to the wall 153. *See* Claim 12.

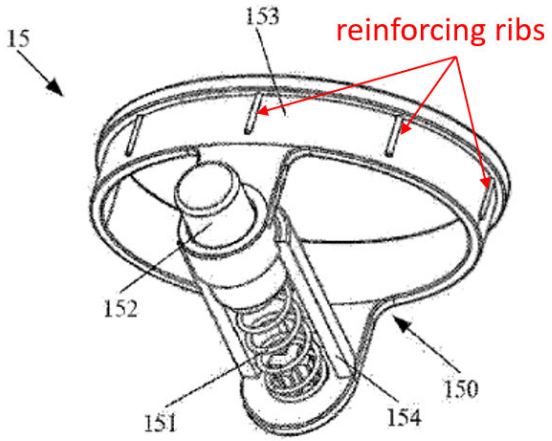


FIG. 7

EX1006, Figure 7 (annotated)

233. And, as explained in Claim 4 above, Liu discloses – or at a minimum renders obvious – utilizing the spring-loaded latch 15 for connecting the horizontal support members 110, 111 to the T-shaped connector 13. When the spring-loaded latch 15 connects the horizontal frame member 110 to T-shaped connector 13, the horizontal joint portion of the T-shaped connector would surround and include these reinforcing ribs in its interior. In addition, adding reinforcing ribs is a common practice and well within the knowledge of a POSA.

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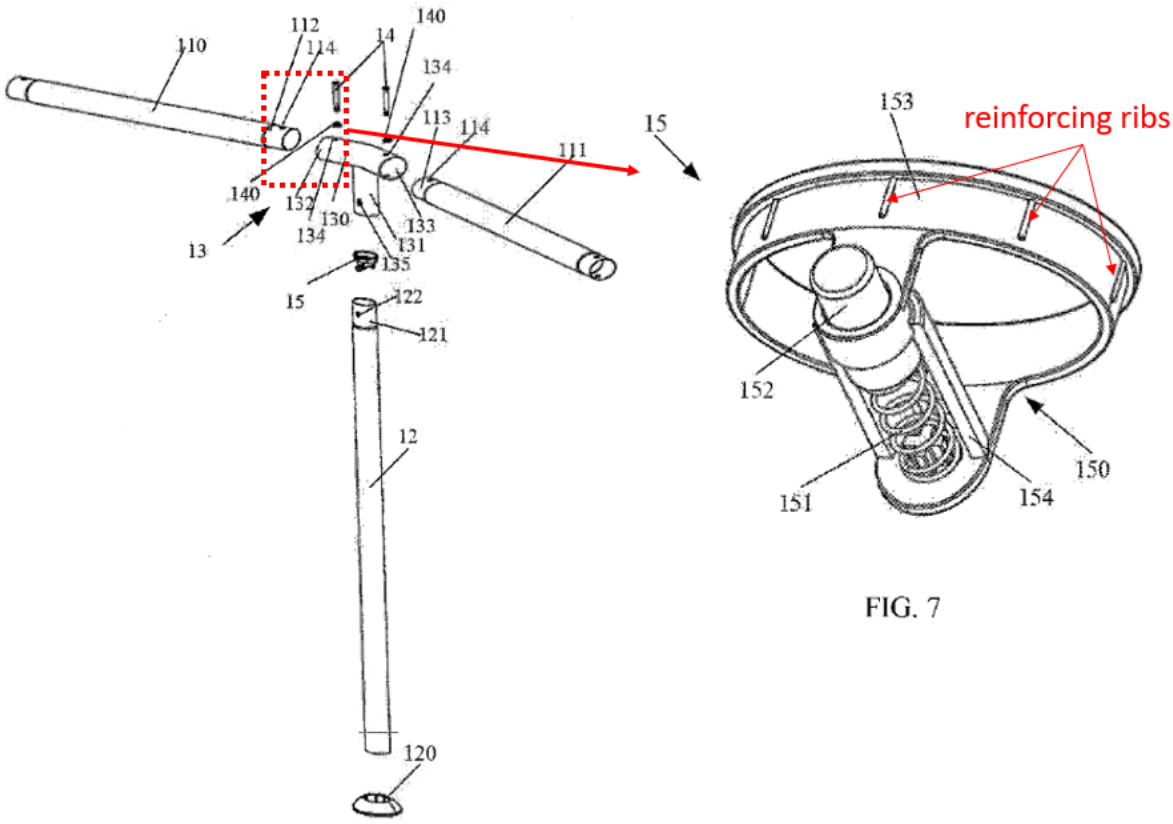


FIG. 4

FIG. 7

EX1006, Figs. 4, 7, annotated

J. Claim 14

234. Liu discloses "wherein at least one of the first joint portion and the second joint portion includes an internal support member."

235. For example, see claim 13 above. The same "reinforcing ribs" can be referred to as support member as they support the wall 153, which in turn supports the base for the spring 151. See Element [4.0] above.

K. Claim 15

1. Element [15.0]

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236. See Element [1.0] above.

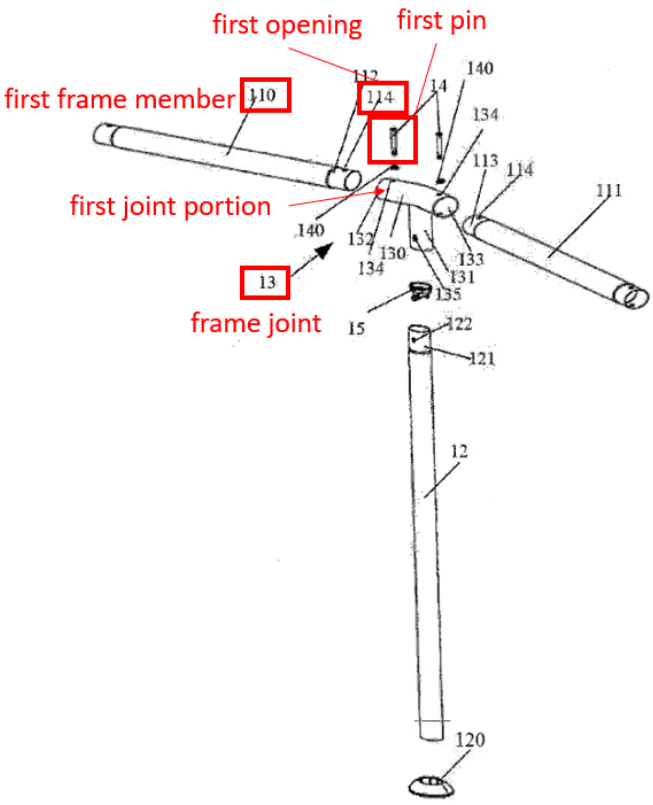
2. Element [15.1]

237. Regarding "a first joint portion of a frame joint," see Element [1.4] and [1.5] above.

238. Regarding "a first frame member," see Element [1.1] above.

239. Regarding "a first pin configured to engage a first opening of the first frame member," see Elements [1.1] and [1.5] above.

240. Liu discloses coupling the first joint portion of the frame joint to the first frame member with a first pin configured to engage the first opening of the first frame member, as shown below and described above regarding Element [1.5].



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EX1006, Fig. 4, annotated

3. Element [15.2]

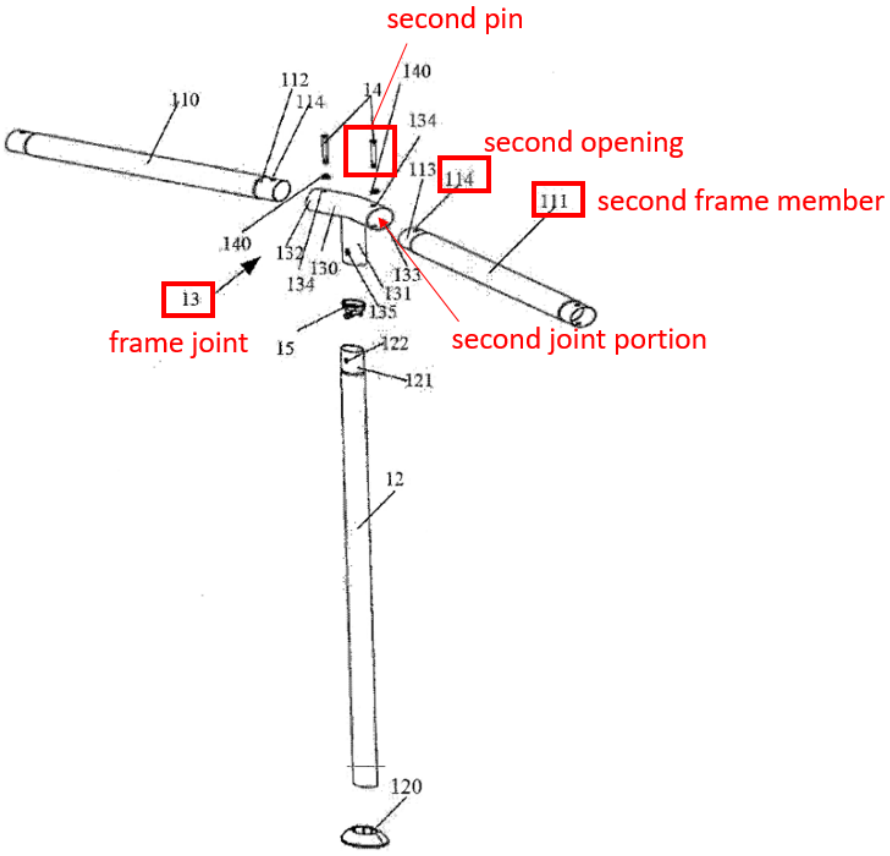
241. Regarding "a second joint portion of the frame joint," see Element [1.6] above.

242. Regarding "a second frame member," see Element [1.2] above.

243. Regarding "a first pin configured to engage a first opening of the first frame member," see Elements [1.2] and [1.6] above.

244. Liu discloses coupling the second joint portion of the frame joint to the second frame member with a second pin configured to engage the second opening of the second frame member, as shown below and described above regarding Element [1.6].

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EX1006, Fig. 4, annotated.

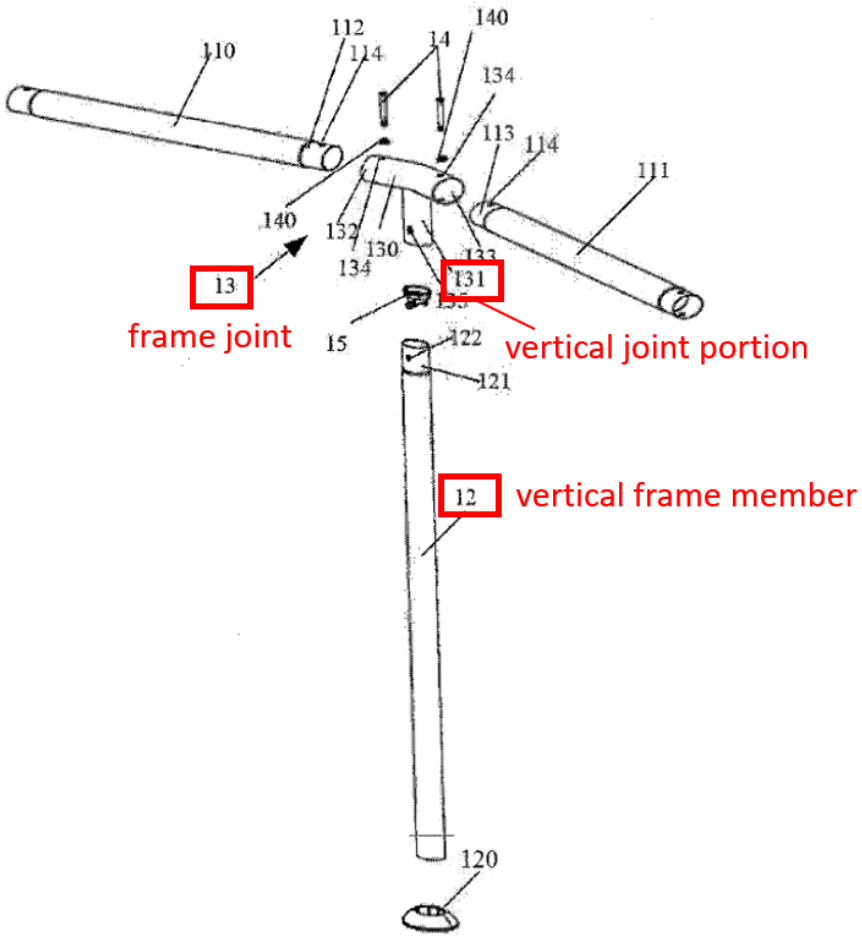
4. Element [15.3]

245. Regarding "a vertical joint portion of the frame joint," see Element [1.7] above.

246. Regarding "a vertical frame member," see Element [1.3] above.

247. Liu discloses coupling the vertical joint portion of the frame joint to the vertical frame member as shown below and described above regarding Element [1.7].

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EX1006, Fig. 4, annotated

5. Element [15.4]

248. See Element [1.8] above.

6. Element [15.5]

249. See Element [1.9] above. There is no practical difference between a width of "at least 50%" in Element [1.9] and a width that is "a majority" in Element [15.5]. To the extent there is any difference in these terms, my analysis applies to Element [1.9]'s "at least 50%" limitation and Element [15.5]'s "a majority" limitation.

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L. Claim 16

1. Elements [16.0], [16.1], and [16.2]

250. Liu teaches an external cross-section of the first joint portion matches an internal cross-section of the first frame member, an external cross-section of the second joint portion matches an internal cross-section of the second frame member, and an external cross-section of the vertical joint portion matches an internal cross-section of the vertical frame member.

251. For example, Liu teaches that the "horizontal support members 11 and the vertical support members 12 each include an elongated tubular member with an elliptical cross-section." EX1006, [0085]. Likewise, the "horizontal tubular member 130 and the vertical tubular member 131 each have an elliptical cross-section." EX1006, [0087]. Therefore, all of the frame members 11, 12 and the respective portions of the T-shaped connector 13 have matching inner and outer cross-sectional shapes – elliptical.

252. To the extent this claim requires the first, second, and vertical joint portions to fit within the first, second, and vertical frame members respectively, this would have been an obvious design choice. Whether the frame members fit on the inside or the outside of the frame joint is a matter of design choice that does not impact the operation or structural integrity of the frame pool. The '512 Patent provides no special significance for the first, second, and horizontal frame members

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fitting on the outside (as opposed to the inside) of the T-shaped frame joint 10. It would have been a simple increase in diameter of Liu's vertical and horizontal support members – or a decrease in diameter of Liu's horizontal tubular member 130 (or a combination of the two) – to make such a connection. In that configuration, the spring-loaded latch 15 would be fitted on the inside of the various tubular sections of the T-shaped joint 13, rather than inside the horizontal and vertical support members to assure its pin 152 extends through both connecting parts.

M. Claim 17

253. Liu discloses "wherein the first joint portion, the second joint portion, and the vertical joint portion are constructed of plastic."

254. For example, Liu states: "The various components of the support frame of the present invention may be constructed from molded… plastic." EX1006, [0131]. The support frame 10 includes the T-shaped connector 13 (*id*., [0085]), and therefore its horizontal tubular member 130 and vertical tubular member 131 may be constructed from molded plastic.

N. Claim 18

255. Liu discloses "coupling the first joint portion to the first frame member comprises depressing the first pin into the first joint portion and releasing the first pin into engagement with the first frame member; and coupling the second joint portion to the second frame member comprises depressing the second pin into the

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second joint portion and releasing the second pin into engagement with the second frame member."

256. For example, see Elements [4.0] and [4.1] above. To assemble the frame pool, the latch 15 has a helical spring 151 that biases a pin 152 outwardly through an aperture 122 of the vertical support member 12 and an aperture 135 of the T-shaped connector 13 to "snap-lock" the T-shaped connector 3 to the vertical support member 12. EX1006, [0090], [0094], [0095]. When the latch 15 is used for connecting the horizontal support members 110, 111 (see claim 4 above), this would include a depression of the pin 152 to fit the latch into the T-shaped connector 13, and then a release of the pin 152 as it is extended through positioning holes 134. The process would be repeated for connecting both horizontal support members 110, 111 to the T-shaped connector 13 utilizing the spring-loaded latch 15.

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I understand and have been warned that willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. § 1001). I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under § 1001 of title 18 of the United States Code.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Dated: June 15, 2024

Kimberly Cameron

Dr. Kimberly Cameron

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EXHIBIT A

KIMBERLY K. CAMERON, Ph.D., P.E.
PRINCIPAL
kkcameron@engsys.com

Dr. Kimberly Cameron is a Principal for ESi in the Mechanics and Materials practice. She specializes in design, failure analysis, and risk assessments of engineering structures and components. She has conducted hundreds of investigations on a wide variety of engineering structures, from miniature biomedical devices to large scale process equipment. She has also taught classes for engineers preparing to take the fundamentals of engineering exam and the professional engineering licensing examination in both Civil Engineering and Mechanical Engineering.

Dr. Cameron has performed multidisciplinary investigations on biomedical devices, pipelines, consumer electronics, consumer products, aircraft structures, industrial machinery, heat exchangers and cooling fins, refrigeration products, power-plant components, solar panels, pressure vessels, and vehicle components. The common thread in each of Dr. Cameron's investigations is the application of the fundamentals of metallurgy, materials science, engineering physics, computational mathematics, and engineering mechanics to help understand and solve complex problems.

Dr. Cameron is a registered patent agent, with experience in both the patent application process, as well as intellectual property disputes. In particular, she has experience in biomedical, automotive, electrical, mechanical, and materials science fields and has provided numerous invalidity and infringement reports. She has testified in federal and state court as well as in front of the ITC and in arbitration.

Areas of Specialization

Metallurgy	Product Design	Biomedical Devices
Plastics & Composites	Structural Engineering	Oil & Gas
Corrosion	Product Recalls	Energy & Power
Materials Selection	Root Cause Investigations	Consumer Products & Electronics
Mechanical Engineering	Regulatory Compliance	Automotive & Aviation
Intellectual Property Matters	Failure Analysis	Electrical Equipment

Education

Ph.D. Mechanical Engineering, minor Materials Science & Engineering, Stanford University, CA, 2004
M.S. Mechanical Engineering, Stanford University, CA, 2000
B.S.E. Mechanical and Aerospace Engineering. Certificates: Engineering Physics, Applied & Computational Mathematics, Materials Science & Engineering, Woodrow Wilson School of Public Policy & International Affairs, Princeton University, NJ, 1999

Licensed Professional Engineer (P.E.)

Mechanical Engineer, State of California .....License No. 33732
Metallurgical Engineer, State of California.....License No. 1969

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Professional Affiliations/Honors

American Society of Mechanical Engineers
Member

TMS
Member

Department of Defense
Fellowship

National Science Foundation
Fellowship

Lucent Technologies
Graduate Fellowship

Positions Held

Engineering Systems Inc., Sunnyvale, California
Principal, Mechanics, 2011 – Present

Exponent, Menlo Park, California
Senior Engineer, Mechanics & Metallurgy, 2004 – 2011

Publications/Presentations

"Crack Growth and Arrest in Steam Turbine Casings," EPRI 3002003504, EPRI, Palo Alto, CA, December 2014.

M. H. Anderson, D. Cislo, J. Saavedra, and **K. Cameron**, Why International Inventors Might Want to Consider Filing Their First Patent Application at the United States Patent Office & the Convergence of Patent Harmonization and E-Commerce, 30 Santa Clara High Tech. L.J. 555 (2014).

"Increasing Reliability of Small Punch Fracture Toughness Testing with Acoustic Emission Monitoring," Proceedings, 3rd International Conference on Small Sample Test Techniques, September 2014. (with D. Purdy and J. Foulds).

"Small Punch Fracture Toughness Evaluation of Combustion Turbine Materials," EPRI 3002001468, EPRI, Palo Alto, CA, December 2013. (with D. Purdy, J. Foulds and J. Rodgers).

"Small Punch Testing for Fracture Toughness" by J. Foulds, J. Rodgers, **K. Cameron** and P. Sullivan, EPRI, Palo Alto, CA: 2013. 3002000250.

"The Effect of Low Sulfur Content on the Weldability of Linepipe Steel" by **K. Cameron** and A.M. Pettinger, Proceedings of the 9th International Pipeline Conference, September 2012.

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"Effectiveness of Hydrostatic Testing for High Strength Pipe Material" by **K.K. Cameron** & A.M. Pettinger, Proceedings, 8th International Pipeline Conference, October 2010.

"Axial Loads from Soil Movement Challenge Pipeline Integrity" by **K.K. Cameron** & A.M. Pettinger, PipeLine Gas Technology, November 2009.

"Assessing Pipeline Integrity Using Fracture Mechanics and Currently Available Inspections Tools" by **K.K. Cameron** & A.M. Pettinger, Journal of Pipeline Engineering, October 2009.

"Assessing Pipeline Integrity Using Fracture Mechanics and Currently Available Inspections Tools" by **K.K. Cameron** & A.M. Pettinger, Proceedings, 2008 Evaluation and Rehabilitation of Pipelines Conference, Clarion Technical Conferences, Scientific Surveys Ltd., Prague, Czech Republic, October 2008.

"Fatigue Damage in Bulk Metallic Glass I: Simulation" by **K.K. Cameron** & R. Dauskardt, Scripta Materialia 2006; 54(3):349–353.

"Fundamentals of Engineering in a Flash" by **K.K. Cameron**, PPI, August 2006.

"Transmission Electron Microscopy Structure and Platinum-like Temperature Coefficient of Resistance in a Ruthenate-Based Thick Film Resistor with Copper Oxide" by **K.K. Cameron**, G. Crosbie, J. Jiang, & X. Pan, J. Appl. Phys. 2000; 88:1124–1128.

Selected Project Experience

Failure analysis, design analysis, material selection, mechanical testing, finite element analysis, fatigue and fracture evaluation, and development of various implantable medical devices including cardiovascular implants (heart valves, stents, catheters, pacemakers), orthopedic implants (screws, plates, pins, hip implants, spinal implants), cranial implants, etc.

Design and failure analysis of various fluid and drug delivery systems including implantable pumps, drug eluting stents, syringes, patches, microneedles, CPAP machines, anesthesia machines, insulin and other drug delivery pumps, balloon respirators, etc.

Design and failure analysis of other types of medical devices including surgical tools, scooters, hospital beds, physical therapy equipment, refrigerated portable coolers, etc.

Performed analyses to support FDA submissions.

Evaluated the design, pipeline integrity management program, in-line inspection tools, leak detection systems, control room management and operation and maintenance practices, of both liquid and gas pipeline systems under both 49 CFR 195 and 192.

Evaluated pipeline construction practices of various pipeline systems and performed pipeline failure investigations after various landslide events.

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Assisted the Inter-American Development Bank with a pipeline integrity study and supervision of implementing a pipeline integrity management program. This included geotechnical site investigations, fracture mechanics, metallurgical investigations, in-line inspection data, and external inspection data.

Evaluated welding procedures and determined the effect of welding defects and other construction factors on pipeline integrity.

Evaluated pipe-soil interactions, mechanical and welded joints, welding procedures, in-line inspection tools, regulatory compliance, and the overall integrity of pipeline systems.

Failure analysis of various insulated steel oil and water pipeline systems, including behavior of the polyurethane foam and jacket materials.

Design evaluation and failure analyses of pipe couplings and fittings, including finite element analyses, as well as analysis of various plumbing fixtures and components.

Performed design and failure analyses of various gas distribution systems made of polyethylene and steel pipe, including the evaluation of compression couplings.

Retained as an expert for the United States Patent and Trademark Office in the evaluation of a patent claim dispute relating to large diameter pipes.

Evaluated the design of a hydrogenerator system. Performed a finite element analysis and fatigue analysis of the rotors, thrust bridge, and head cover to assess the design.

Evaluated the design of various pumps, rotors, bearings, seals and insulation systems.

Thermal analyses of industrial heat exchangers and cooling fins, nuclear reactor heads, and welds.

Failure analysis of various refrigeration systems and components and HVAC system components.

Performed design analysis of various solar panel system components and assisted in design changes to meet standardized safety testing.

Developed testing protocols and conducted failure analyses and design reviews for various consumer electronic devices and accessories, electrical connectors, power cords, and jacket sleeves.

Design of electrical connectors and various components of several consumer electronic devices including phones, tablets, and computers.

Design evaluation of various consumer products, including washing machines, refrigerators, various child containment products, hand and power tools, security and display systems, coffee machines, exercise machines, cooling sleeves and pads, consumer electronic accessories, breast pumps, baby bottles, etc.

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EXHIBIT B

KIMBERLY K. CAMERON, Ph.D., P.E.
PRINCIPAL
kkcameron@engsys.com

PROJECT	STATE	
2024		
Baby Bjorn, AP, v. The Ergo Baby Carrier, Inc. Case No. 2:23-CV-00446AB U.S. District Court, Central District of California	CA	(deposition)
Smarte Carte Inc. v. Innovative Vending Solutions, LLC C.A. No. 1:19-cv-08681-ESK-AMD United States District Court for the District of New Jersey	DE	(deposition)
Novo Nordisk Inc., and Novo Nordisk A/S v. Orbicular Pharmaceutical Technologies Pvt. Ltd., et al. C.A. No. 22-856 (CFC) United States District Court for the District of Delaware	DE	(deposition)
In the Matter of Certain Photovoltaic Connectors and Components Thereof Investigation No. 337-TA-1365 United States International Trade Commission	D.C.	(deposition, trial)
2023		
Certain Liquid Transfer Devices with an Integral Vial Adapter Investigation No. 337-TA-1362 United States International Trade Commission	D.C.	(deposition, trial)
Grey Fox, LLC. v. Plains All American Pipeline, L.P. Civil Action No. 2:16-cv-03157 U.S. District Court, Central District of California	CA	(deposition)
Eugene Davis, in his capacity as Liquidating Trustee of the Venoco Liquidating Trust v. Plains Pipeline, L.P., et al. Case No.: 16CV01319 Superior Court of the State of California County of Santa Barbara	CA	(deposition)
California State Lands Commission et al v. Plains Pipeline, L.P., et al Case No.: 18CV02504 Superior Court of the State of California County of Santa Barbara, Anacapa Division	CA	(deposition)
Hoya Corporation and Hoya Surgical Optics, Inc., Hoya Lamphun Ltd., and Hoya Medical Singapore PTE LTD., v.	TX	(deposition)

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Alcon Inc., Alcon Laboratories, Inc., and Alcon Research, LLC, and Alcon Vision, LLC
Civil Action No. 3:20-cv-03629-M
US District Court for the Northern District of Texas

National Products Inc. v. Innovative Intelligent Products, LLC D/B/A GPS Lockbox — WA — (deposition)
Case No. 2:20-cv-00428-DGE
United States District Court for the Western District of Washington at Seattle

EIS Inc. v. IntiHealth Ger GmbH, WOW Tech USA, Ltd.; WOW Tech Canada, Ltd.; Novoluto GmbH; Novoluto GmbH; Triple A Import GmbH; and Triple A Marketing GmbH — DE — (deposition, trial)
Civil Action No. 19-CV-12279 (GBW)(MPT)
United States District Court for the District of Delaware

Novo Nordisk Inc. and Novo Nordisk AS v. Teva Pharmaceuticals f/k/a Teva Development, USA, Inc. . — DE — (deposition)
Civil Action. No. 21-1782 (CFC)
United States District Court for the District of Delaware

International Medical Devices, Inc. v. Robert Cornell, M.D., et al — CA — (deposition, trial)
Case No. 2:20-cv-03503-CBM (RAOx)
United States District Court
Central District of California – Western Division

Envirotainer AB v. Doubleday Acquisitions, LLC — D.C. — (deposition)
Case No. IPR2022-00864
Case No. IPR2022-00851
United States Patent and Trademark Office Before the Patent Trial and Appeal Board

Victualic v. ASC Engineered Solutions, LLP — DE — (deposition, trial)
Case No. 1-20-CV-00887-CFC
United States District Court for the District of Delaware

Echologics, LLC, Mueller International, LLC, and Mueller Canada, LTD. d/b/a Echologics v. Orbis Intelligent Systems, Inc. — CA — (deposition)
Case No. 3:21-cv-01147-RBM-AHG
United States District Court Southern District of California

Wonderland Switzerland AG v. Evenflo Company, Inc. — DE — (deposition, trial)
Civil Action No. 1:20-cv-00727-JPM
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Timothy Johnson v. LA Fitness; Fitness International LLC CA (deposition, trial)
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Ultra-Mek, Inc. v. United Furniture Industries, Inc.; Oiseys International, Inc.; Taizhou Chenguang Vehicle Co., LTD; Man Wah (USA), Inc.; Man Wah Holdings LTD; Remarco Machinery Technology Co., LTD; and Jiangsu Yulong Smart Technology Co., LTD NC (deposition)
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Antonio Barrera and Martha Barrera v. Southern California Edison Company, Robert K. Laird and Rebecca F. Clark CA (deposition)
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Novo Nordisk Inc. and Novo Nordisk AS v. Sandoz Inc. DE (deposition)
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Marathon Pipe Line LLC. v. Energy Transfer L.P, et al IL (deposition)
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In The Matter of Certain Electrical Connectors and Cages, Components Thereof, And Products Containing the Same D.C. (deposition, trial)
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Alcon Inc., Alcon Laboratories, Inc., and Alcon Research, LLC
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5th Circuit, US District Court for the Northern District of Texas

Cherelus (Genicia) vs Columbia Hospital Corporation of South Broward D/B/A Westside Regional Medical Center; Ravishankar Shivashankar, M.B.B.S.; Envision Healthcare Corporation; Radiology Physician Solutions of Florida, LLC; and Penumbra, Inc FL (deposition)
Case No. CACE-19-002780
Circuit Court of the 17th Judicial Circuit, Broward County, Florida

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Novo Nordisk Inc. and Novo Nordisk AS v. Mylan Institutional LLC DE (deposition)
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In the Matter of: Certain Portable Gaming Console Systems With Attachable Handheld Controllers and Components Thereof II D.C. (deposition, trial)
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In the Matter of: Certain Collapsible and Portable Furniture D.C. (deposition, trial)
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