

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

Unirac, Inc.
Petitioner,

v.

Ecofasten Solar, LLC
Patent Owner

U.S. Patent No. 10,763,777
Title: Roof Mounting System

IPR Case No.: IPR2021-00532

**DECLARATION OF BARRY CINNAMON IN SUPPORT OF PATENT OWNER'S
PRELIMINARY RESPONSE**

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I. INTRODUCTION

1. I am over the age of eighteen (18) and competent to make this declaration.
2. I have been retained by the Patent Owner, Ecofasten Solar, LLC's ("Ecofasten") counsel as an independent consultant and expert in IPR2021-00532 (the "Petition") before the United States Patent and Trademark Office (the "Office").
3. I have been informed that the Petition seeks to invalidate claims 1-14 and 16-24 of the '777 Patent (the "Challenged Claims").
4. I was asked to investigate and express an opinion (the "Cinnamon Declaration" or EX-2001) on the alleged invalidity of United States Patent No. 10,763,777 (the "'777 Patent") and respond to the *Declaration of Philip D. Dregger in Support of Petition for Inter Partes Review of U.S. Patent 10,763,777* dated 12 February 2021 (the "Dregger Declaration", or EX-1003).
5. I am being compensated for my time spent on this matter at the rate of \$425 per hour, plus reasonable expenses. My compensation is not related to the outcome of this action, and I have no financial interest in this case or the parties.
6. This report incorporates by reference all of the information in the exhibits of record.
7. I have reviewed the '777 Patent (EX-1001), the file wrapper of the '777 Patent (EX-1002), the Dregger Declaration (EX-1003), the Petition, and the documents associated with the Petition.
8. Based on my review, I have concluded that claims 1-14 and 16-24 are valid in light of the art presented in the Petition. First, there is no reason or motivation to modify Wentworth with Ullman or Glicksman, because Wentworth expressly teaches a system that contemplates a *hardware* that loads a *plug* in compression. Second, the assembly suggested by Dregger at EX-1003, p. 61, creates a recess that can catch and retain water on top of a fastener that would be

prone to leaking. Third, based on the art I have reviewed that is currently on the record, there are better references that shows compression seal assemblies that have already been considered by the Office during the prosecution of the '777 Patent.

II. QUALIFICATIONS, EXPERIENCE, AND PUBLICATIONS

9. My curriculum vitae (CV) describes my educational and professional background and is part of the record as EX-2002.

10. I received a Bachelor of Science degree in Mechanical Engineering from Massachusetts Institute of Technology in 1980. I also have a Master of Business Administration in Marketing and Finance from the Wharton School, University of Pennsylvania in 1986.

11. I have more than 40 years of experience designing and installing renewable energy systems. I am currently the CEO of Cinnamon Energy Systems, where my responsibilities include installing residential and commercial renewable energy systems. I have held this position since 2012. From 2014 to 2020, I was also the CEO and Founder of Spice Solar, where my responsibilities included designing solar mounting and racking components.

12. Prior to my current positions, I was the Founder and CEO of Akeena Solar from 2001 to 2012, where I was responsible for overseeing the operations and growth of one of the largest residential and commercial solar contractors with operations in six (6) states with more than 10,000 rooftop customers.

13. I founded and operated several software, internet, and media companies from 1986 to 2001.

14. From 1978 to 1984, I was a consultant for Renewable Energy Systems Engineering, where my responsibilities included the design and installation of solar and heat pump systems. I also developed the first residential utility energy auditing program.

15. As shown in my CV, I have authored or coauthored 9 publications, which are all related to the deployment of solar energy systems.

16. I am a member of several industry and professional organizations, including the California Solar and Storage Association, for which I served as President in 2007-2008. I also regularly attend and present at industry and educational conferences concerning solar energy and solar mounting systems, including Solar Power International, North American Board of Certified Energy Practitioners Conference, and the Energy Storage Association.

17. I have received several awards and recognitions for my work concerning solar mounting technology, including 2009 Popular Mechanics Breakthrough Award for Andalay Solar Panels, 2009 SEIA Innovator in PV Technology, and 2020 San Jose Energy Champion.

18. I am an inventor on more than 30 U.S. and foreign patents, including U.S. Patent No. 7,406,800, entitled “Mounting System for a Solar Panel,” which demonstrates a solar panel with integrated racking and ground, and plug and play side electrical connections.

19. I am very familiar with Quick Mount PV,¹ their line of flashing products, and U.S. Pat. No. 7,762,027 to Wentworth et al. (“Wentworth”). Over my career, I have installed more than 5,000 Quick Mount PV flashing products like the ones disclosed in Wentworth.

III. MATERIALS CONSIDERED

20. In formulating my opinion and preparing this declaration, I relied on the subject matter of the table below.

Exhibit #	Description
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¹ Wentworth is owned by Wencon Development, Inc. dba Quick Mount PV, which is owned by Ecofasten’s parent company, Esdec, Inc.

1001	U.S. Pat. No. 10,763,777 (the “’777 Patent”)
1002	Prosecution History of the ’777 Patent (“File History”)
1003	Declaration of Philip Dregger, P.E.
1004	Curriculum Vitae of Philip Dregger, P.E.
1005	U.S. Pat. No. 7,762,027 (“Wentworth”)
1006	U.S. Pat. No. 6,185,885 (“Thaler”)
1007	U.S. Pat. No. 3,168,321 (“Glicksman”)
1008	U.S. Pub. No. 2003/0177706 (“Ullman”)
1009	<i>McGraw-Hill Dictionary of Scientific and Technical Terms</i> (5 th ed. 1994)
1010	U.S. Pat. No. 4,321,745
1011	U.S. Pat. No. 6,526,701
1012	U.S. Pat. No. 7,600,349
1013	U.S. Pat. No. 4,010,578
1014	U.S. Pat. No. 4,160,347
1015	U.S. Pat. No. 4,265,058
1016	U.S. Pat. No. 7,861,485
1017	U.S. Pat. No. 4,526,407
1018	U.S. Pat. No. 5,222,334
1019	U.S. Pub. No. 2007/0199561
1020	U.S. Pat. No. 7,797,883
1021	U.S. Pat. No. 8,151,522 (the “’522 Patent”)
2002	Declaration of Barry Cinnamon
2002	Curriculum Vitae of Barry Cinnamon
2003	Wentworth Brochure

2004	Notice of References cited from U.S. Pat. No. 8,153,700
2005	Table of the ‘777 Family
2006	IDS from the ‘299 Patent
2007	Office action dated 21 January 2016 in Application Serial No. 15/083,472
2008	U.S. Patent No. 8,153,700
2009	Japanese Publ. No. JP2003-336355
2010	German Publ. No. 10 2005 018 687
2011	Japanese Publ. No. JP1983-194642

IV. APPLICABLE LEGAL STANDARDS

21. In forming my opinions in this case, I used the following legal standards that were explained to me by counsel.

22. I have been informed that an issued utility patent includes a specification, and one or more claims. I understand that a utility patent may also include drawings when necessary, such as those included in the ‘777 Patent. I have been informed that an issued patent has a file history, which is communication between the Office and Ecofasten’s counsel from the filing of the patent application to the issuance of the ‘777 Patent. I have been informed that the claims of a patent may be interpreted in view of the file history and specification.

23. I have been asked to provide my opinion about the Dregger Declaration, the prior art identified in the Petition, and the combination of references put forward in the Petition.

24. I understand that a patent claim is invalid if it is anticipated by a single item of prior art. I also understand that an anticipation analysis involves two steps. First, the patent claims are construed to ascertain their scope. Second, each construed, asserted claim is compared to the

prior art reference on an element-by-element basis. If the prior art reference discloses or contains each and every element of the claimed invention, either expressly or inherently, then it anticipates the claim. The understanding that a person of ordinary skill in the art (“POSA”) would have after reviewing the prior reference is the standard for determining what the reference discloses.

25. I understand that a claim is invalid for obviousness if the differences between it and the prior art are such that the claim’s subject matter would have been obvious to a POSA at the time of the claimed invention.

26. I understand that obviousness is a question of law that requires underlying factual determinations of:

- (a) The level of ordinary skill in the relevant art.
- (b) The scope and content of the prior art. I understand that a reference qualifies as prior art for obviousness when it is analogous to the claimed invention. A prior art reference is analogous if it either: is from the same field of the inventor’s endeavor, regardless of the problem addressed; or is not from the same field of the inventor’s endeavor but is reasonably pertinent to the problem addressed by the claimed invention.
- (c) The nature of the differences (if any) between the asserted claim and the prior art.
- (d) Any secondary considerations of non-obviousness, including: the claimed invention’s commercial success; a long-felt need for the claimed invention that was not met by the prior art; evidence that others tried but failed to develop the claimed invention; initial skepticism or disbelief that the invention would work for its intended purpose before industry acceptance; articles, awards, and other public statements praising the claimed invention’s merits, as well as licenses showing industry respect; evidence

that the accused infringer or others copied the claimed invention; evidence that a combination of known elements resulted in an effect or properties greater than what would have been predictable; independent discovery of the claimed invention by others before or about the same time as the named inventor(s); and other evidence tending to show obviousness or non-obviousness. I further understand that there must be a nexus between the secondary consideration and the claimed invention's novel features for the secondary consideration to have probative value.

27. I understand that to prove a claim would have been obvious, the accused infringer must demonstrate that a POSA would have been motivated to combine or modify the prior art to achieve the claimed invention and had a reasonable expectation of successfully combining or modifying the prior art. I understand that the suggestion to modify or combine relevant prior art references may come from either: a teaching or suggestion in the prior art references; the common sense of a POSA; any need or problem known to a POSA and addressed by the claimed invention, including, but not limited to, the problem addressed by the patent; design incentives and other market forces. I further understand that obviousness should be evaluated without the benefit of hindsight or what is known today.

28. I understand that the invention date is either when the claimed invention was reduced to practice or conceived, provided the inventors were diligent in reducing the claimed invention to practice. I understand that diligence means working continuously, though not necessarily every day. I understand that conception is the formation in the inventor's mind of a definite and permanent idea of the complete and operative invention. Conception is complete when the idea is so clearly defined in the inventor's mind that, if the idea were communicated to a POSA, the POSA would be able to reduce the claimed invention to practice without undue research or

experimentation. An invention is reduced to practice when it has been constructed or used sufficiently to show that it will work for its intended purpose or when the inventor files a patent application.

V. PERSON OF ORDINARY SKILL IN THE ART

29. I understand, that for the purposes of the Patent Owner Preliminary Response, that the parties agree that a POSA pertaining to the ‘777 Patent at the time of the patent application’s filing is “a person having a Bachelor of Science degree in a relevant engineering discipline, such as mechanical, structural, civil, or industrial engineering, and a couple of years of experience.” *Petition*, p. 12. “Alternatively, rather than an engineering degree, the person of ordinary skill in the art would have at least several years of experience designing, investigating, repairing, or installing roof mounting systems or roof assembly systems.” *Id.* I used this level of ordinary skill in forming my validity opinions in this case and determining the plain and ordinary meaning of the claim terms.

30. I have been informed that for the purposes of my rendering my opinion in this declaration the invention date is March 19, 2009.

VII. THE ‘777 PATENT

31. The ‘777 Patent issued on September 1, 2020 and is titled “Roof Mounting System.” The ‘777 Patent names Brian Cecil Stearns and Douglas Timothy Lounsbury as the inventors and is part of the record as EX-1001.

32. Without limiting the scope of the ‘777 Patent or arguments Ecofasten may subsequently present, this summary serves as context for the Response. Claim 1 of the ‘777 Patent recites:

1. *A roof mount assembly comprising:*

a flashing including a top surface, a bottom surface, and an upwardly extending projection with the flashing defining a first aperture extending

through the upwardly extending projection between the top surface and the bottom surface;

a preformed rubber seal including a first end portion forming a first circular disk having a first planar end surface, a second end portion forming a second circular disk having a second planar end surface, and a central portion between the first end portion and the second end portion, the preformed rubber seal defining a cylindrical second aperture centrally located in the preformed rubber seal and extending from the first planar end surface to the second planar end surface;

an L-shaped bracket supportable on the flashing, the L-shaped bracket including an elongate body portion defining a third aperture and a flange defining a fourth aperture sized to receive the preformed rubber seal and the upwardly extending projection, the fourth aperture including a first aperture portion having a first cylindrical shape and defining a first diameter and a second aperture portion having a second cylindrical shape and defining a second diameter that is less than the first diameter;

a washer including a polymeric compression portion and a rigid backing portion and defining a fifth aperture; and

a screw including a head and extending through the first aperture, the cylindrical second aperture, the fourth aperture, and the fifth aperture, to secure the L-shaped bracket and the flashing and inhibit fluid flow through the first aperture.²

33. The roof systems and roof mount assemblies of the ‘777 Patent are “operable to support any of a variety of roof-mounted fixtures, such as, for example, snow fences, solar panels, an antenna, signs, billboards, or any of a number of other roof-mountable assemblies.” *Id.* at 6, 7:67-4. The ‘777 Patent states “[d]epending on one or more of the geographic location, anticipated quantity and type of precipitation, and anticipated roof and wind loading, the roofing system 10 can include any of a variety of flashing, seal and bracket arrangements.” *Id.* 7:4-8. “The roofing system 10 inhibits leakage of fluids through the flashing 16, and, in some

² Claim language included in this Declaration is quoted in *italics* to distinguish the claim language from other quoted material.

embodiments, may also or alternately inhibit leakage of fluids beyond the flashing to portions of the substrate 14 or areas below the substrate” of a roof. *Id.* 7:20-24.

34. The ‘777 Patent resulted from Application Serial No. 16/752,667 filed on January 26, 2020. Ecofasten has a long and prolific relationship with the Office. It has been filing and prosecuting patent applications over a period spanning two decades with numerous corporate and personnel changes.

35. I understand that at least twelve (12) applications have issued in the ‘777 Patent Family.

36. Wentworth was originally identified by the Office on September 16, 2011, in the Notice of References cited in a parent case of the ‘777 Patent. Ullman was identified to the Office in an Information Disclosure Statement on July 18, 2011, and both have been considered by the Examiner for nearly a decade. EX-2005.

VII. THE CITED REFERENCES

37. I understand that a reference must qualify as prior art under the patent laws to be considered for purposes of anticipation or obviousness. I also understand that the Patent Act includes several provisions that determine whether a reference qualifies as prior art. I further understand that determining whether a reference qualifies as prior art is usually a legal question for the court that may depend on underlying factual issues.

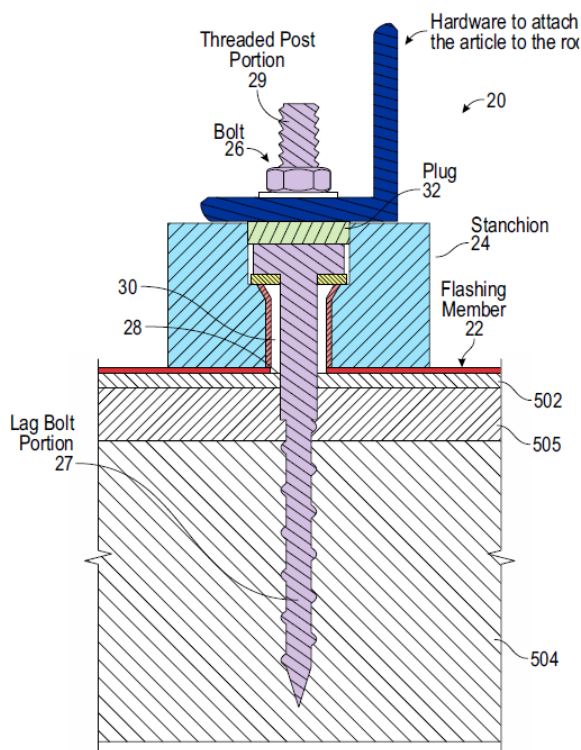
A. Wentworth.

38. Wentworth discloses “a system for attaching an article to a roof 500 having shingles.” EX-1005, 3:6-7. The system includes “a flashing member 22 and a stanchion 24 connected to the flashing member 22.” *Id.* at 3:7-10. Wentworth teaches an “upstanding sleeve 40 comprises a tube which is oriented perpendicular to flashing 36” (i.e., substantially perpendicular to the roof). *Id.* at 3:43-48. Wentworth also teaches “[s]tanchion 24 has a hole 30 for receiving sleeve 40 of

flashing member 22 . . . Hole 30 has a flared portion 44 to accommodate flared distal end 42 of sleeve 40.” *Id.* at 3:60-64.

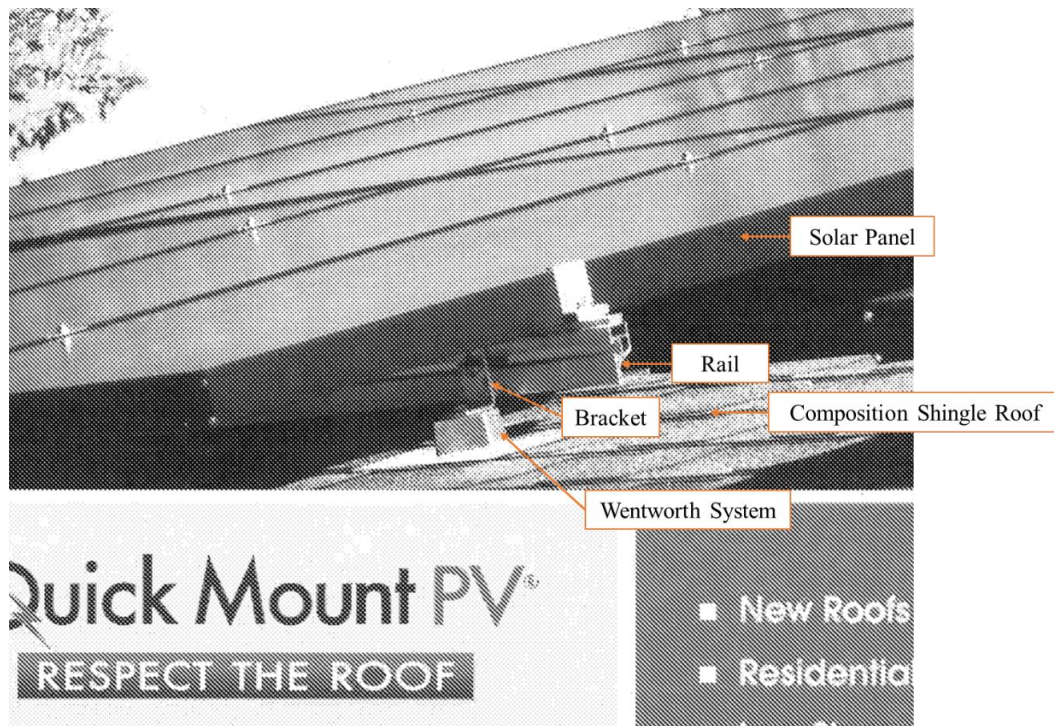
The “[s]ystem 20 also includes a bolt 26 for attaching system 20 to structural member 504 (such as a rafter) of roof 500 . . . Bolt 26 is received by an aperture 28 in flashing member 22 . . . and a hole 30 in stanchion 22 . . . and threadably engages structural member 504 to accept bolt 26. A plug 32 made of rubber or the like is provided for sealing hole 30 to prevent water leaks. In the shown embodiment bolt 26 includes both a lag bolt portion 27 for engaging structural member 504 and a threaded post portion 29 for receiving hardware to attach the article to the roof (refer also to FIG. 22). System 20 also includes a washer 34 which engages stanchion 22 and bolt 26.” Id. at 2:21-36.

39. Wentworth provides “that stanchion 24 is 360° rotatable with respect to flashing member 22.” *Id.* at 4:3-4. This would allow the stanchion to shed water, by being angled when installed on the roof. Wentworth teaches an attachment point with a seal that is covered and compressed by the “hardware to attach the article to the roof.” *Id.*; EX-2003, p. 1.



40.

41. A brochure advertising Quick Mount PV was disclosed and considered during prosecution and is located in the file wrapper of the '777 Patent. EX-1002, pp. 73-99. Quick Mount PV was the business operated by the inventors of Wentworth, Mr. and Mrs. Wentworth. EX-2003, p. 1. The brochure depicts the Wentworth system installed on a roof. *Id.*



42. Unirac characterizes the stanchion of Wentworth as a bracket. See, for example, Petition at page 21. However, there is no mention of a bracket in Wentworth. The distinction matters because the Wentworth invention was designed to retain a bracket atop the stanchion. If the Wentworth references were to mention a bracket, it would be in a manner consistent with the Wentworths' product as depicted in the Quick Mount PV brochure, which shows an L-foot bracket mounted on the Quick Mount stanchion, and such stanchion is installed at an angle to the roof slope.

B. Thaler

43. U.S. Patent No. 6,185,885 to Thaler (“Thaler”) is directed “to roof flashings of the type which provide a waterproof and weather resistant seal between a roof of a building structure and pipes, vent stacks, support members for roof mounted apparatus, or other elongate members projecting from the roof.” EX-1006, 1:4-9. The background of Thaler provides that the structures employed in roof flashings and grommets should be shaped and installed “to effectively shed precipitation and avoid accumulation or pooling of water and ice on the flashing.” *Id.* at 1:56-57. The grommet of Thaler “comprises three inwardly tapered circumferentially extending lips 92, 94 and 96 disposed in downwardly outwardly stepped relation coaxial with the boss portion 34, said lips 92, 94 and 96 having internal diameters of downwardly increasing magnitude.” *Id.* at 7:6-10 and Fig. 5.

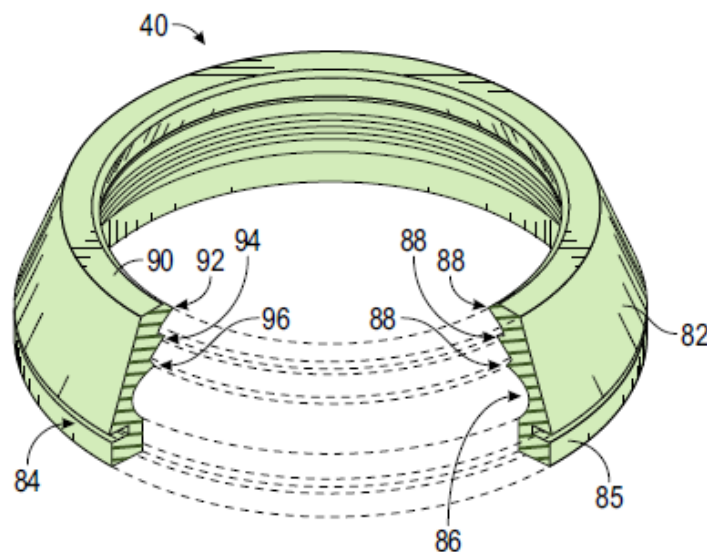
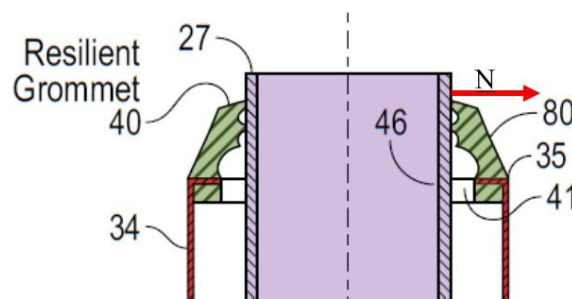


FIG. 5

44. In Thaler, the “lips 92, 94 and 96 having internal diameters of downwardly increasing magnitude” so that the grommet can accommodate different diameter vent pipes. *Id.* The interaction between the sealing lips of the resilient grommet and the elongate member in Thaler create a radial loading scheme where the diameter of the one or more sealing lips is smaller than

the outer diameter of the pipe. The water shedding arrangement of the Thaler grommet works in a manner similar to fitting a rubber collar around a plumbing vent pipe. A portion of Fig. 1 of Thaler is reproduced below and annotated to demonstrate the normal force N exerted by elongate member 26 loading the lips of resilient grommet 40 during typical operation.



45. The resilient grommet of Thaler does not operate under a compressive load like that of the load imparted by fasteners on seals in the Challenged Claims. Unirac's argument redesigns the resilient grommet in Thaler to meet the limitations of Ecofasten's claimed seal. With Unirac's redesign, Thaler no longer seals using axial interference and no longer uses sealing lips. Instead, the Thaler grommet is contorted from a radial loading arrangement to a loading arrangement that purportedly seals by compression, despite the express teaching of Thaler. See, EX-1006, 7:5-10.

46. Unirac's version of the Thaler seal was not part of the prior art as of the priority date for the '777 Patent. Neither Thaler nor any other reference identified by Unirac discloses the seal required by the Challenged Claims of the '777 Patent. The seal design relied on by Unirac is not within the scope and content of the prior art. *Id.* at ¶52.

C. Glicksman

47. U.S. Patent No. 3,168,321 to Glicksman (“Glicksman”) is directed to “sealing washers, of a type adapted to be disposed beneath a screw head or similar fastening structure.” EX-1007, 1:8-10. Glicksman discloses “a metallic washer element 11 and a resilient washer element 12.” *Id.* at 3-4. *See* also, Fig. 5.

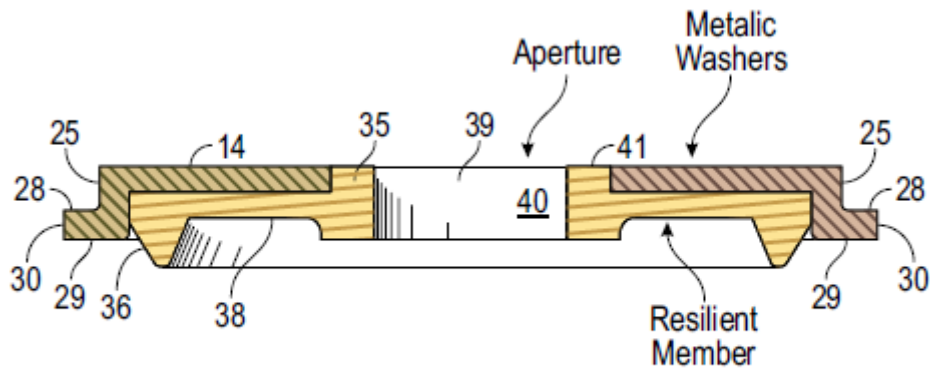


FIG. 5

48. Glicksman teaches that the sealing washer is “pressed against the flat surface of a sheet metal body or casing to effect a hermetic seal.” *Id.* at 1:10-11. Glicksman expressly teaches that the resilient member engages a flat surface. In Glicksman, “an improved resilient composite washer construction in which the opening therein is of smaller diameter than the accommodated threaded shank of a fastener, wherein the same may be distorted to effect a hermetic seal about the threads of the shank.” *Id.* at 1:24-28.

D. Ullman

49. U.S. Publ. No. 2003/0177706 to Ullman (“Ullman”) discloses a “mounting system for elevating and supporting objects such as solar panels . . . upon the roofs of . . . buildings.” EX-1008, Abstract. Ullman teaches “[r]oof mount 10 comprises base section 17, stanchion 42 along with threadably connected mounting bolt 40 and washer 50.” *Id.* ¶0148. Ullman notes that one of the improvements of the system is that “[t]he PV modules and module support rail can be

elevated from the roof to allow for existing roof obstructions such as pipes and conduits.” *Id.*

¶0096 Ullman provides that “[o]nce the roof is in a condition for installing a solar panel, a pair of C-shaped elongated horizontal members 54 are provided.” *Id.* at ¶0148. Ullman teaches that solar panels may be secured to the “elongated horizontal members” with “end clamps” and “bi-modules clamps.” *Id.* See, ¶0154-0157. The stanchion 42 of Ullman provides for the support rail and the PV modules to be elevated from the roof.

VIII. OBVIOUSNESS

50. Unirac alleges claims 1-5 and 10-14 of the ‘777 Patent are obvious based on Wentworth in view of Thaler, and further in view of Glicksman (“Ground 1”). Unirac asserts that claims 6-9 and 16-24 of the ‘777 Patent are obvious based on Wentworth in view of Thaler, Glicksman, and Ullman (“Ground 2”).

51. Ground 1 and Ground 2 rely on the combination of Wentworth and Thaler to teach the claimed bracket and seal elements required in each of the Challenged Claims. However, unirac fails to identify references that disclose the claimed bracket and seal present in all Challenged Claims. The claimed seal and bracket are outside the scope and content of the prior art identified by Unirac.

52. Several of the references cited during the ‘777 Patent’s prosecution also disclose similar subject matter as the references Dregger cites. For example, during prosecution of the ‘777 Patent, the Office considered many references that include seals that are loaded in compression, including, Wentworth (EX-1005), Japanese Publication No. JP2003-336355 (EX-2009), German Publication No. DE 10 2005 018 687 (EX-2010), Japanese Publication No. JP1983-194642 (EX-2011), and U.S. Patent No. 4,321,745 (EX-1010) (the “Considered References”). I have reviewed each of the Considered References. Unlike Thaler, the Considered References use the

same loading scheme employed by the claims of the ‘777 Patent, namely a compressive load scheme.

53. As a practical matter, Thaler does not disclose the seal recited in the Challenged Claims of the ‘777 Patent. Thaler cannot be the source of a material error by the Office because the Office already considered the more relevant Considered References.

54. Using the grommet from Thaler, Unirac uses hindsight bias as it eliminates key contours, changes the mode of sealing, and places the grommet from Thaler in an environment where it would be ineffective. Unirac then justifies the redraw as obvious without credible support.

55. The Office also considered a plethora of references that teach various seals. Like Thaler, none of those various seals from that plethora of references teaches the seal as claimed in the ‘777 Patent. The Office does not redraw a prior art reference to justify a rejection because the Office is prohibited from applying hindsight bias. The Office is also limited by the scope and content of the prior art; hand-drawn references are not considered part of the prior art.

56. Both Unirac and the Office considered references that do not disclose the seal recited in the claims of the ‘777 Patent. Thus, the Office considered substantially the same art as the Thaler reference when it considered prior art seal structures that fail to disclose the seal claimed in the ‘777 Patent.

57. In a similar vein, the Office considered substantially the same arguments now advanced by Unirac with regards to the seal from Thaler. However, the Office is limited to reliance on the scope and content of the prior art and prohibited from hindsight bias.

58. Unirac suggests combining a modified version of Wentworth with a total redesigned grommet of Thaler to satisfy the claimed bracket and seal elements recited in each of the independent claims. The proposed modifications and redesign of the Thaler grommet contradict

the express teachings of Wentworth, Thaler, and Glicksman. The obviousness positions also ignore fundamental engineering and construction principles a POSA would rely on in considering the art. Even with the redesign and hindsight that are used in Grounds 1 and 2, Unirac fails to establish a *prima facie* case of obvious. Unirac does not have a reasonable likelihood of success in invalidating any of the Challenged Claims.

A. Unirac identifies no reasonable motivation to modify Wentworth with the teachings of Thaler, Glicksman or Ullman because Unirac’s motivation contradicts the Wentworth reference and the Wentworths’ well-known reduction to practice.

59. No POSA would modify Wentworth in the manner Unirac suggests because Wentworth already contemplates a top bracket that attaches to the threaded shaft, compresses the plug, and otherwise seals the sleeve and aperture in the flashing.

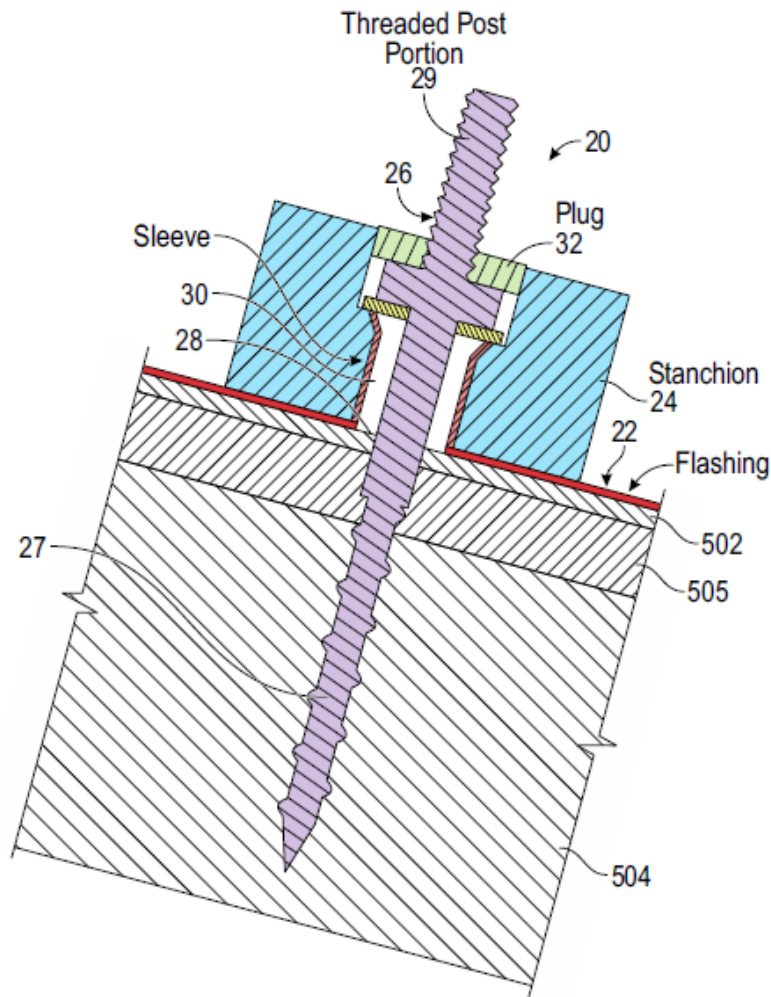
60. Unirac characterizes Wentworth without acknowledging the operation of Wentworth’s devices and the express teachings of the Wentworth. The motivations to modify Wentworth offered by Unirac do not exist because the physical arrangement of the Wentworth system forecloses those same motivations with standard solar panel mounting rails and L-feet, as sold by both Unirac and Ecofasten.

61. Wentworth’s system “pertains to attaching articles such as photovoltaic panels to the roof of a structure, and more particularly to a system which is installed on the roof to serve as an anchor for the articles.” EX-1005, 1:6-9. A POSA understands the basic operation of a roof. A roof keeps the elements out of a structure.

62. Wentworth’s assembly discloses a seal 32 to prevent water from leaking into the hole 30 of the stanchion, and further through the aperture of the flashing 22. Unirac asserts that the seal 32 is located at the top of the stanchion and is not held in place by the compressive force of the

fastener, but instead is located external to the fastener, uncovered, and potentially exposed to the elements, and thus may deteriorate, degrade, or loosen over time such that water is able to leak through the hole in the flashing projection. EX-1003, ¶ 74.

63. Unirac also offers Fig. 3 from Wentworth to reinforce this position.



64. Unirac ignores the teachings of Wentworth in making the above assertions. The Wentworth roof attachment creates a mounting point – that is “a threaded post portion 29 for receiving hardware to attach the article to the roof.” EX-1005, 3:28-36. Hardware, such as an L-foot bracket, gets fastened onto the top of stanchion 24 and seal 32 in Wentworth. *Id.* Retaining

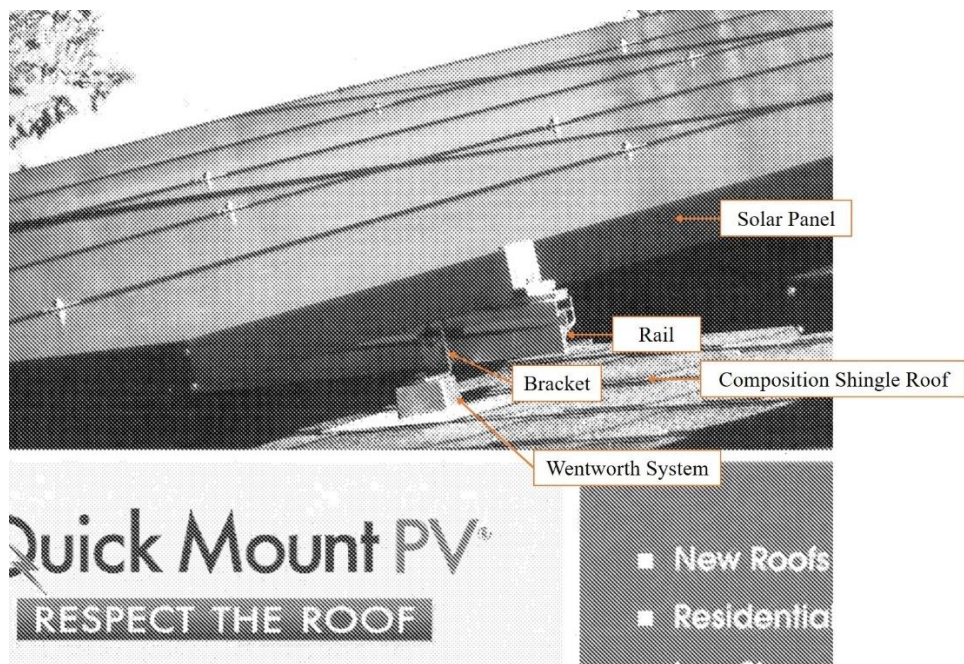
hardware is the reason for the existence of threaded portion 29 and stanchion 24 according to Wentworth itself. EX-1005, 3:28-36. Moreover, the plug is compressed by the *hardware* when the hardware is secured to the *threaded post portion*.

65. Wentworth and the Wentworths' commercial activities in furtherance of their business, Quick Mount PV,³ embody commonly known usage for the Wentworth attachment point and hardware, such as an L-foot bracket. Included in the prosecution history of the '777 Patent is a brochure from Quick Mount PV. EX-1002 pp. 73-99. Quick Mount PV was owned by Claudia and Stuart Wentworth, the inventors named in Unirac's Wentworth reference.

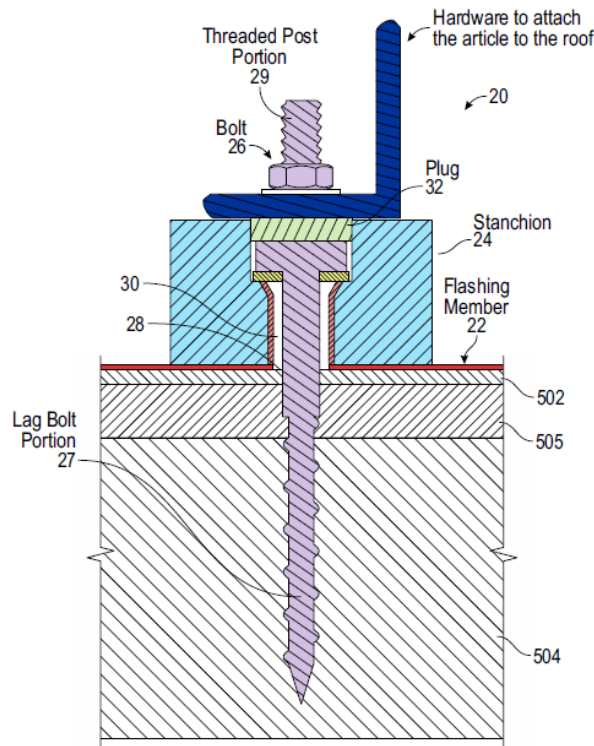
66. The brochure shows the Wentworth system attached to a composition shingle roof. The brochure also shows an L-shaped bracket positioned on the stanchion of Wentworth. Attached to the bracket is a rail, which has a solar panel mounted to it. This figure is demonstrative of the teachings of Wentworth reduced to practice.

67. Typical installation of the Wentworth system is well within the knowledge of a POSA. The advertised installation in Mr. and Mrs. Wentworth's brochure shows that the seal that Unirac contends is exposed to the elements is not exposed at all. The seal is covered by a bracket and is compressed into the stanchion.

³ Wentworth is owned by Wencon Development, Inc. dba Quick Mount PV, which is owned by Ecofasten's parent company, Esdec, Inc.



68. For additional clarity, depicted below is a modified version of Fig. 3 from Wentworth, including the features described in Wentworth itself and shown in the Wentworths' brochure as disclosed in the file wrapper of the '777 Patent. EX-1002 pp. 73-99. The features explicitly described in Wentworth include bolt 26 with "both a lag bolt portion 27 for engaging structural member 504 and a threaded post portion 29 for receiving hardware to attach the article to the roof." EX-1005, 3:28-36.



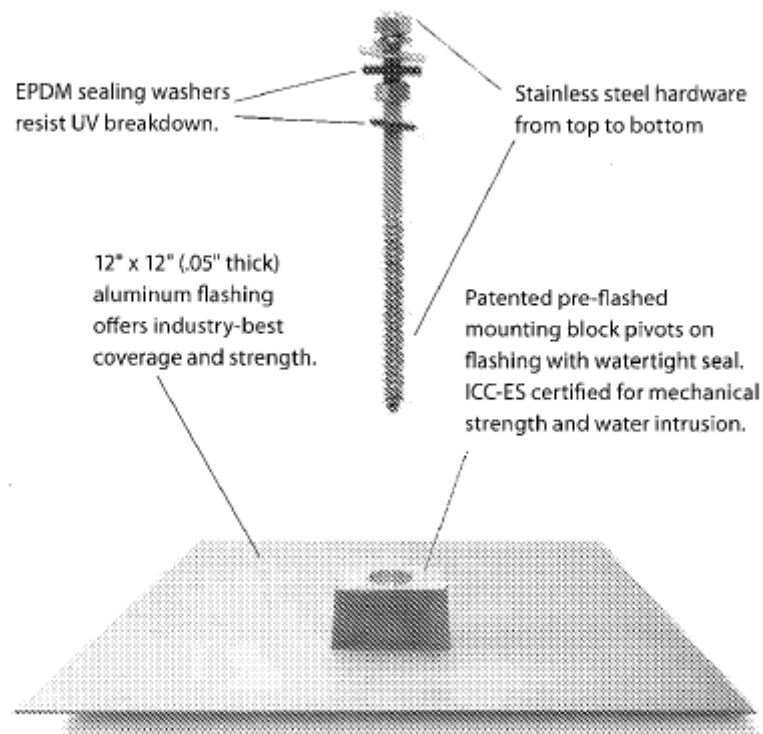
69. The Wentworths’ brochure depicts the Wentworth system “receiving hardware to attach the article to the roof,” precisely as taught by Wentworth and depicted above. *Id.*; See also, EX-2003. The depiction includes actual hardware used in conjunction with the system disclosed in the Wentworth reference in roof installations. A POSA would be familiar with the practical application of Wentworth and its express teachings. In practice, Wentworth contemplates a bracket installed on and secured to stanchion 24 by the threaded post portion 29, a washer and a nut. That is why Wentworth’s lag bolt includes threaded post portion 29 protruding from plug 32.

70. Unirac contends both that the seal in Wentworth “is not held in place by the compressive force of the fastener” and that the seal in Wentworth is “exposed to the elements.” *Petition*, p. 27. This statement directly contradicts the Wentworth disclosure as well as the Wentworths’ own reduction to practice on two fronts. EX-1005, 2:21-36; EX-2003, p. 1

71. The seal in Wentworth is held in place by the compressive force of the fastener as it drives the bracket into the stanchion. Even if a POSA only knew of art cited in the file wrapper, a POSA would have access to Wentworth and the Wentworth brochure. Wentworth itself describes the bolt as having “a threaded post portion 29 for receiving hardware to attach the article to the roof.” EX-1005, 3:28-36. The threaded post portion described in Wentworth is a component of a fastener, as is any threaded nut or other retention means that threads to a threaded post. The Wentworth’s brochure as excerpted above further depicts an L-shaped bracket fastened to the top of the stanchion by a fastener.

72. Below from the same brochure, the Wentworths depict their mounting system without the L-bracket. EX-2003, p. 5. The Wentworth system was a racking agnostic attachment point for mounting hardware (e.g., solar panel rails and mounting brackets). Even in a practical application of the Wentworth system without an L-bracket used to mount solar panels, the seal is compressed into the stanchion by the fastener. The seal is not “located external to the fastener” as stated by Unirac.

Superior Waterproofing Technology



73. The seal in Wentworth is held in place between the stanchion and bracket by the compressive force of the fastener.

74. Unirac's assertion that the seal in Wentworth is "uncovered and potentially exposed to the elements" is patently false. *Petition*, p. 27. In Wentworth, the seal is covered when the threaded post portion 29 receives mounting hardware as shown on the cover page of the Wentworths' brochure. *See*, EX-2003, p. 1. Even in the embodiment without the L-bracket present from page 5 of the Wentworths' brochure, the EPDM sealing washer is covered by a stainless-steel washer having a greater diameter than the sealing washer. *Id.*; *See also, Id.* at p. 5. The seal in Wentworth is covered and not exposed to the elements. *Id.*; *See also, Id.* at p. 1.

75. Unirac suggests that Ullman teaches a modification to the bracket of Wentworth. Ullman discloses a stanchion and so does Wentworth. Each stanchion is configured to receive a bracket

to create an elevated mounting position on a roof. While the stanchion structure in each of the disclosures is different, neither structure is a bracket. Rather, both structures operate as a spacer to create an elevated attachment point for a bracket. The elevated attachment points in Ullman and Wentworth position the sealing interfaces above any snow or water pooling or running down a roof.

76. There is nothing in Ullman that would suggest that the stanchion of Wentworth be modified to include additional structure because, both the stanchion of Wentworth and the stanchion of Ullman are elevated attachment points for brackets or module support rails. To suggest any other modifications would be to ignore the disclosure of each reference and the construction conventions relied upon by a POSA.

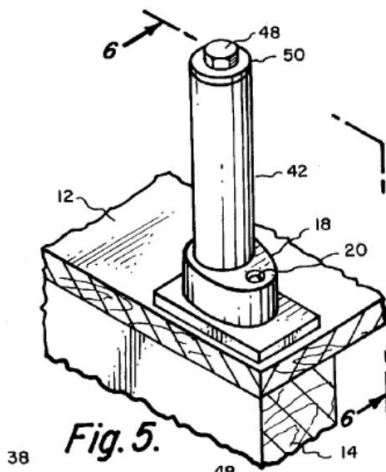


FIG. 5 of Ullman showing stanchion 41 (EX-1009, p. 3)

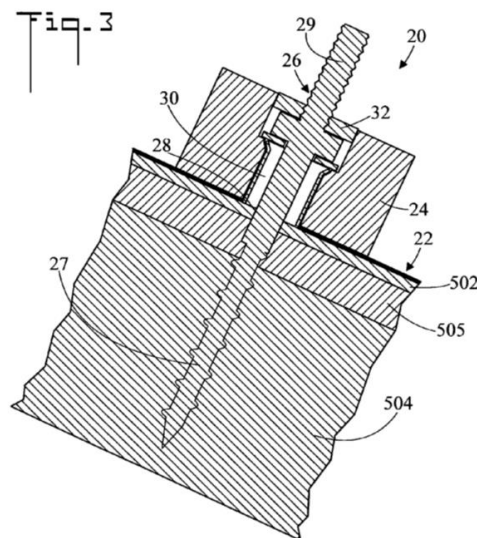


FIG. 3 of Wentworth showing stanchion 24 (EX-1005, p. 3)

77. Unirac offers no reasonable motivation to modify Wentworth. In fact, Unirac's motivation to modify Wentworth contradicts Wentworth itself. Without a motivation, POSA would have no reason to modify Wentworth with the teachings of Thaler, Glicksman, or Ullman.

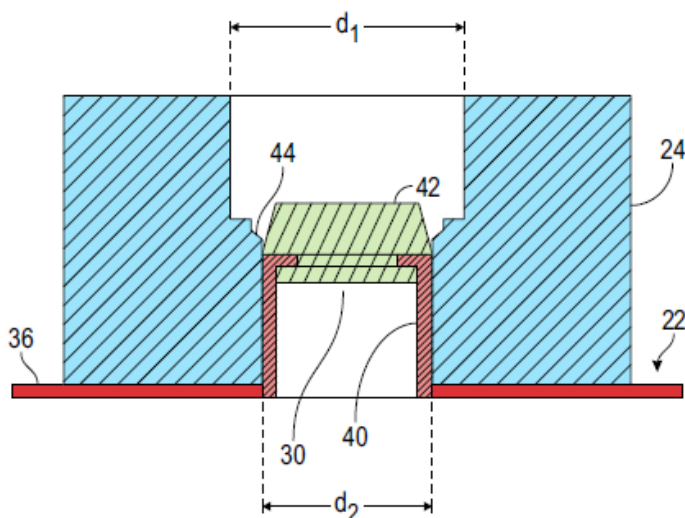
The lack of any feasible motivation to modify Wentworth is sufficient to prevent Unirac from prevailing on Ground 1 for any challenged claim.

B. POSA would have no reasonable expectation of success in modifying Wentworth with Thaler as proposed by Unirac because the modifications are unworkable and exceed the scope content of the prior art.

78. Even if a POSA had a motivation to modify Wentworth, they would not modify Wentworth with the teachings of Thaler. With Thaler, Unirac mischaracterizes the reference, redesigns a seal with hindsight bias, and ignores the express teachings of the references.

79. The resilient grommet of Thaler “comprises three inwardly tapered circumferentially extending lips 92, 94 and 96 disposed in downwardly outwardly stepped relation coaxial with the boss portion 34, said lips 92, 94 and 96 having internal diameters of downwardly increasing magnitude.” EX 1006 7:6-10. This arrangement allows the grommet of Thaler to engage the variable outer diameter of a vent pipe, such that the sealing lips of Thaler are loaded radially.

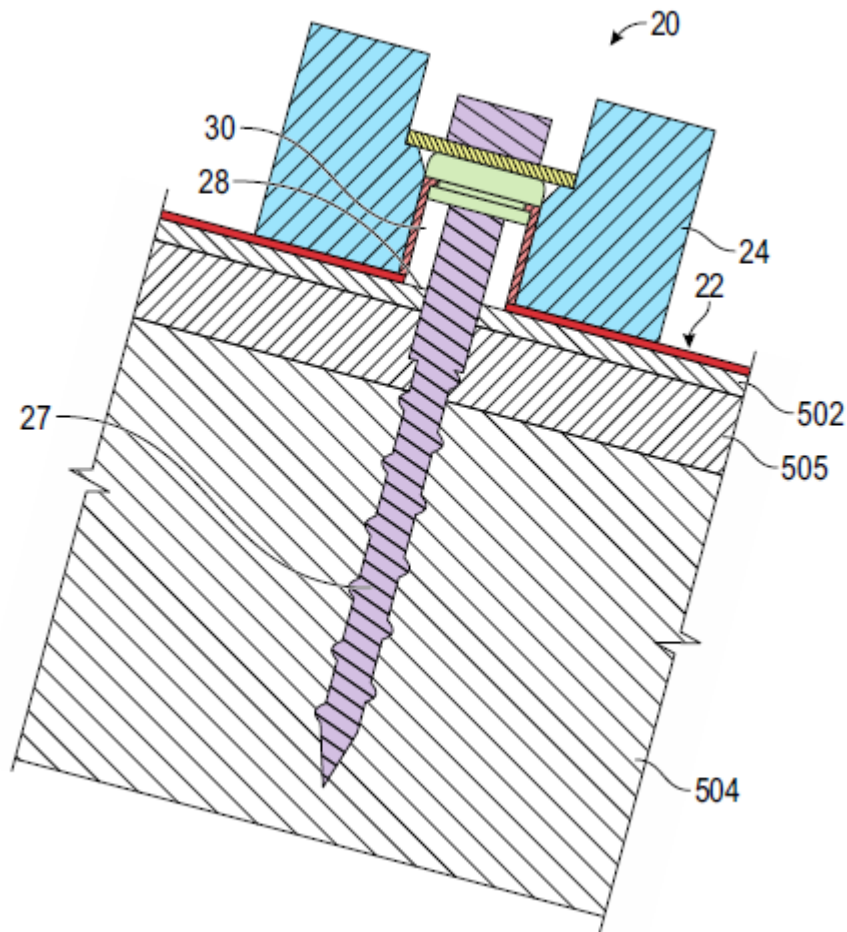
80. Unirac redesigns the entire structure. Unirac drew the heavily modified Fig. 18 below from Wentworth including the redesigned seal of Thaler. *Petition*, p. 46.



Modified Fig. 18

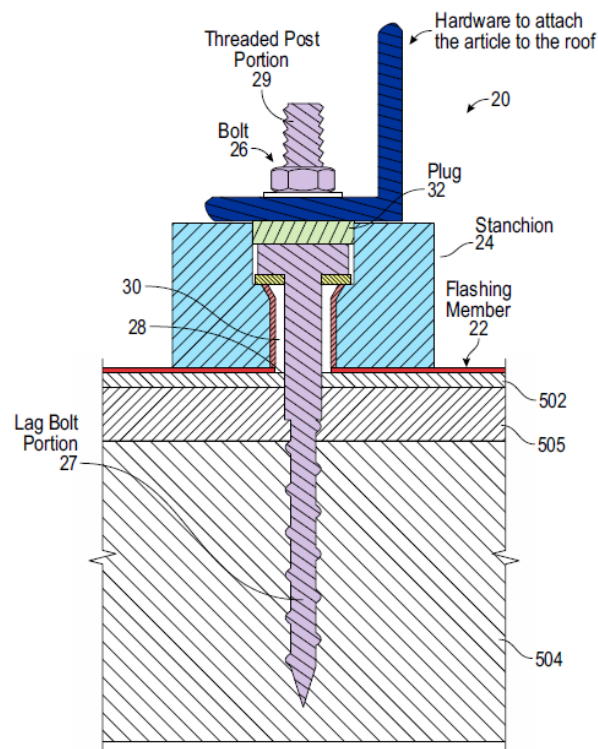
81. Unirac adds a fastener and the washer of Glicksman to arrive at the solution shown below. The alleged solution includes the flashing of Wentworth, with the redesigned Thaler grommet, and the washer of Glicksman. Unirac modifies the swaged end of the flashing of Wentworth that contemplates a compressed seal, then replaces the seal of Wentworth with the redesigned seal. In addition to changing the contours of the Thaler grommet, Unirac changes the mode of operation from being a radial loaded seal to an axially compressed grommet. Thaler thus does not even teach the seal Unirac is forcing into Wentworth for its obviousness positions.

82. Unirac cites no reference that teaches or suggests that Unirac's redesigned seal and flashing would support a compressive load from a fastener and washer. Unirac alleges that the seal in Wentworth "is not held in place by the compressive force of the fastener." *Petition*, p. 27. The load arrangement proposed by Unirac would drive the seal through the sleeve creating a void between the washer and seal.



83. More importantly, a POSA would not have a reasonable expectation of success modifying Wentworth as described in the Petition because the proposed modifications result in an assembly that would pool water above the top of the fastener in the open void of the stanchion. The assembly proffered by Unirac ignores the overt teachings of Thaler that roof flashings and grommets should be shaped and installed “to effectively shed precipitation and avoid accumulation or pooling of water and ice on the flashing.” EX-1006 at 1:56-57. As a result of heating and freezing cycles, pooling water over a resilient sealing material is likely to result in leakage over time. This is one reason Wentworth’s elevated water seal has been successful. Review of Fig. 3 in Wentworth in light of the Wentworths’ reduction to practice shows the void

in the stanchion is filled with a fully loaded assembly that allows for a compressed elevated water seal. Ecofasten's modified version of FIG. 3 showing the mounting hardware from the Wentworths' brochure over the stanchion is again reproduced below for reference.



84. Unirac's modifications also contradict Glicksman. Glicksman teaches that a hermetic seal is achieved by engagement of the threads of the fastener with the resilient material of Glicksman, which Unirac has omitted in Fig. 3. EX-1007, 1:27-28. Unirac proposes using Glicksman with a smooth shank fastener. As a result, the threads of the fastener in Unirac's proposed modification would engage the seal of Glicksman before the seal came to rest against the smooth shank. Engagement with the threads would deform the resilient material and create a path for pooled water in the cup of the stanchion to leak along the smooth shank of the fastener to drain the pooled water into the roof penetration created by the fastener.

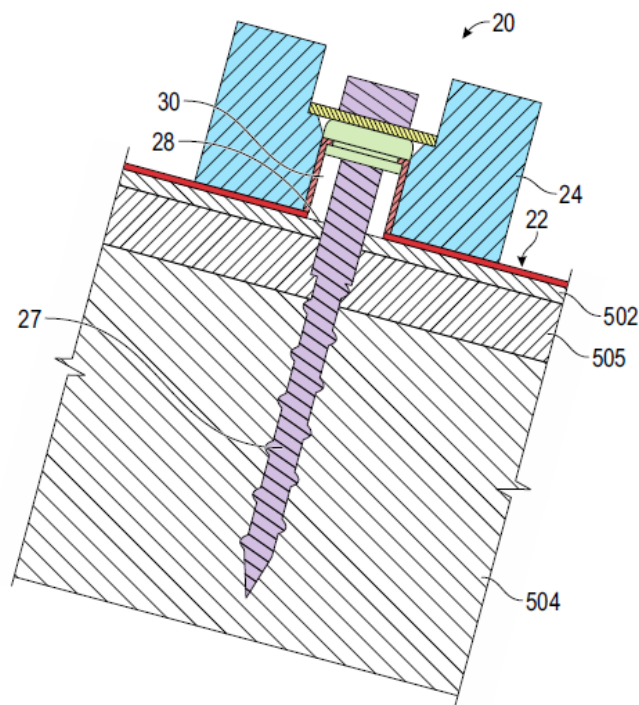
85. Glicksman also teaches that its washer should be compressed against a flat, metal surface. EX-1007, 1:8-12. Instead of compressing the Glicksman washer against a flat surface, Unirac suggests engaging only the outer perimeter of Glicksman with a tapered surface. *Petition*, p. 48.

86. Unirac also fails to identify in the prior art a bracket that functions as an attachment point for solar racking. Unirac modifies Fig. 21 of Wentworth with a “blue body” structure to create an L-shaped bracket. *Petition*, p. 42. Unirac provides no rationale for adding the “blue body” and provides no way to attach the “blue body” to the stanchion of Wentworth.

IX. SUMMARY OF OPINIONS

87. The *Petition* therefore does not establish a *prima facie* case of obviousness and, therefore, cannot have a reasonable likelihood of invalidating any of the Challenged Claims. Institution should be denied.

88. The Dregger Declaration contends that Thaler discloses the claimed seal and solves the problem addressed by the ‘777 Patent. I disagree with this position because, Thaler teaches a grommet that is loaded radially. The ‘777 Patent and Wentworth both teach a seal that is loaded in compression. Because of the different loading characteristics, the grommet of Thaler would be prone to leaking. Moreover, no POSA would create a pool above a roof penetration as suggested by Dregger at EX-1003, p. 60 and as shown in the proposed Dregger design reproduced below.



89. Based on my review, I have concluded that claims 1-14 and 16-24 are valid in light of the art presented in the Petition. First, there is no reason or motivation to modify Wentworth with Ullman or Glicksman, because Wentworth expressly teaches a system that contemplates a *hardware* that loads a *plug* in compression. Second, the assembly suggested by Dregger at EX-1003, p. 61, creates a recess that can catch and retain water on top of a fastener that would be prone to leaking. Third, based on the art I have reviewed that is currently on the record, there are better references that shows compression seal assemblies that have already been considered by the Office during the prosecution of the ‘777 Patent.

90. Based on Wentworth's reputation in the market and POSA's knowledge of the waterproofing technology of Wentworth, POSA would not look to modify the Wentworth roof attachment because the Wentworth system was already waterproof.

X. SUPPLEMENTATION

91. I reserve the right to supplement this report based on additional information.

Dated: 2 June 2021

Barry Cinnamon
Barry Cinnamon (Jun 2, 2021 18:40 PDT)

Barry Cinnamon

Validity Expert Report - Cinnamon

4839-4395-8252 v.7

Final Audit Report

2021-06-03

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