UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAFE ARC TECH., LLC,
Petitioners,

v.

AL-AZEM,
Patent Owner.

Case IPR2025-01214
U.S. Patent No. 9,545,775

DECLARATION OF DR. DAVID BROOKSTEIN, Sc.D. IN SUPPORT OF PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 9,545,775

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CLAIM LISTING

1.pre 1. An enclosure comprising:

1.a a first panel having a male edge with a front side and a rear side, wherein the front side and the rear side each comprise a first portion of a fastening medium thereon; and

1.b a second panel having a female edge with a first flap and a second flap extending therefrom,

1.c wherein the first flap and the second flap each have an inner surface comprising a second portion of the fastening medium thereon adapted for engagement with the first portion of the fastening medium, wherein the first flap engages the front side and the second flap engages the rear side via engagement between the first portion and the second portion of the fastening medium,

1.d wherein the engagement between the first panel and the second panel forms a seal adapted to maintain a pressure differential across opposing sides thereof.

2 2. The enclosure of claim 1, wherein engagement between the first flap and the front side, engagement between the second flap and the

rear side, or combinations thereof, forms a seal adapted to maintain a pressure differential across opposing sides thereof.

3 3. The enclosure of claim 1, wherein the first portion of the fastening medium, the second portion of the fastening medium, or combinations thereof, comprise a plurality of strips of a hook and loop fastening medium.

4 4. The enclosure of claim 1, wherein the first panel, the second panel, or combinations thereof, is formed at least partially from a heat resistant material.

5.pre 5. An enclosure comprising:

5.a a wall comprising a first panel, a second panel, a third panel, and a fourth panel,

5.b wherein the first panel comprises a first male edge having a front side and a rear side and a first female edge having at least two flaps extending therefrom, wherein the front side and the rear side each comprise a first portion of a fastening medium thereon, and wherein said at least two flaps each have an inner surface comprising a second portion of the fastening medium thereon,

5.c wherein the second panel comprises a second male edge having a front side and a rear side and a second female edge having at least two flaps extending therefrom, wherein the front side and the rear side each comprise a first portion of the fastening medium thereon, and wherein said at least two flaps each have an inner surface comprising a second portion of the fastening medium thereon,

5.d wherein the third panel comprises a third male edge having a front side and a rear side and a third female edge having at least two flaps extending therefrom, wherein the front side and the rear side each comprise a first portion of the fastening medium thereon, and wherein said at least two flaps each have an inner surface comprising a second portion of the fastening medium thereon,

5.e wherein the fourth panel comprises a fourth male edge having a front side and a rear side and a fourth female edge having at least two flaps extending therefrom, wherein the front side and the rear side each comprise a first portion of the fastening medium thereon, and wherein said at least two flaps each have an inner surface comprising a second portion of the fastening medium thereon,

5.f.i wherein the second panel is engaged with the first panel via engagement between the first female edge and the second male edge,

5.f.ii wherein the third panel is engaged with the second panel via engagement between the second female edge and the third male edge,

5.f.iii wherein the fourth panel is engaged with the third panel via engagement between the third female edge and the fourth male edge, and

5.f.iv wherein the first panel is engaged with the fourth panel via engagement between the fourth female edge and the first male edge; and

5.g wherein the engagement between the first panel and the second panel, engagement between the second panel and the third panel, engagement between the third panel and the fourth panel, engagement between the fourth panel and the first panel, or combinations thereof, forms a seal adapted to maintain a pressure differential across opposing sides thereof.

6 6. The enclosure of claim 5, wherein engagement between the first panel and the second panel defines a first axis, and wherein engagement between the third panel and the fourth panel defines a

second axis, and wherein the first axis is offset a distance from the second axis in a direction generally perpendicular to the first axis and the second axis to form an overlapping engagement between a first portion of the wall and a second portion of the wall.

7 7. The enclosure of claim 5, wherein engagement between the second panel and the third panel defines a first axis, and wherein engagement between the fourth panel and the first panel defines a second axis, and wherein the first axis is offset a distance from the second axis in a direction generally perpendicular to the first axis and the second axis to form an overlapping engagement between a first portion of the wall and a second portion of the wall.

8 8. The enclosure of claim 5, wherein the first panel, the second panel, the third panel, the fourth panel, or combinations thereof, further comprise at least one additional edge having a front side and a rear side, wherein the front side and the rear side each comprise a first portion of the fastening medium thereon for engagement with at least one additional panel.

9 9. The enclosure of claim 5, further comprising at least one additional edge having a first flap and a second flap extending therefrom,

wherein the first flap and the second flap each have an inner edge comprising a second portion of the fastening medium for engagement with at least one additional panel.

10 10. The enclosure of claim 5, wherein each first portion of the fastening medium, each second portion of the fastening medium, or combinations thereof, comprise a plurality of strips of a hook and loop fastening medium.

11 11. The enclosure of claim 5, further comprising at least one additional wall engaged with the wall to form an enclosed space adapted for performing hot work, for containing a pressure differential therein, or combinations thereof.

12 12. The enclosure of claim 5, wherein engagement between the first panel and the second panel, engagement between the second panel and the third panel, engagement between the third panel and the fourth panel, engagement between the fourth panel and the first panel, or combinations thereof, comprise engagement between a first of said flaps and one of the front sides and a second of said flaps and one of the rear sides via engagement between the first portion and the second portion of the fastening medium.

I, David Brookstein, hereby declare as follows:

I. INTRODUCTION

1. I have been retained as an expert on behalf of Safe Arc Technology, LLC ("Petitioner" or "Safe Arc") for this *inter partes* review ("IPR") of U.S. Patent No. 9,545,775 ("the '775 patent").

2. I am being compensated for my time in connection with this IPR at my standard rate for consulting services. My compensation is not dependent on the outcome of this proceeding, the results of my analysis, or on the substance of my opinions and testimony.

3. I have been asked to provide my opinion on the validity of the '775 patent. In particular, I have been asked to consider whether the panel fastening system of Ferrante (Ex. 1005), which uses a clamping hook-and-loop arrangement, renders obvious the claims of the '775 patent when considered in combination with Wardlaw (Ex. 1004) and Ballinger (Ex. 1006). Related to these opinions, I have also provided opinions on other matters as set forth in this Declaration, including how I believe a person of ordinary skill in the art (a "POSITA") would understand the claims.

4. In preparing this Declaration, I have reviewed the following materials, as well as any other materials discussed in this document:

Exhibit No.	Exhibit Description
1001	U.S. Patent No. 9,545,775 ("the '775 patent")
1002	File History of U.S. Patent No. 9,545,775
1004	U.S. Patent Application Publication No. 2008/0282652 ("Wardlaw")
1005	U.S. Patent No. 5,713,089 ("Ferrante")
1006	U.S. Patent No. 3,715,843 ("Ballinger")
1007	U.S. Patent No. 3,009,235 ("De Mestral")

II. BACKGROUND AND QUALIFICATIONS

5. I am qualified to testify as an expert in this case. I was awarded a Bachelor of Textile Engineering degree from the Georgia Institute of Technology ("Georgia Tech") in 1971, a Master of Science degree in Textile Technology from the Massachusetts Institute of Technology ("MIT") in 1973, and a Doctor of Science degree in the field of mechanical engineering from MIT in 1976. I was a professor of Textile Engineering at Georgia Tech from 1975- 1980. I was Associate Director of Albany International Research Co. (formerly Fabric Research Laboratories) from 1980-1994. I was Dean of the School of Engineering and Textiles and Executive Director of Research at Philadelphia University (formerly Philadelphia College of Textiles and Science) from 1994 to 2010. In 2010, I was appointed Executive Dean for University Research at Philadelphia University and served in that position through June 2012. In July 2012, I resigned

from Philadelphia University to become Dean of the Science, Technology, Engineering, and Mathematics Division of Montgomery County Community College in Pennsylvania. In August 2014, I was appointed Professor of Mechanical Engineering and Director of Undergraduate Affairs at the Temple University College of Engineering, and in July 2017 I was promoted to Senior Associate Dean for Undergraduate Studies at the Temple University College of Engineering. I retained my rank of Professor of Mechanical Engineering and I was responsible for the capstone senior design course required of all engineering graduates.

6. At Philadelphia University I was the Principal Investigator for a multi-year research and development project funded by the US Army. The project involved the development of new warfighter chemical protective uniforms that consisted on many hook and loop fastener systems that aided in providing critical sealing to protect the soldier from gaseous chemical attacks.

7. In 1995, I was elected by my peers as a Fellow of the American Society of Mechanical Engineers, which is an honorific awarded to only about 1% of its members. In 1992, I was elected by my peers as a Fellow of The Textile Institute (United Kingdom). In 1998, I was awarded the ASTM Harold Dewitt Smith Award for textile fiber utilization. In 1993, I was awarded the Techtextil Innovation Prize (Germany).

8. I am the named inventor on 13 U.S. patents, all of which relate to structures made using the principles of textile engineering and science.

9. I have authored or co-authored approximately 50 publications in the fields of textile engineering, textile structural design, and textile manufacturing.

10. I have over 50 years of experience in industry, academia and consulting and I have served as an expert witness on about 35 patent litigations with district courts, the International Trade Commission and the US Patent and Trial Appeal Board.

11. A copy of my curriculum vitae, provided as Appendix A, contains further details concerning my education, experience, publications, patents, and other qualifications to render an expert opinion in this matter.

III. UNDERSTANDING OF PATENT LAW

12. In forming the opinions expressed in this Declaration, I relied upon my education and experience in the relevant field of the art, and I have considered the viewpoint of a person having ordinary skill in the relevant art at the time of the invention. I am not a patent attorney, nor have I independently researched the law of patent validity. Attorneys have explained certain legal principles to me that I have relied on in forming my opinions as set forth in my Declaration, including principles of prior art, anticipation, and obviousness.

13. I understand that in an *inter partes* review process, the petitioner carries the burden of proving patent claim invalidity by a preponderance of the evidence on a claim-by-claim basis, based on either patents or printed publications. Each claim is analyzed independently. It is my understanding that when a party has the burden of proving a claim invalid by the preponderance of the evidence, the party must show that it is more likely than not that the claim is invalid.

14. I understand that a patent can be invalid for anticipation or for obviousness. However, in this case, I only provide opinions on obviousness of the challenged claims.

15. I understand that under § 103 of the patent statutes, a patent claim may be invalid as obvious in view of a combination of prior art references or in view of a single prior art reference. Obviousness is determined from the perspective of a hypothetical person of ordinary skill in the art (also known as a "POSITA" as discussed below in ¶¶20-24).

16. I understand that an obviousness analysis involves three factual inquiries: (1) the scope and content of the prior art, (2) differences between the prior art and the claims at issue, and (3) the level of ordinary skill in the art.

17. I understand that a patent claim is obvious if the prior art, either alone or in combination, and when combined with the knowledge of one having ordinary skill in the art, discloses or suggests all of the limitations of a claim. I also

understand that a patent claim is obvious if a POSITA would have modified or combined the prior art in a manner that would have disclosed or suggested all of the limitations of the claim, and had a reason to make these modifications or combinations.

18. In addition, I understand that a variety of factors are considered in determining whether an invention would have been obvious to a person of ordinary skill in the art. For example, a teaching, suggestion, or motivation in the prior art that would have led a person of ordinary skill in the art to modify a prior art reference or select multiple prior art references and combine them in such a fashion as in the claimed invention, may render an invention obvious. As well, a combination of elements that was obvious to try, for example, in light of market pressures, may render an invention obvious if there was a reasonable expectation of success. I understand that other factors can be considered in an obviousness analysis, including: whether known elements are combined using known methods to create predictable results; whether one known element is substituted for another known element to obtain predictable results; whether a known technique is used to improve a similar device in the same way; whether a known technique is applied to a known device ready for improvement to yield predictable results; and whether design incentives or other market forces would have prompted a POSITA to

implement predictable variations in known work in one field of endeavor for use of those predictable variations in either the same field or a different one.

19. In understand that prior art reference that are "analogous art" are available for consideration of questions of obviousness. The test for determining whether a prior art reference constitutes analogous art to the claimed invention is whether the prior art is from the same field of endeavor, regardless of the problem addressed, or if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved.

IV. PERSON OF ORDINARY SKILL IN THE ART

20. I understand that the factors considered in determining the level of ordinary skill in the art include education and experience of persons working in the art, and the types of problems encountered in the art.

21. From my review of the '775 patent, I believe a person of ordinary skill in the art ("POSITA") would be familiar with the field relating to methods of attachment (e.g., fasteners) and their uses (for example, to secure pieces of material together to form an enclosure).

22. The patent application for the '775 patent was filed on May 1, 2012, and claims priority to a provisional application filed on May 2, 2011. I see no appreciable difference in a POSITA's understanding of the fastener art on May 1,

2012, as compared to May 2, 2011, and I will simply refer to this period as the "relevant period."

23. In my opinion, a POSITA at the time of the relevant period would have had at least a college or trade school degree in mechanical engineering or textile engineering, or a related field, and work or research experience in the field of fasteners. Work experience can substitute for formal education and additional formal education can substitute for work experience.

24. As noted above with regard to my education and experience as of the relevant period, I believe I possessed at least an ordinary level skill as of that date. I am familiar with the knowledge that a person of ordinary skill in the art ("POSITA") would have had at this time and the manner in which such a person would have viewed the available information at the time. My declaration and opinions are offered from this perspective, even if my declaration does not specifically refer to the perspective of a POSITA in every instance below.

V. ANALYSIS

25. It is my opinion that the clamping hook-and-loop arrangement for panel fastening system of Ferrante (Ex. 1005) renders obvious the claims of the '775 patent when considered in combination with Wardlaw (Ex. 1004) and Ballinger (Ex. 1006).

26. I have been informed that the following references, which were each published prior to 2011, are available as prior art references to consider for the purposes of obviousness:

Prior Art References Considered	
Ex1004	U.S. Pat. Pub. 2008/0282652 ("Wardlaw"), published Nov. 20, 2008, filed May 15, 2007
Ex1005	U.S. Pat. 5,713,089 ("Ferrante"), issued Feb. 3, 1998
Ex1006	U.S. Pat. 3,715,843 ("Ballinger"), issued Feb. 13, 1973

27. In reaching my opinions, I considered the following possible Grounds of unpatentability:

Grounds of Unpatentability	
1	Whether claims 1-4 are obvious under 35 U.S.C. § 103 over Wardlaw in view of Ferrante
2	Whether claims 1-12 are obvious under 35 U.S.C. § 103 over Wardlaw in view of Ferrante and Ballinger
1A	Whether claims 1-4 are obvious under 35 U.S.C. § 103 over Wardlaw in view of Ferrante (alternate construction)
2A	Whether claims 1-12 are obvious under 35 U.S.C. § 103 over Wardlaw in view of Ferrante and Ballinger (alternate construction)

A. The '775 Patent

28. The US Patent 9,545,775 B2 (the "775 patent") is entitled, "Attachment Systems and Methods Usable to Form Enclosures." The '775 patent was filed on May 1, 2012 and issued on January 17, 2017.

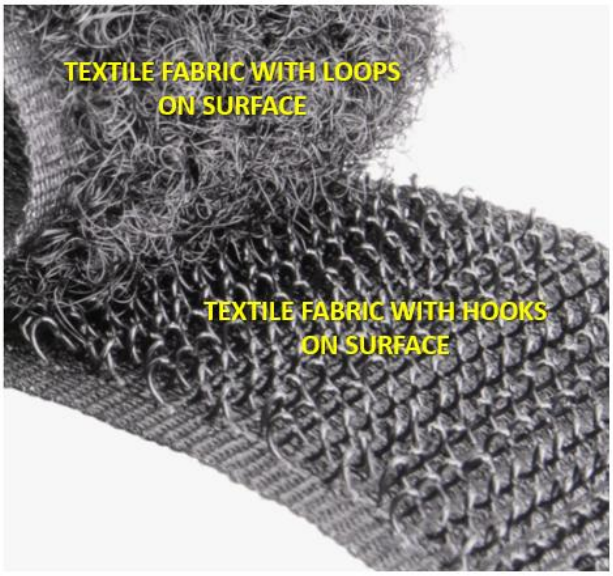
29. The abstract of the ’775 patent describes a panel of a welding enclosure having both a male and female fastener on a single panel. The abstract recites, “panels for forming such enclosures can include a first edge having a front side and a rear side, each side having a first portion of a fastening medium thereon, and a second edge having first and second flaps, each flap having an inner surface with a second portion of the fastening medium thereon. The flaps of a first panel can [be] engaged with the front and rear sides of an adjacent panel, and similarly, any number of adjacent panels can be engaged in this manner to form a sealed enclosure, usable for maintaining a pressure differential between the interior and exterior thereof.” A POSITA would understand that the fastening medium is a clamp style.

30. The panels disclosed in the ‘775 patent are generally thin, square-shaped panels, with a front side and a rear side. The panel can be formed from any generally durable material able to maintain its shape when connected together to form an enclosure under a positive internal pressure. In an embodiment, the panel can be formed from flexible, lightweight, and/or heat resistant materials, such as coated fiberglass, silicone, and/or various other polymers, composites, or other similar materials. ‘775 patent, 6:61-7:1. A POSITA would understand that this description indicates that the panels are made from a textile fabric.

31. I note that the ’775 patent acknowledges that “[w]hen welding or performing other hot-work operations, especially in an offshore environment, it is

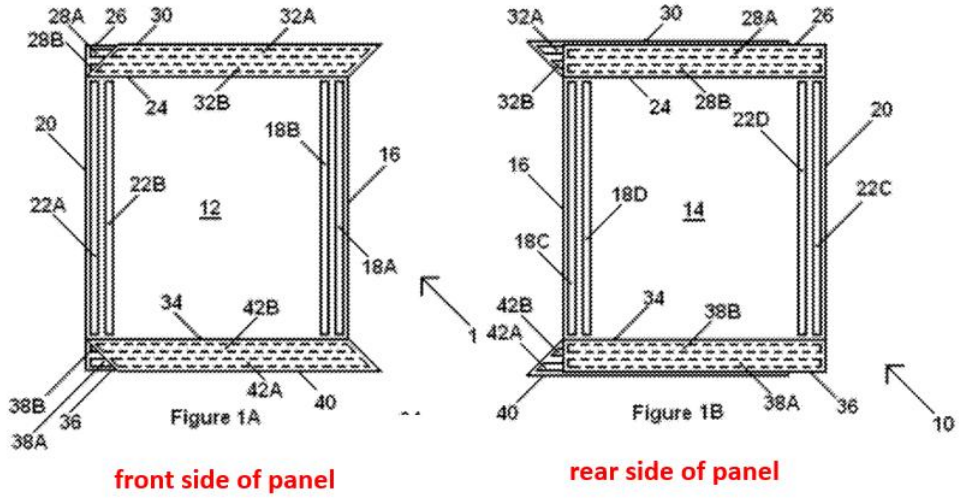
typically necessary to perform such operations in an isolated enclosure or, to a lesser extent, contain any ignition sources, such as sparks that result from performing hot-work operation." '775 patent, 1:25-28. The '775 patent is directed to a modular habitat to enclose hot work, such as welding or grinding, which may send off sparks or hot welding slag. As disclosed in the '775 patent, the modular enclosure is designed to be built in the field of multiple heat-resistant panels, engaged together via hook-and-loop fasteners such as VELCRO™, which is a well-known fastening system consisting of fabric strips of hooks and loops which form a mechanical bond when pressed together.

32. I am very familiar with hook-and-loop fasteners such as VELCRO™ and provide a brief background on the development of this product over sixty years ago. VELCRO™ was developed in Switzerland and was originally patented in 1961 as U.S. Patent No. 3,009,235, titled "Separable Fastening Device" to G. De Mestral (Ex. 1007). That patent discloses that "*Hooking or connecting devices of this character are adapted to, be used, for example for clothing, blinds or the like, thus replacing slide fasteners, buttons and other attachments of this type, particularly when a flexible closure, which is invisible and can be opened easily, is desirable*." (1:28:34). An annotated photograph of this type of fastener is shown below.

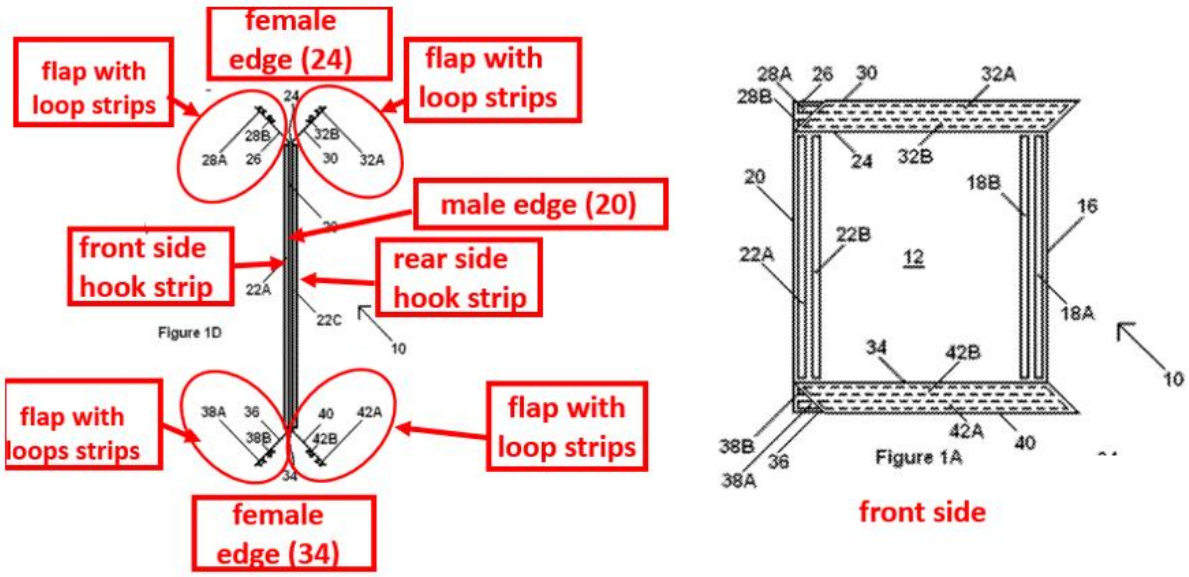


33. The ’775 patent recognizes, and a POSITA would agree, that while a VELCRO™ fastening is not completely air-tight, it can provide sufficient air resistance to maintain a pressure differential between the interior and exterior of an enclosure. ’775 patent, 10:60-64 (“engagement between overlapping male and female edges using strips of hook and loop fastening media can provide a ***generally*** airtight seal to form an enclosure capable of maintaining a positive pressure within.”) (emphasis added).

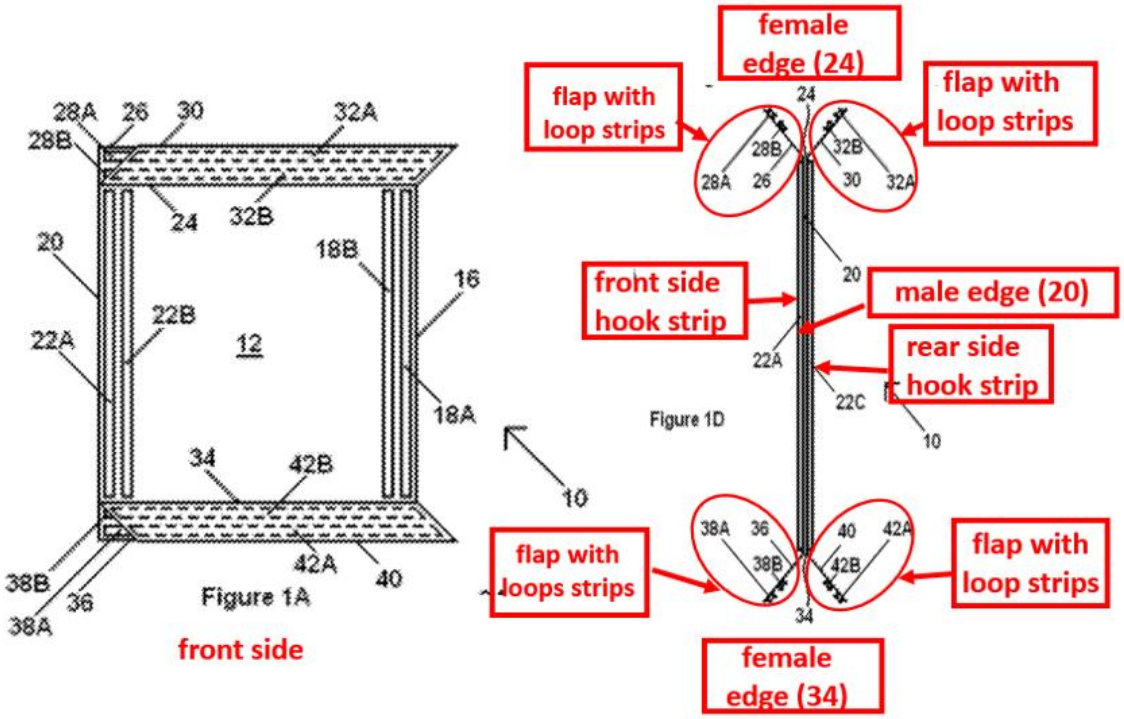
34. The invention described in the ‘775 patent consists of thin square shaped panels **10** having a front side **12** and a rear side **14**. The panels can be formed from flexible, lightweight, and/or heat resistant materials, such as coated fiberglass, silicone, and/or various other polymers, composites, or other similar materials. ‘775 patent, 6:61-7:1, Fig. 1A and Fig. 1B.



35. FIG. 1C depicts a diagrammatic right side view of the panel of FIG. 1A. '775, 5:57-58



36. FIG. 1D depicts a diagrammatic left side view of the panel of FIG, 1D.



37. The depicted panel **10** can be engaged with a generally similar and/or identical panel by placing either male edge **16**, **20** of the panel **10** adjacent to a female edge of an additional panel, then closing the flaps of the female edge over the male edge **16**, **20**, such that a first flap contacts the front side **12**, causing loop straps on the flap to engage hook straps **8A**, **18B**, **22A**, **22B** on the front side **12**, and a second flap contacts the rear side **14**, causing loop straps on the flap to engage hook straps **18C**, **18D**, **22C**, **22D** on the rear side **14**. '775 patent 8:5-14. A POSITA would understand that this engagement is a clamp style one.

38. The depicted panel **10** can also be engaged with a generally similar and/or identical panel by placing either female edge **24**, **34** adjacent to a male edge of an additional panel, then closing the flaps **26**, **30**, **36**, **40** over the male edge, such that a first flap contacts a front side of the male edge and a second flap contacts a rear side of the male edge, causing engagement between the loop straps **28A**, **28B**, **38A**, **38B** of one of the flaps **26**, **36** and one side of the male edge, and engagement between the loop straps **32A**, **32B**, **42A**, **42B** of the opposing flap **30**, **40** and the opposing side of the male edge. '775 patent, 8:15-25. A POSITA would understand that this engagement is a clamp style one.

39. FIGS. 2A through 2C depict an engagement between two panels (**10**, **44**) usable within the scope of the present disclosure. Specifically, FIG. 2A depicts an exploded diagrammatic front view of engagement between the panels **10**, **44**, with dashed lines extending therebetween to indicate a connection. '775 patent, 8:26-31.

40. The second panel (**44**), shown adjacent to and engaged [clamped] with the first panel (**10**), is depicted as identical or substantially similar to the first panel (**10**), rotated ninety degrees such that a female edge (**58**) of the second panel (**44**) is positioned to engage the first male edge (**16**) of the first panel (**10**). '775 patent, 8:37-42.

41. FIG. 2A depicts an exploded diagrammatic front view of an engagement between two panels usable within the scope of the present disclosure.'775 patent, 5:61-63. I have annotated FIG. 2A with a blue arrow to indicate how female edge (**58**) of the second panel (**44**) will engage the first male edge (**16**) of the first panel (**10**).

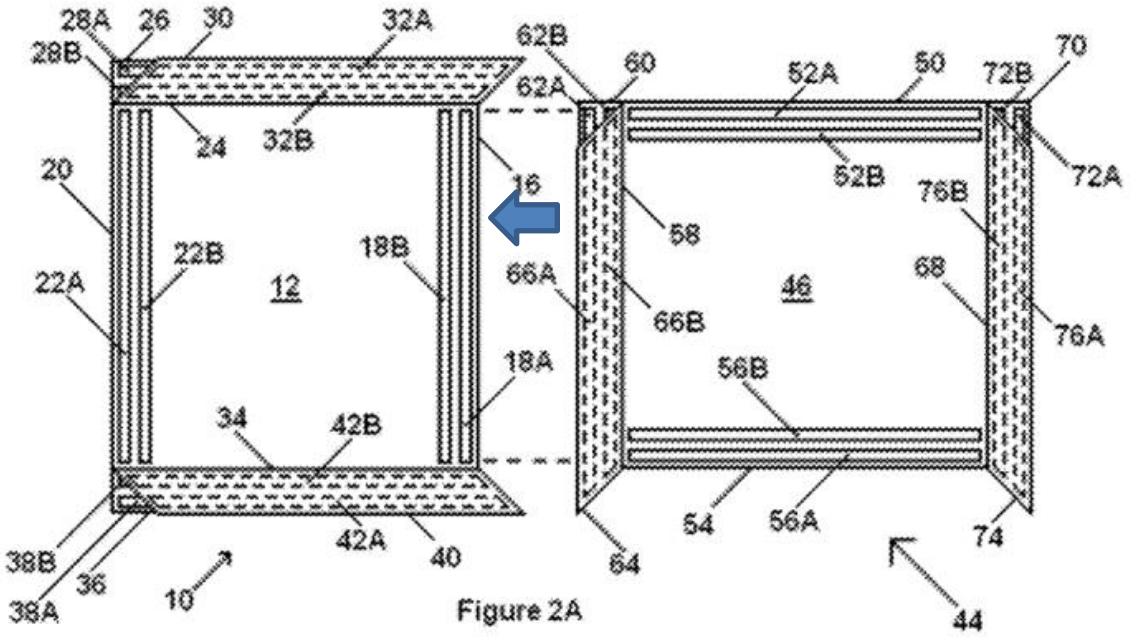


Figure 2A

42. FIG. 2B depicts a diagrammatic front view of the engagement of FIG. 2A. '775 patent, 5:64-65. The engagement is a result of the clamp-style action of the hook and loop flaps engaging with each other.

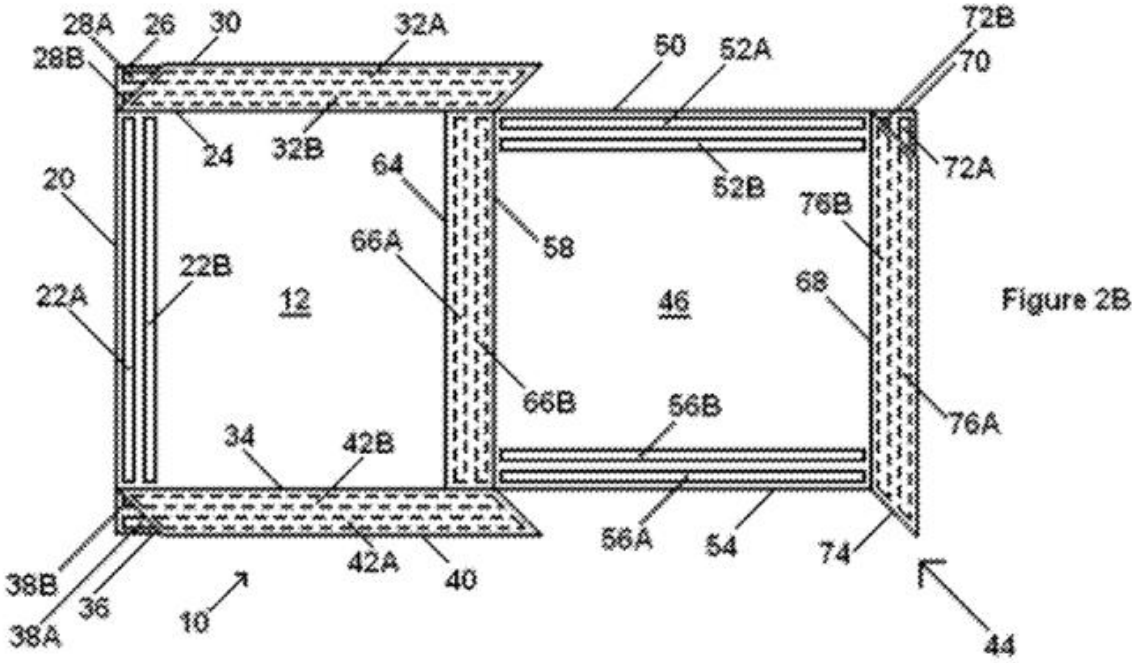


Figure 2B

43. FIG. 2C depicts a diagrammatic rear view of the engagement of FIG. 2B. '775 patent, 5:66-67.

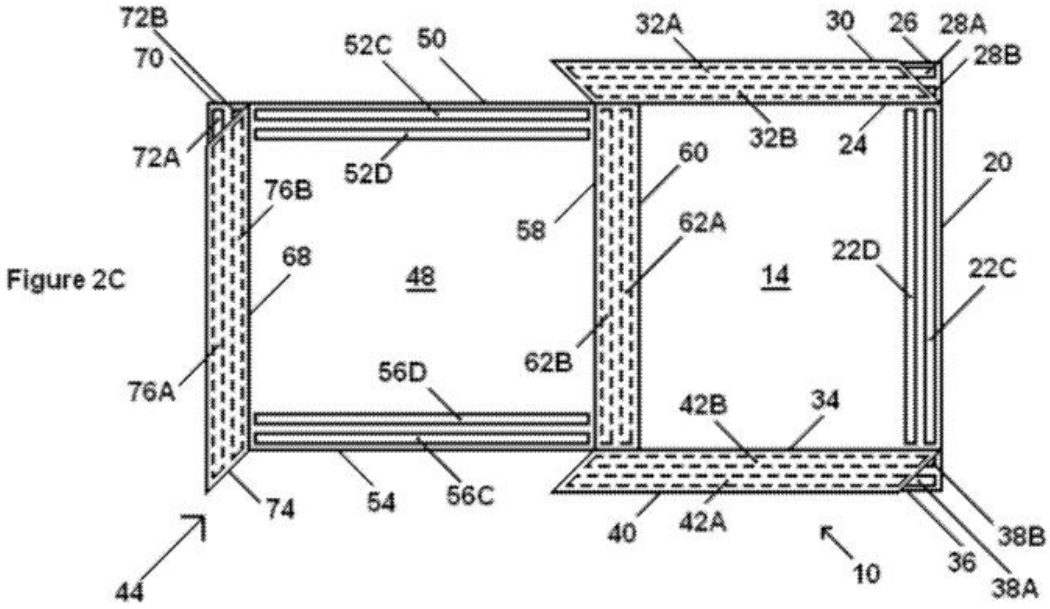


Figure 2C

44. FIG. 3 is a diagrammatic front view of an engagement between four panels (**10**, **44**, **78**, **80**) is shown, e.g., forming a generally continuous wall usable as part of an enclosure. Each of the depicted panels (**10**, **44**, **78**, **80**) includes a configuration similar or identical to that of the panels depicted in FIGS. 1A through 2C. '775 patent, 9:54-59.

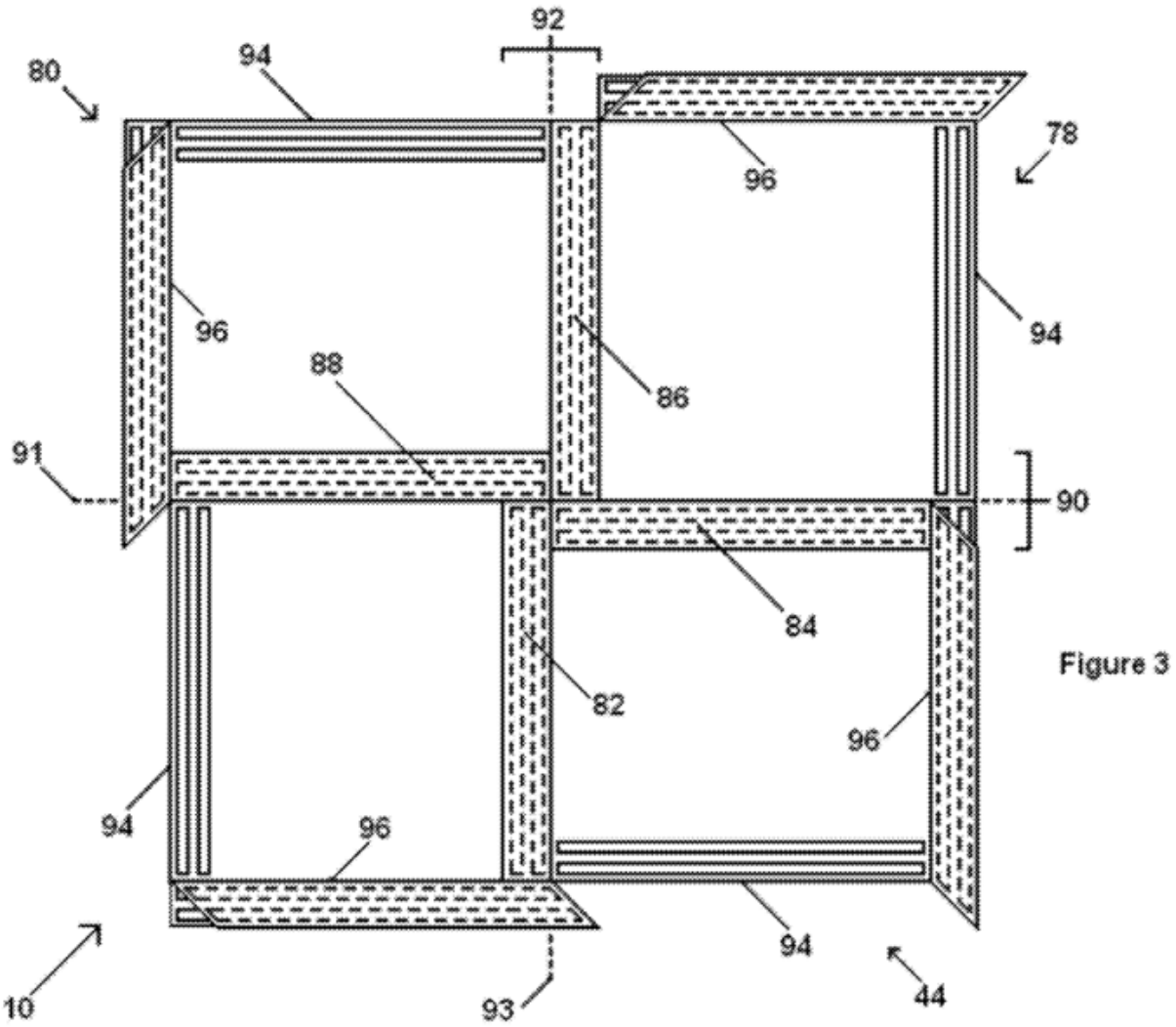


Figure 3

45. Specifically, the first panel **10** is shown engaged with the second panel **44** at engagement **82**, which can be formed through connection between hook and loop fastening media disposed on a male edge of the first panel **10** and a female edge of the second panel **44** in the manner described previously. Similarly, the second panel **44** is shown engaged with the third panel **78** at engagement **84**, which can be formed through connection between hook and loop fastening media disposed on a male edge of the second panel **44** and a female edge of the third panel**78**. The third panel **78** is shown engaged with the fourth panel **80** at engagement **86**, which can be formed through connection between hook and loop fastening media disposed on a male edge of the third panel **78** and a female edge of the fourth panel **80**. The fourth panel **80** is shown engaged with the first panel **10** at engagement **88**, which can be formed through connection between hook and loop fastening media disposed on a male edge of the fourth panel **80** and a female edge of the first panel **10**. '775 patent, 9:63-10-14

46. As shown in FIG. 3, engagement between the first and fourth panels (**10**, **80**) and between the third and second panels (**78**, **44**) thereby defines a first axis (**91**), while engagement between the first and second panels (**10**, **44**) and between the third and fourth panels (**78**, **80**) defines a second axis (**93**). Due to the arrangement of male and female edges on the panels (**10**, **44**, **78**, **80**), each of the engagements (**82**, **84**, **86**, **88**) are offset from the adjacent axes (**91**, **93**), providing

the depicted array of panels with an overlapping engagement. For example, the first and third engagements (**82**, **86**) are offset from one another by a distance (**92**), while the second and fourth engagements (**84**, **88**) are offset from one another by a distance (**90**). '775 patent, 10:16-28.

47. FIG. 4B shows are arrangement of multiple 4-panel walls which are connected to form the enclosure.

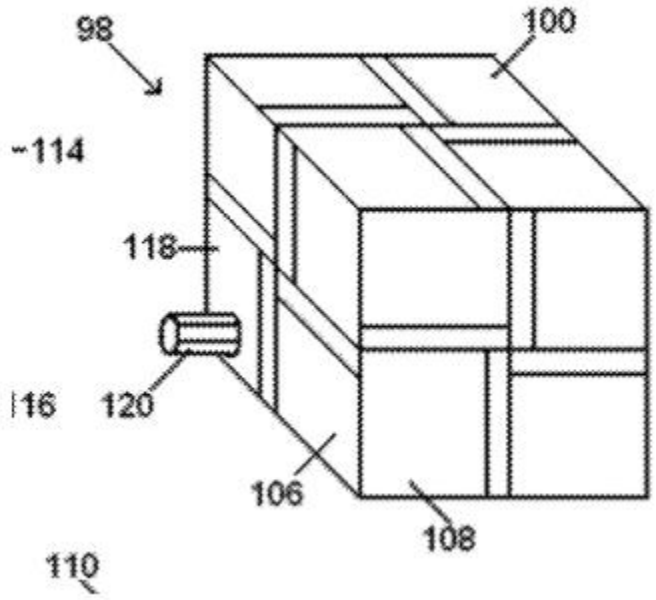


Figure 4B

B. Claim Construction

48. I understand that the Board construes claims using the *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc) standard. I have been informed that, under this standard, terms receive their plain and ordinary meaning as understood by one of ordinary skill in the art, consistent with the disclosure and prosecution history.

49. In rendering my opinions, unless otherwise noted below, I have applied the plain and ordinary meaning of the claim terms as understood by a POSITA familiar with the ’775 patent. At this time, I do not believe the prosecution history of the ’775 patent illuminates the meaning of any term.

50. Nevertheless, I note some imprecision concerning certain elements of the claims. To account for uncertainty, my analysis below provides alternate Grounds.

51. For example, independent claims 1 and 5 each recite a first panel having a male edge with a front and a rear side, “wherein the front side and the rear side each comprise a first portion of a fastening medium thereon” and a second panel having a female edge with a first flap and a second flap, “wherein the first flap and the second flap each have an inner surface comprising a second portion of the fastening medium thereon adapted for engagement with the first portion of the fastening medium.” Thus, while the claim recites a “first portion” and a “second portion,” a POSITA would understand that there are four claimed sides or surfaces.

52. As addressed in Grounds 1 and 2 below, a POSITA’s best understanding of the intent of these recitations was to allow for a double clamping attachment of the panels, namely a hook-and-loop fastening of the front side and a first inner surface, and another hook -and-loop fastening of the second side and a second inner surface. This is because the claims do not recite that the first portions

must be the same ***type*** of portion of a fastening medium. Similarly, the claims do not recite that the second portions must be the same ***type*** of portion of a fastening medium. Thus, Grounds 1 and 2 are presented to allow for two "first portions" respectively interacting with two "second portions."

53. Grounds 1A and 2A address an alternate interpretation where the "first portions" must all be the same type of fastener (i.e., hooks), and that the "second portions" must also be the same type of fastener (i.e., loops). These alternative Ground 1A and 2A address how the challenged claims are unpatentable even if an unclaimed "type" requirement were added to claims so that all of the first portions (and/or second portions) must be of the same type of portion of a fastening medium, such that, for example if one "first portion" is "hooks" of a hook-and-loop fastening medium, the other "first portion" must also be "hooks."

54. Also, in dependent claims 6 and 7, the claims require that engagement between a first couple of panels "defines a first axis" and engagement between a second couple of panels "defines a second axis." From that basis, those claim recite "the first axis is offset a distance from the second axis in a direction generally perpendicular to the first axis and the second axis to form an overlapping engagement."

55. A POSITA would understand these recitations to be described in the '775 patent with respect to the embodiment shown in Fig. 3, reproduced below:

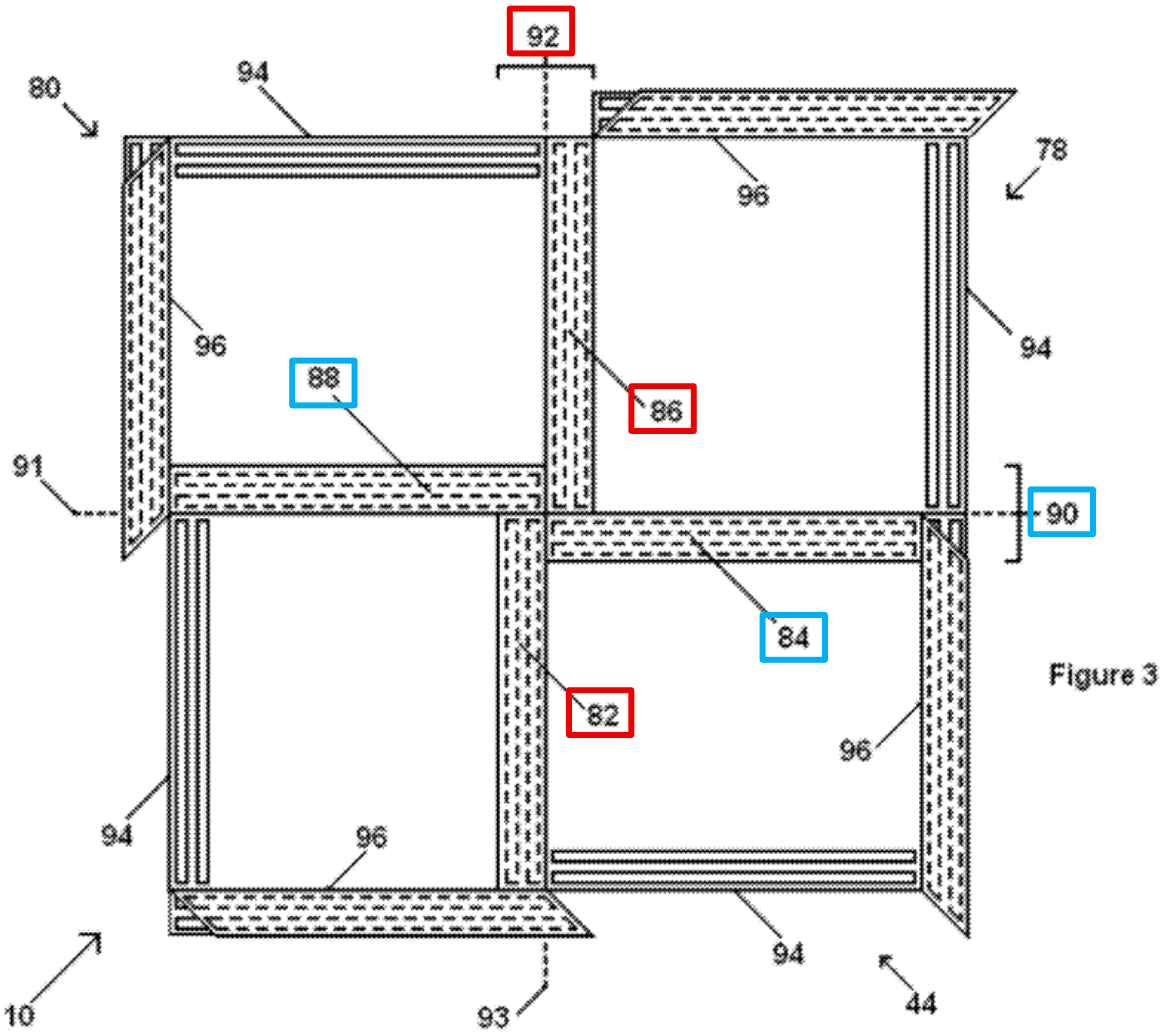


Figure 3

56. The ’775 patent describes Fig. 3 as follows (’775 patent, 10:16-34):

> Engagement between the first and fourth panels (10, 80) and between the third and second panels (78, 44) thereby defines a first axis (91), while engagement between the first and second panels (10, 44) and between the third and fourth panels (78, 80) defines a second axis (93). Due to the arrangement of male and female edges on the panels (10, 44, 78, 80), each of the engagements (82, 84, 86, 88) are offset from the adjacent axes (91, 93), providing the

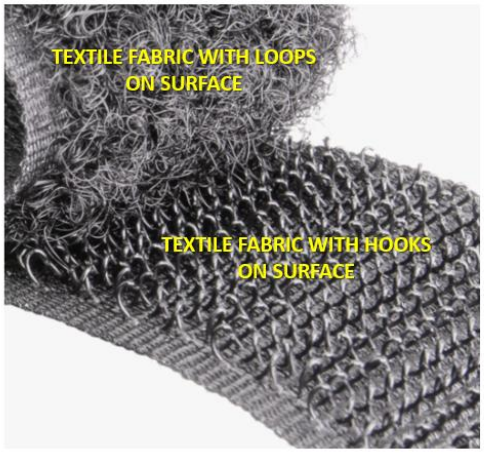
> depicted array of panels with an overlapping engagement. For example, the first and third engagements (82, 86) are offset from one another by a distance (92), while the second and fourth engagements (84, 88) are offset from one another by a distance (90). This overlapping arrangement provides the depicted engagements between panels with added strength. For example, impacts, wind, and/or other forces applied to the panels (10, 44, 78, 80) are significantly less likely to separate offset engagements than two engagements in linear alignment with one another.

57. A POSITA reviewing these disclosures would conclude that neither the claims nor the specification of the ’775 patent disclose or explain the magnitude of the “distance” of the offset. Rather, the ’775 patent distinguishes an offset from a situation where engagements are “in linear alignment with one another.” Indeed, the use of hook-and-loop fasteners are selected by the ’775 patent to avoid the “tedious installation steps such as the mating and alignment of zippers.” ’775 patent, 2:17-23. As of the priority date, this was a well-known characteristic of hook-and-loop fasteners, and was not an invention of the ’775 patent. A POSITA would interpret claims 6 and 7 such that any non-linear alignment between adjacent panels would provide the required offset in the axes of engagement. Similarly, the plain meaning of “offset,” without disclosed or claimed quantitative measures of offset, includes tiny, even undetectable, offset.

C. Comparing The ’775 Patent to the Prior Art

58. A POSITA would understand the specification of the ’775 patent to disclose three concepts: (1) the use of panels made of heat-resistant material to construct a pressurized habitat or enclosure for hot work such as welding, (2) male and female connectors alternating around the four edges of a panel used to form the habitat, and (3) use of fasteners with hooks (or loops) on both upper and lower portions on the male connector, and corresponding clamping portions with upper and lower loops (or hooks) on the female connector to form a hook-and-loop clamp connection.

59. It is my opinion that each of these elements was in the prior art. Modular pressurized welding habitats with Velcro® (i.e., hook-and-loop) connectors were well known before 2011.



60. It was nothing more than a design choice to determine how to arrange well-known hook-and-loop fastener mechanisms to connect panels together.

61. But even the design presented in the ’775 patent was not inventive, as clamp-style VELCRO™ connectors were well-known in the art, as was the use of alternating male and female connectors around a heat-resistant panel to connect it to other panels to form a modular enclosure. As I will explain, the first set of claims of the ’775 patent (claims 1-4) are nothing more than a routine combination of Wardlaw (modular hot work habitat with panels, connected together via VELCRO) with Ferrante (use of clamp-style hook-and-loop fasteners for edge connections) and the second set of claims (claims 5-12) simply add Ballinger’s Fig. 16 connection arrangement (male and female connectors arranged on opposite sides of a panel). These elements are illustrated below, with reference to the prior art relied upon.

62. Wardlaw’s pressurized modular hot work habitat is made by connecting the edges of panels together via VELCRO, as shown in Fig. 1:

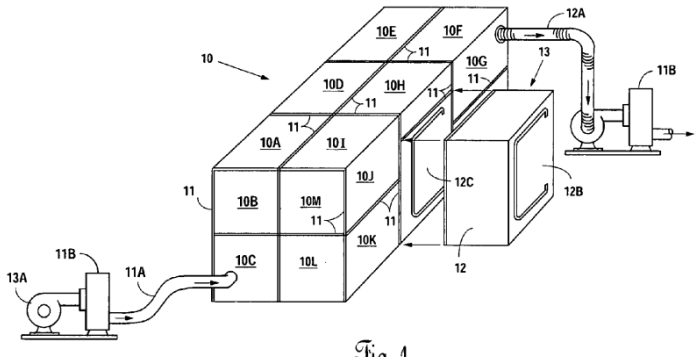


Fig. 1

63. Ballinger provides a panelized structure of heat-resistant material with instructions on how to place cooperating male and female fasteners, namely male

("**M**") fasteners on two opposite edges of the panel and female ("**F**") fasteners on the remaining two opposite edges of the panel. Ballinger's Fig. 16 (annotated):

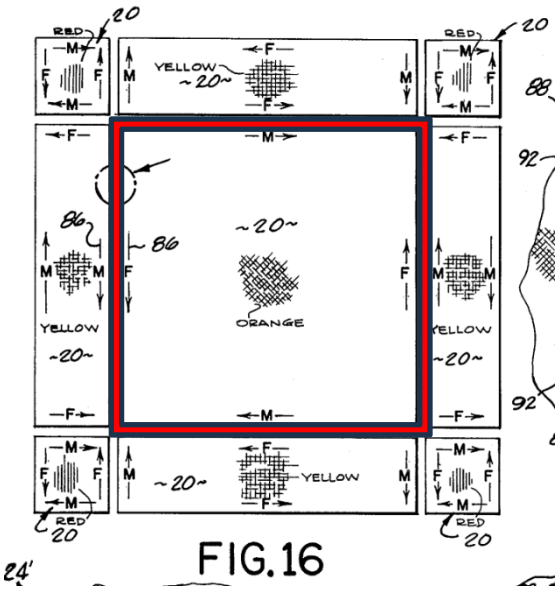


FIG. 16

64. Ferrante discloses a hook-and-loop fastener system with male and female connectors for connecting panels together. A POSITA would easily recognize this system as a "clamp style".

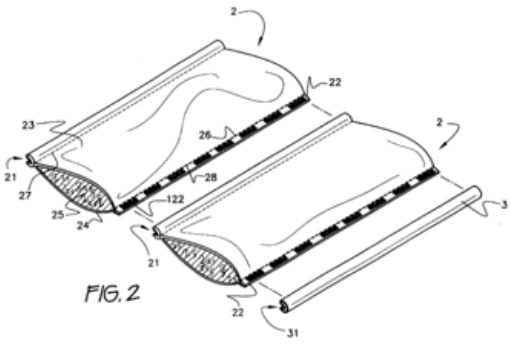


FIG. 2

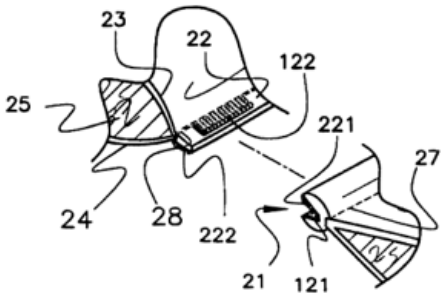


FIG. 3

1. Ground 1: The Combination of Wardlaw and Ferrante Renders Obvious Claims 1-4

a) Wardlaw

65. It is my opinion that Wardlaw is analogous art to the ’775 patent because Wardlaw discloses a “modular welding … enclosure unit.” Wardlaw, [0017]. Fig. 1 is a perspective view of the present modular unit shown in inflated position over a conduit work area. As depicted in Fig. 1 as unit **10**, the unit is “composed of a series of separate module or inflatable members, **10A**-**10M**, which are secured one to another prior to inflation by means of companion VELCRO strips **11** secured around the outer edges [of] each inflatable member” (Wardlaw, [0026], Fig. 1):

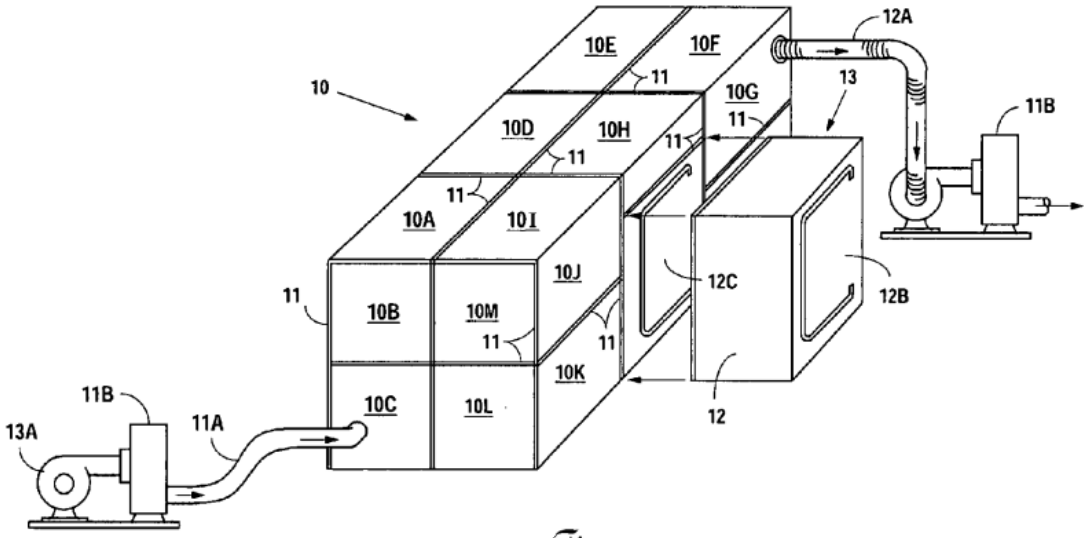


Fig. 1

b) Ferrante

66. As shown in Fig. 1 of Ferrante, Ferrante discloses a "modular quilted blanket 1 that includes a plurality of panel sections **2** and a capping strip **3**". (Ferrante, 2:65-67):

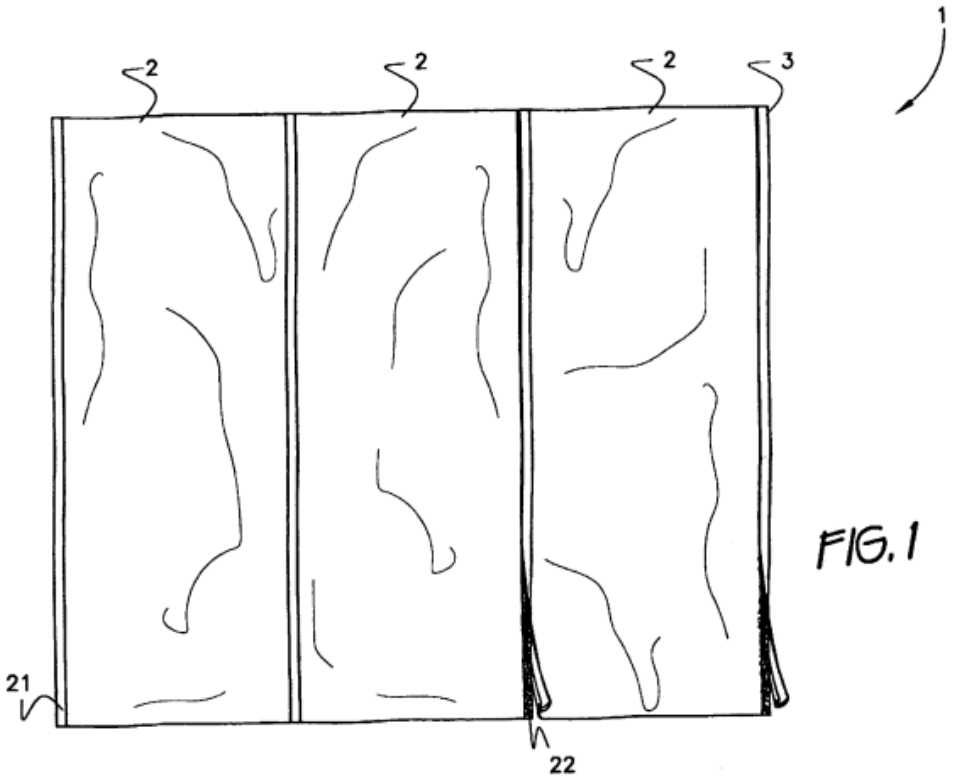


FIG. 1

67. As shown in Fig. 2 of Ferrante, "[e]ach of the panel sections **2** has a first long edge with a panel groove **21**, formed by the bifurcation of the top and bottom fabric sheets beyond a lengthwise groove stitching **27**". (Ferrante, 3:15-18):

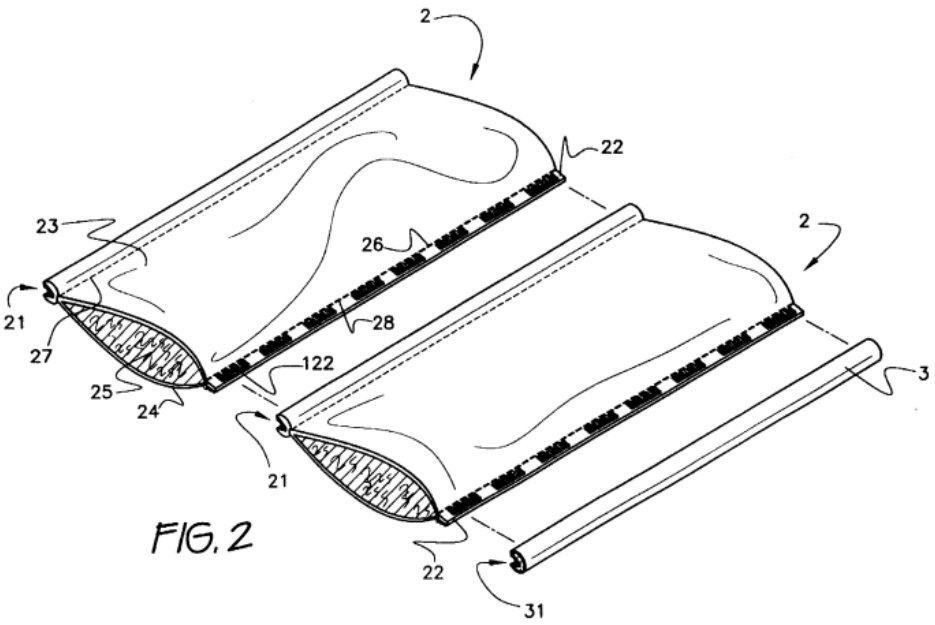


FIG. 2

68. Ferrante uses fasteners of the "hook and loop variety" to provide a "releasable attachment." Ferrante, 3:30-33. And, as shown in Fig. 3 of Ferrante, "the tongue strip **22** of one panel section **2** is secured to the panel groove **21** of another panel section through first fasteners provided on the surface of the tongue strip and second fasteners within the groove" (Ferrante, 3:26-30):

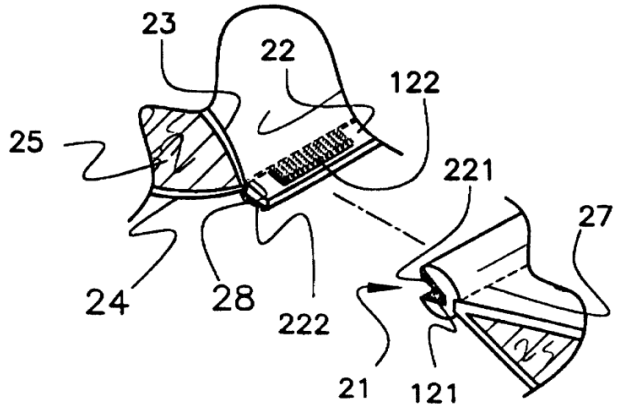


FIG. 3

Specifically, "one surface of the exposed tongue strip includes tongue hooks **122**, and the other surface of the tongue strip includes tongue loops **222**," either in discrete strips (as shown in Figs. 2 and 3) or continuously. Ferrante, 3:35-39.

69. The groove **21** of Ferrante provides the cooperating portion of the hook (or loop) fastener found on the tongue **22**. "The interior of panel groove **21** would accordingly carry panel groove loops **221** and panel groove hooks **121** for releasably securing to tongue hooks **122** and tongue loops **222**, respectively." Ferrante, 3:39-42.

70. Ferrante states advantages for its "particular arrangement of hook and loop fasteners"—including for its "security." Ferrante, 3:42-47 (stating the arrangement is "advantageous both for its security and because the panel groove of a leftmost panel section (as depicted) may be closed on itself in a releasable manner to more effectively hide these fasteners.").

c) Motivation to Combine Wardlaw and Ferrante

71. A POSITA would have found it obvious to use the tongue-and-groove clamping arrangement of hook-and-loop fasteners in Ferrante to construct Wardlaw's hook and loop-based modular welding enclosure.

72. It is my opinion that Ferrante is analogous art to the '775 patent and to Wardlaw. Wardlaw does not provide details concerning the construction of its hook-and-loop fasteners needed to fasten its modular panels together. A POSITA

would therefore look to known techniques to securely attach modular panels together, such as disclosed in Ferrante. In particular, Wardlaw's paragraph [0026] expressly discloses the use of hook-and-loop fasteners to fasten its modular panels together, and a POSITA therefore would have had a reason to look to other references that disclose available types of hook-and-loop fasteners. Ferrante discloses a particular type of hook-and-loop fastener that would have been available as a fastening mechanism for Wardlaw's panels.

73. A POSITA would have been motivated to use Ferrante's tongue-and-groove clamping fasteners for the reason expressly stated in Ferrante—to provide increased security for the connection between adjoining panels. Ferrante, 3:42-47. Thus, the use of Ferrante's tongue-and-groove fastening system with Wardlaw would be an obvious combination with an expectation of creating a more secure connection. A POSITA would have a reasonable expectation of success in doing so, as a POSITA would make a simple substitution of the generic hook and loop fastener (such as one strip of loops and one strip of hooks) called for by Wardlaw with the more secure tongue-and-groove clamping fastener of Ferrante since Ferrante uses a tongue strip with one side of tongue hooks and an opposing side with tongue loops.

74. Additionally, it is my opinion that there are a limited number of ways that Wardlaw's panels could be connected together via hook and loop fasteners,

and it would have been obvious to select any known hook and loop connection fastener, such as the tongue-and-groove clamping fastener of Ferrante, to connect Wardlaw's panels together.

75. Such a combination would render obvious the following claims of the '775 patent.

d) Independent Claim 1: [1.pre] "An enclosure comprising:"

76. To the extent that that the preamble is limiting, the combination would include "an enclosure." Wardlaw, [0017]. Wardlaw expressly discloses a "modular welding … enclosure unit." *Id*.

(1) [1.a] "a first panel having a male edge with a front side and a rear side, wherein the front side and the rear side each comprise a first portion of a fastening medium thereon; and"

77. As depicted in Wardlaw's Fig. 1 as unit **10**, the enclosure is "composed of a series of separate module or inflatable members, **10A-10M**, which are secured one to another prior to inflation by means of companion VELCRO strips **11** secured around the outer edges [of] each inflatable member." Wardlaw, [0026], Fig. 1. The asserted combination would include the panels of Wardlaw, including a "first panel" as claimed, with at least one panel tongue strip as disclosed in Ferrante, satisfying the claimed "a male edge with a front side and a rear side,"

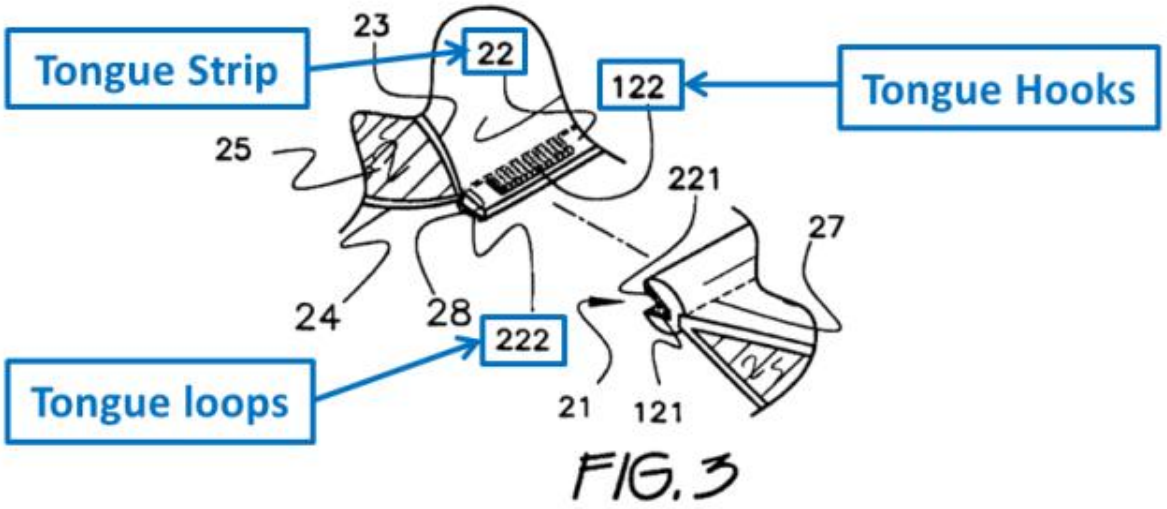
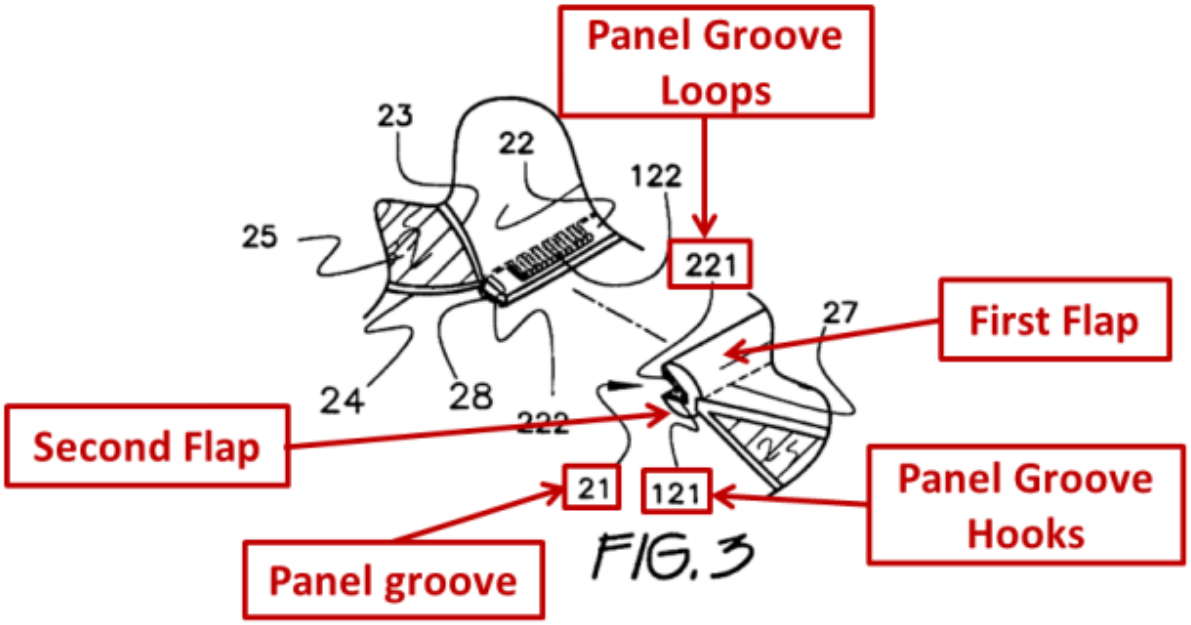


FIG. 3

78. The combination would also include, on each side of the tongue, a portion of a hook and loop fastener, as Ferrante discloses placing a portion of a hook and loop fastener on each side of its tongue (front and rear), meeting the requirement of "the front side and the rear side each comprise a first portion of a fastening medium thereon."

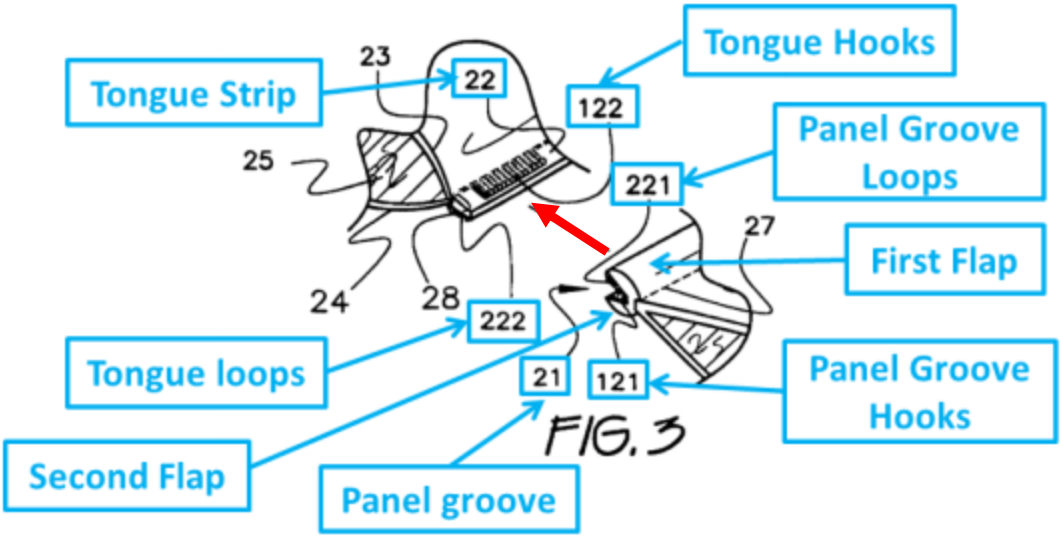
(2) [1.b] "a second panel having a female edge with a first flap and a second flap extending therefrom,

79. The combination would include the panels of Wardlaw, including a "second panel" as claimed, with a panel groove that cooperates with a panel tongue as disclosed in Ferrante, satisfying the claimed "a second panel having a female edge with a first flap and a second flap extending therefrom," as shown in the annotated Fig. 3 of Ferrante below:



(3) [1.c] "wherein the first flap and the second flap each have an inner surface comprising a second portion of the fastening medium thereon adapted for engagement with the first portion of the fastening medium, wherein the first flap engages the front side and the second flap engages the rear side via engagement between the first portion and the second portion of the fastening medium,"

80. In the panel groove of the combination, panel groove hooks and panel groove loops are provided on the inner surface of the flaps of the panel groove, as shown in annotated Fig. 3 of Ferrante below, which respectively engage with the panel tongue loops and panel groove hooks of the tongue strip of the front and rear sides of another panel of the combination, also as shown in annotated Fig. 3 of Ferrante below:



(4) [1.d] "wherein the engagement between the first panel and the second panel forms a seal adapted to maintain a pressure differential across opposing sides thereof."

81. The engagement of the tongue-and-groove fastener of the combination would "form a seal adapted to maintain a pressure differential across opposing sides thereof," as claimed. The hook-and-loop fastening system of Wardlaw maintains a "positive internal pressure," Wardlaw, [0053], as "the inflation members **10A-M** forming the unit **10** do not have to be completely air tight at the interface of the VELCRO strips **11**, and only have to assure that the unit **10** may be inflated and maintained in inflated position during the welding or heating operation therewithin." Wardlaw, [0027]. As the tongue-and-groove clamping fastener of Ferrante also uses an interface of VECLRO strips, and simply provides increased fastening security relative to a simple hook-and-loop fastening system, a POSITA

would have understood that the combination of Wardlaw and Ferrante would also maintain Wardlaw's "positive internal pressure" for inflation.

e) Claim 2: "The enclosure of claim 1, wherein engagement between the first flap and the front side, engagement between the second flap and the rear side, or combinations thereof, forms a seal adapted to maintain a pressure differential across opposing sides thereof."

82. The combination discloses this element for the same reasons stated with regard to element [1.d].

f) Claim 3: "The enclosure of claim 1, wherein the first portion of the fastening medium, the second portion of the fastening medium, or combinations thereof, comprise a plurality of strips of a hook and loop fastening medium.

83. In the combination, the portions of the fastening medium comprise a plurality of strips of portions of hook-and-loop fasteners, as expressly disclosed in Wardlaw ("VELCRO") and as expressly shown in Fig. 2 and 3 of Ferrante. Ferrante, 3:35-39 ("in discrete groups").

g) Claim 4: "The enclosure of claim 1, wherein the first panel, the second panel, or combinations thereof, is formed at least partially from a heat resistant material."

84. In the combination, the panels are at least partially formed of heat-resistant materials. This disclosure is expressly provided in Wardlaw, which like the '775 patent enclosure, is directed to a "modular welding … enclosure unit." Wardlaw, [0017]. Wardlaw discloses that the modular welding enclosure unit's

panels are fire resistant or fire retardant in order to contain any hot sparks that might result from the hot work performed within the welding enclosure. Wardlaw, [0028] ("The modular inflation members **10A-10M** are preferable made of material that is comparatively light in weight as well as fire resistant or fire retardant, in order to assure that high temperature sparks are retained within the interior of the unit **10** and do not penetrate through the fabric, forming holes.").

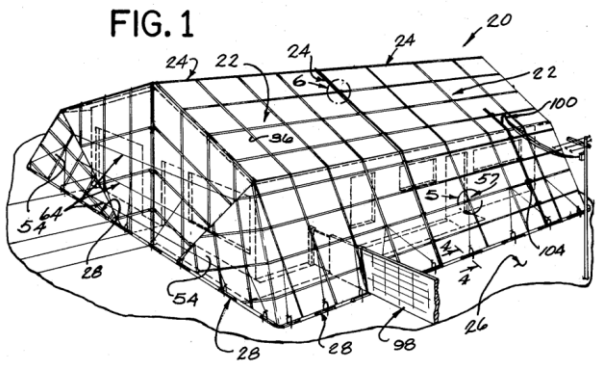
2. Ground 2: The Combination of Wardlaw, Ferrante, and Ballinger Renders Obvious Claims 1-12

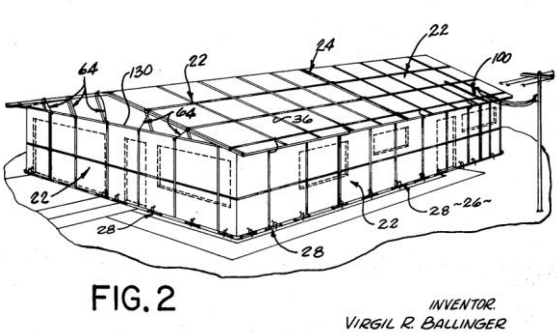
85. Independent claim 5 is similar in scope to independent claim 1, but includes more detail regarding the arrangement of male and female connections along the edges of four connected panels forming the enclosure. In particular, independent claim 5 recites a particular arrangement of male and female connectors alternating around the four edges of a panel, and how that panel interconnects with other panels forming the enclosure. While Wardlaw and Ferrante render claims 1-4 obvious, they do not specifically disclose the alternating male-female connector arrangements recited in claim 5. Ballinger, on the other hand, does specifically disclose the alternating male-female connector arrangements recited in claim 5, and does so in the context of analogous heat-resistant panels being interconnected for fire protection. It is my opinion that Ballinger, in combination with the Ground 1 art addressed above, renders obvious each challenged claim.

a) Ballinger

86. Ballinger provides a "[f]ire-resistant apparatus for covering and enclosing a building." Ballinger, Abstract. "The enclosing apparatus includes flexible, thin-sheet cover means of fire-resistant or fire-retardant material which is usually in the form of several panel portions adapted to be edge-joined by junction means to provide to provide a composite cover of a desired size and shape for protecting a particular building." Ballinger, Abstract.

87. The protective cover of Ballinger is modular, allowing it to cover structures of various sizes. For example, as shown in Figs. 1 and 2 of Ballinger, walls of the enclosure can include four or more modular panels.





88. "[T]he protective cover means comprises a plurality of panel portions, each provided with controllable engageable mating edge junction means for firmly fastening together adjacent edge portions of an assembly of such panel portions whereby to cause them to form a complete composite protective cover of a desired size and shape suitable for substantially completely enclosing and protecting a

residential building lying within a predetermined range of sizes and shapes." Ballinger, 3:42-51.

89. Fig. 16 of Ballinger illustrates "certain representative different sizes and shapes of the multiple panel portions which may be assembled to form the complete protective thin-sheet cover" (Ballinger, 7:22-26). "**M**" refers to a male-type connector and "**F**" refers to a female-type connector:

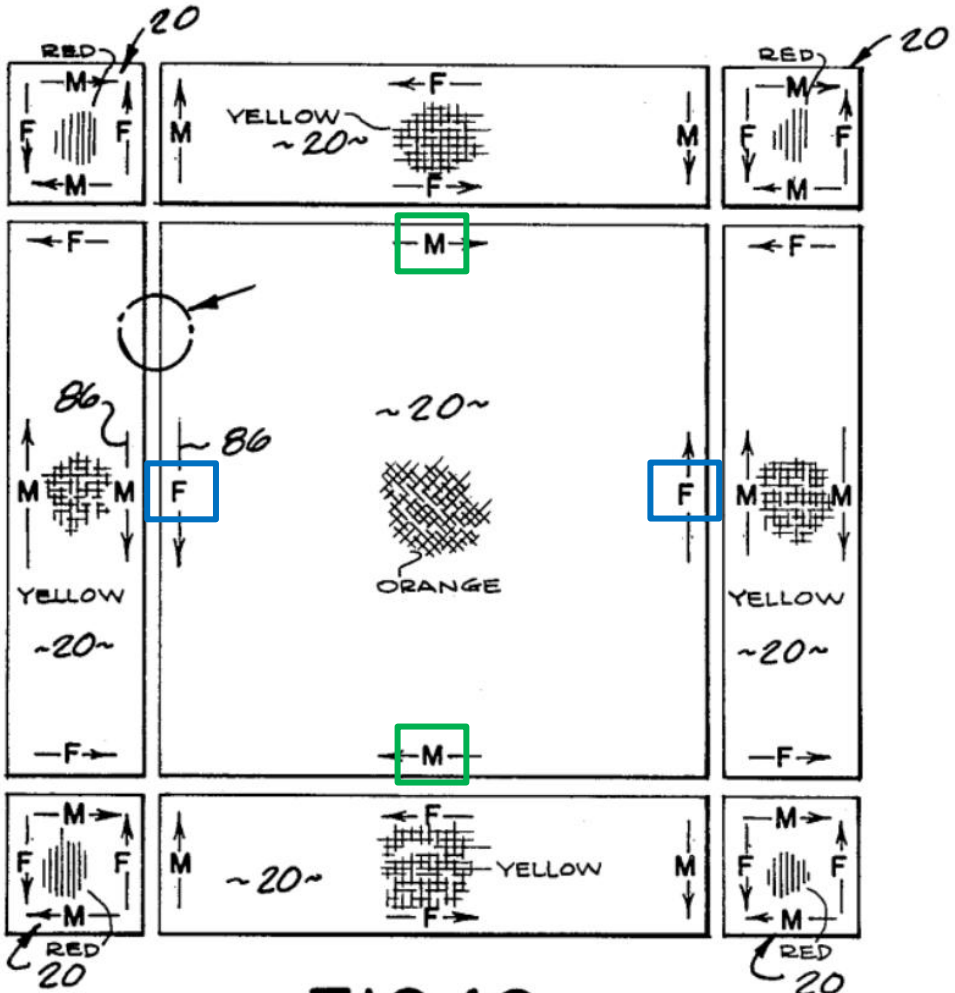


FIG. 16

90. In Fig. 16, "one large square panel portion is shown, four rectangular panel portions are shown, and four small square panel portions are shown." Each panel edge portion of Ballinger has fasteners with two male (green) portions (**M** in Fig. 16, 82 in Fig. 17) and two female (blue) portions (**F** in Fig. 16, **80** in Fig. 17). As Ballinger explains, "the edge junction means portions of any particular panel portion are arranged in a manner such that opposite edges have the same kind of edge junction means portions. That is, directly opposite edges will have either female junction element sets or male junction element sets, while the other pair of **90** displaced junction element sets will, in each case, both be of the other type that is, both male junction element sets or both female junction element sets." Ballinger, 15:51-60. Moreover, although Ballinger can use zipper-type edge junction means, Ballinger states that "intermeshing fasteners of the type known as Velcro fasteners" may be employed as the edge junction means. Ballinger, 16:3-13.

91. Ballinger explains the advantages of the arrangement of male and female portions of fasteners and coding on its panels as follows (Ballinger, 15:61-16:2):

> The above-described exemplary arrangement is such that irrespective of how the panel portions are assembled, provided that the blue and green edge junction coding and identification means are always positioned adjacent

> to each other, it will be found that the ***adjacent junction elements will always be of the opposite type*** and adapted to be closed by movement of a slider element such as that shown at **84** in the same direction ***so that they can be quickly and easily joined together***.

b) Motivation to Combine Wardlaw, Ferrante, and Ballinger

92. My opinion, as noted above in Ground 1, that a POSITA would have been motivated to include Ferrante's edge joining tongue-and-groove hook and loop fasteners to provide a secure edge fastening of panels of Wardlaw's enclosure applies equally in Ground 2 and it does in Ground 1.

93. A POSITA would recognize Wardlaw discloses an enclosure with multiple panels on the walls of the enclosure and would seek improvements to fasten multiple panels together to produce an enclosure.

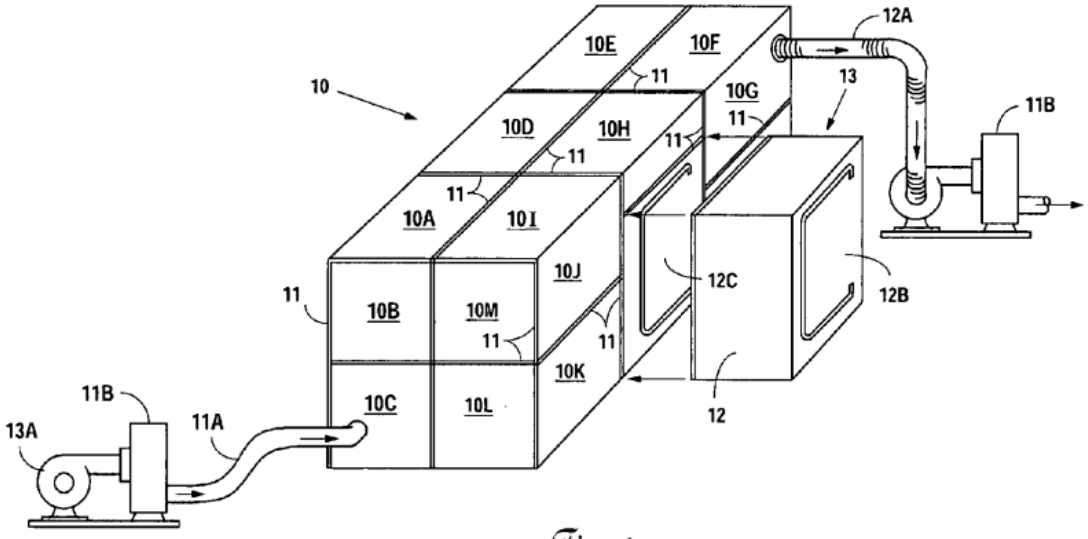


Fig. 1

94. For example, in Fig. 1 above, panels **10B**, **10M**, **10C**, and **10L** are connected at their edges with hook and loop fasteners to form a front wall of the enclosure. Similarly, panels **10E**, **10F**, **10D**, **10H**, **10A**, and **10I** are connected at their edges with hook and loop fasteners to form a top wall of the enclosure.

95. It is my opinion that Ballinger is analogous art both to the ’775 patent and to Wardlaw. Both Wardlaw and Ballinger disclose modular enclosures of heat-resistant material, constructed using multiple panels on a wall. A POSITA would therefore look to techniques to attach multiple modular panels together, such as disclosed in Ballinger. In addition, Ferrante is analogous art to both Ballinger and Wardlaw for the same reasons as stated above in Ground 1 with regard to Wardlaw.

96. It would have been obvious to a POSITA to configure the panels of the Wardlaw and Ferrante combination to have opposite edges of the panels with the same kind of edge junction means portions as taught by Ballinger so that the panels would have tongue (male) portions of the fasteners on opposite edges and groove (female) portions of the fasteners on opposite edges. A POSITA would have been motivated to provide panels with opposite edges of the panels having the same kind of edge junction means portions for the reason expressly stated in Ballinger—by providing panels with opposite edge portions of the same fastener portion (male or female), panels forming a wall can be ensured to have adjacent junction elements that are "always be of the opposite type" "so that they can be quickly and easily joined together" when constructing enclosure walls with multiple panels like in Wardlaw and Ballinger. Ballinger, 15:61-16:2. A POSITA would have a reasonable expectation of success in doing so, as a POSITA would make a simple selection of where to place male portions of a fastener on a panel and where to place female portions on the panel.

97. Such a combination would render obvious the following claims of the '775 patent.

c) Independent Claim 1: [1.pre] "An enclosure comprising:"

98. To the extent that that the preamble is limiting, the Ground 2 combination discloses this feature for the same reasons presented above in Ground 1.

(1) [1.a] "a first panel having a male edge with a front side and a rear side, wherein the front side and the rear side each comprise a first portion of a fastening medium thereon; and"

99. The Ground 2 combination discloses this feature for the same reasons presented above in Ground 1.

(2) [1.b] "a second panel having a female edge with a first flap and a second flap extending therefrom,

100. The Ground 2 combination discloses this feature for the same reasons presented above in Ground 1.

(3) [1.c] "wherein the first flap and the second flap each have an inner surface comprising a second portion of the fastening medium thereon adapted for engagement with the first portion of the fastening medium, wherein the first flap engages the front side and the second flap engages the rear side via engagement between the first portion and the second portion of the fastening medium,"

101. The Ground 2 combination discloses this feature for the same reasons presented above in Ground 1.

(4) [1.d] "wherein the engagement between the first panel and the second panel forms a seal adapted to maintain a pressure differential across opposing sides thereof."

102. The Ground 2 combination discloses this feature for the same reasons presented above in Ground 1.

d) Claim 2: "The enclosure of claim 1, wherein engagement between the first flap and the front side, engagement between the second flap and the rear side, or combinations thereof, forms a seal adapted to maintain a pressure differential across opposing sides thereof."

103. The Ground 2 combination discloses this feature for the same reasons presented above in Ground 1.

e) Claim 3: "The enclosure of claim 1, wherein the first portion of the fastening medium, the second portion of the fastening medium, or combinations thereof, comprise a plurality of strips of a hook and loop fastening medium.

104. The Ground 2 combination discloses this feature for the same reasons presented above in Ground 1.

f) Claim 4: "The enclosure of claim 1, wherein the first panel, the second panel, or combinations thereof, is formed at least partially from a heat resistant material."

105. The Ground 2 combination discloses this feature for the same reasons presented above in Ground 1.

g) Independent Claim 5: [5.pre] "An enclosure comprising:"

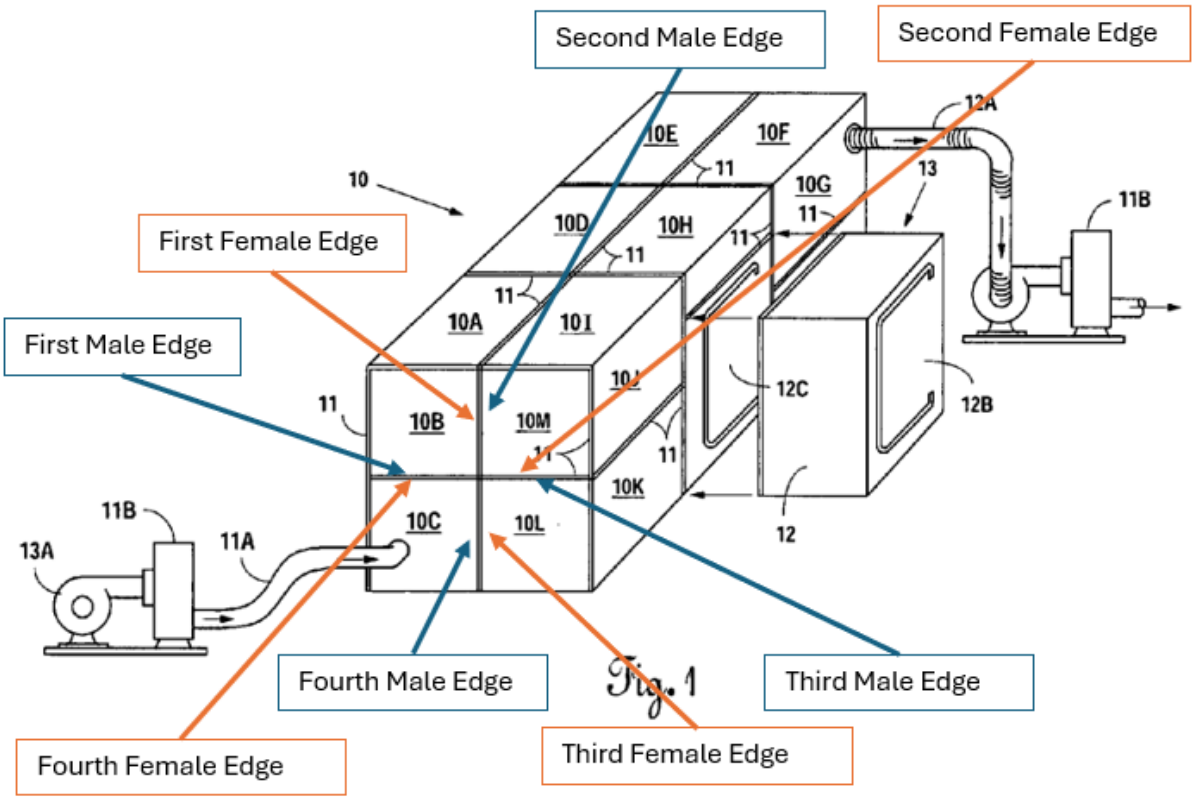
106. To the extent that that the preamble is limiting, the combination includes "an enclosure." Wardlaw, [0017].

(1) [5.a] "a wall comprising a first panel, a second panel, a third panel, and a fourth panel,"

107. The combination includes walls with at least four panels, such as those disclosed in Fig. 1 of Wardlaw and Figs. 1 and 2 of Ballinger.

(2) [5.b] "wherein the first panel comprises a first male edge having a front side and a rear side and a first female edge having at least two flaps extending therefrom, wherein the front side and the rear side each comprise a first portion of a fastening medium thereon, and wherein said at least two flaps each have an inner surface comprising a second portion of the fastening medium thereon,"

108. The combination discloses elements [5.b] to [5.f] as a quadrant of any four adjacent panels on a wall would include the male and female edges engaged as recited in elements [5.b] to [5.f]. For example, as shown in annotated Fig. 1 of Wardlaw as modified by Ballinger below for the front facing quadrant of panels **10B**, **10M**, **10C**, and **10L**, a first panel **10B** would have a first male edge and a first female edge.



109. Such an arrangement would be consistent with the teachings of Ballinger's Fig, 16, which shows such an arrangement of male and female edges of fastening means, for example, in the lower-left quadrant of its four panels:

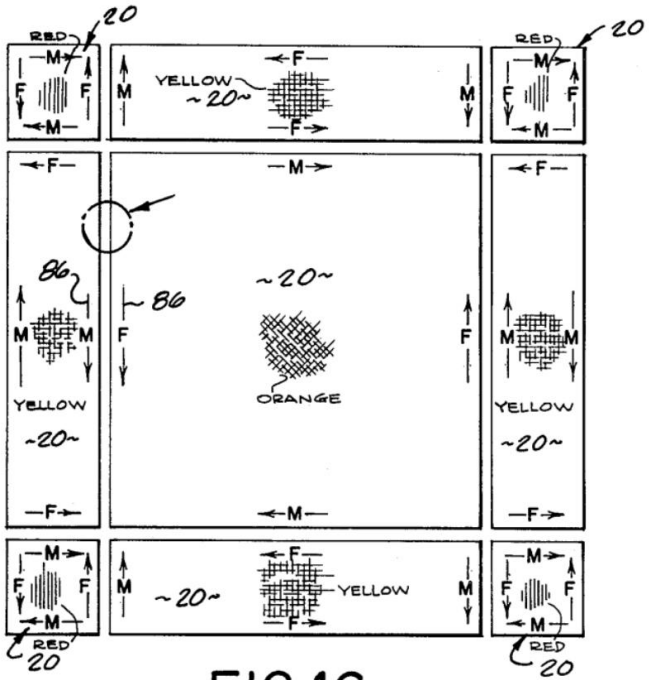


FIG. 16

110. With regard to the recitations in elements [5.b] to [5.e] that a male edge has "a front side and a rear side" and a female edge has "at least two flaps extending therefrom, wherein the front side and the rear side each comprise a first portion of a fastening medium thereon, and wherein said at least two flaps each have an inner surface comprising a second portion of the fastening medium thereon," the combination would have these features for the same reasons as stated above for elements [1.a] to [1.c] of Ground 1.

(3) [5.c] "wherein the second panel comprises a second male edge having a front side and a rear side and a second female edge having at least two flaps extending therefrom, wherein the front side and the rear side each comprise a first portion of the fastening medium thereon, and wherein said at least two flaps each have an inner surface comprising a second portion of the fastening medium thereon,"

111. As noted with regard to element [5.b], the combination discloses elements [5.b] to [5.f] as a quadrant of any four adjacent panels on a wall would include the male and female edges engaged as recited in elements [5.b] to [5.f]. For example, as shown in annotated Fig. 1 of Wardlaw as modified by Ballinger below for the front facing quadrant of panels **10B**, **10M**, **10C**, and **10L**, a second panel **10M** would have a second male edge and a second female edge.

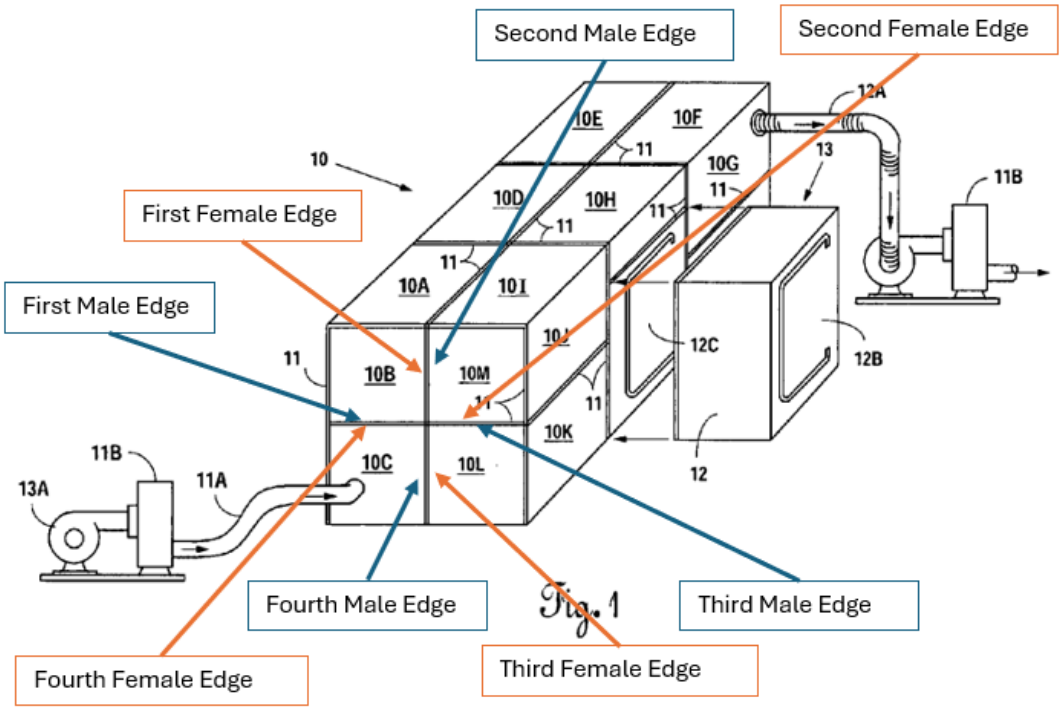


Fig. 1

112. As to the additional recitations in element [5.c] concerning the male and female edges, such features would be present in the combination for the same reasons as stated above for elements [1.a] to [1.c] of Ground 1 and element [5.b] of Ground 2.

(4) [5.d] "wherein the third panel comprises a third male edge having a front side and a rear side and a third female edge having at least two flaps extending therefrom, wherein the front side and the rear side each comprise a first portion of the fastening medium thereon, and wherein said at least two flaps each have an inner surface comprising a second portion of the fastening medium thereon,"

113. As noted with regard to element [5.b], the combination discloses elements [5.b] to [5.f] as a quadrant of any four adjacent panels on a wall would include the male and female edges engaged as recited in elements [5.b] to [5.f]. For example, as shown in annotated Fig. 1 of Wardlaw as modified by Ballinger below for the front facing quadrant of panels **10B**, **10M**, **10C**, and **10L**, a third

panel **10L** would have a third male edge and a third female.

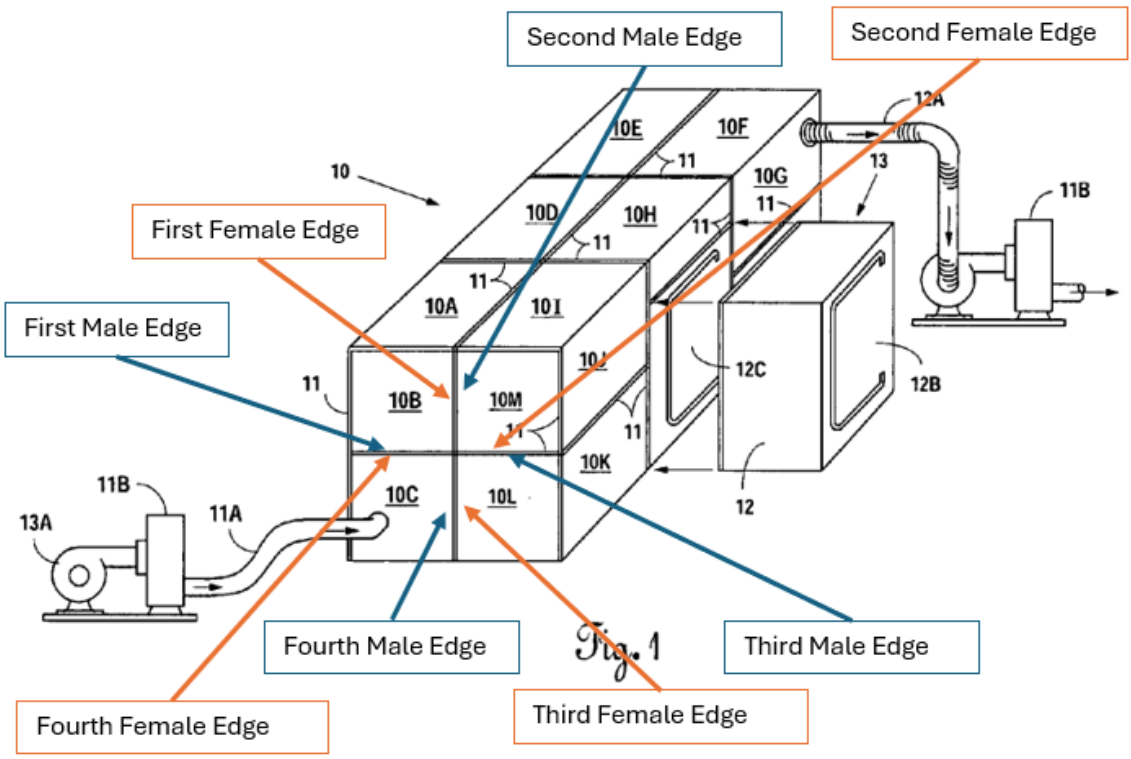


Fig. 1

114. As to the additional recitations in element [5.d] concerning the male and female edges, such features would be present in the combination for the same reasons as stated above for elements [1.a] to [1.c] of Ground 1 and element [5.b] of Ground 2.

(5) [5.e] "wherein the fourth panel comprises a fourth male edge having a front side and a rear side and a fourth female edge having at least two flaps extending therefrom, wherein the front side and the rear side each comprise a first portion of the fastening medium thereon, and wherein said at least two flaps each have an inner surface comprising a second portion of the fastening medium thereon,"

115. As noted with regard to element [5.b], the combination discloses elements [5.b] to [5.f] as a quadrant of any four adjacent panels on a wall would include the male and female edges engaged as recited in elements [5.b] to [5.f]. For example, as shown in annotated Fig. 1 of Wardlaw as modified by Ballinger below for the front facing quadrant of panels **10B**, **10M**, **10C**, and **10L**, a fourth

panel **10C** would have a fourth male edge and a fourth female edge.

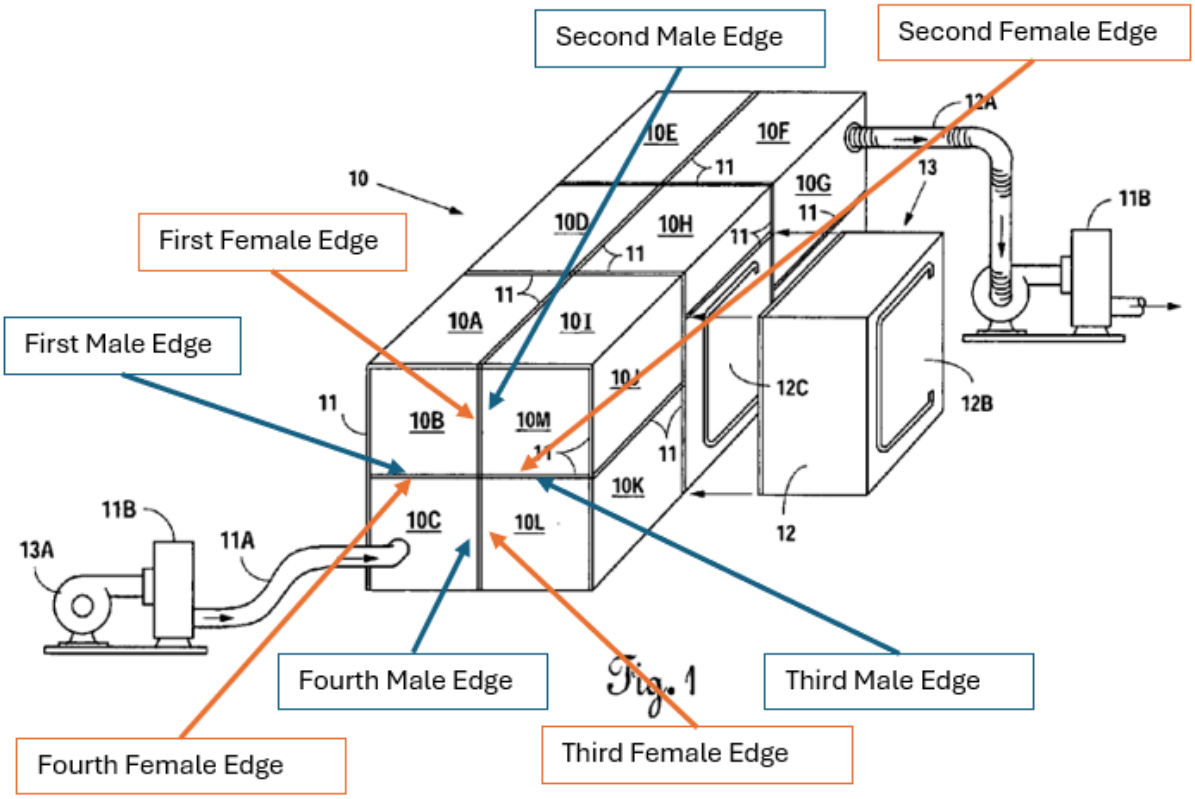


Fig. 1

116. As to the additional recitations in element [5.e] concerning the male and female edges, such features would be present in the combination for the same reasons as stated above for elements [1.a] to [1.c] of Ground 1 and element [5.b] of Ground 2.

(6) [5.f.i] "wherein the second panel is engaged with the first panel via engagement between the first female edge and the second male edge,"

117. As noted with regard to element [5.b], the combination discloses elements [5.b] to [5.f] as a quadrant of any four adjacent panels on a wall would include the male and female edges engaged as recited in elements [5.b] to [5.f]. For example, as shown in annotated Fig. 1 of Wardlaw as modified by Ballinger below for the front facing quadrant of panels **10B**, **10M**, **10C**, and **10L**, a second panel **10M** is engaged with first panel **10B** via an engagement between the first female edge and the second male edge.

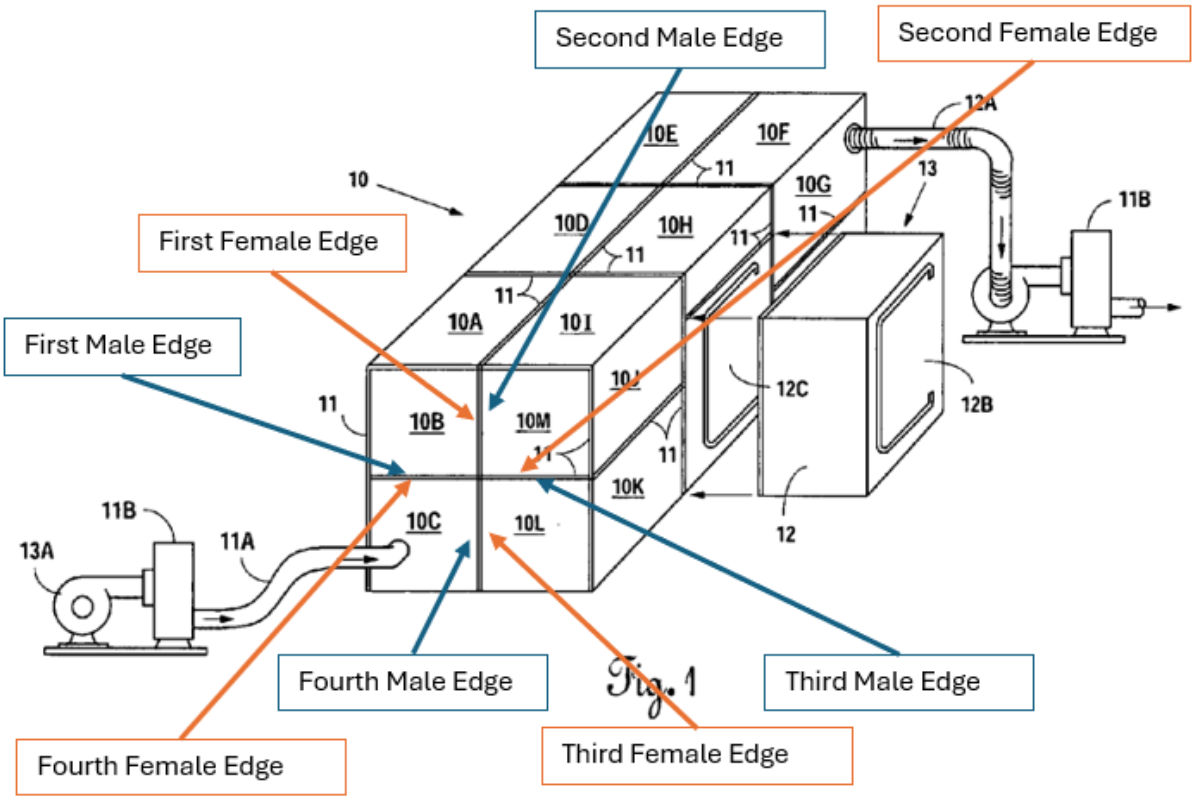


Fig. 1

(7) [5.f.ii] "wherein the third panel is engaged with the second panel via engagement between the second female edge and the third male edge,"

118. As noted with regard to element [5.b], the combination discloses elements [5.b] to [5.f] as a quadrant of any four adjacent panels on a wall would include the male and female edges engaged as recited in elements [5.b] to [5.f]. For example, as shown in annotated Fig. 1 of Wardlaw as modified by Ballinger below for the front facing quadrant of panels **10B**, **10M**, **10C**, and **10L**, a third panel **10L** is engaged with second panel **10M** via an engagement between the second female edge and the third male edge.

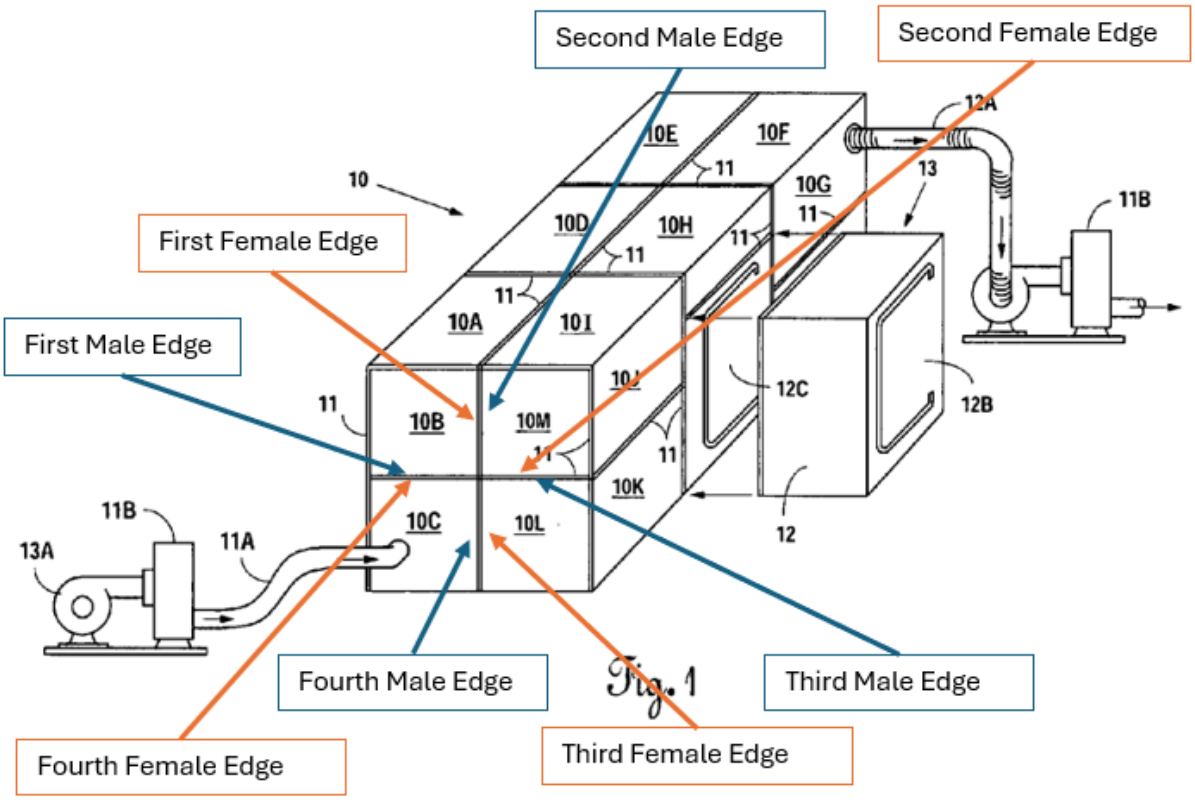


Fig. 1

(8) [5.f.iii] "wherein the fourth panel is engaged with the third panel via engagement between the third female edge and the fourth male edge, and"

119. As noted with regard to element [5.b], the combination discloses elements [5.b] to [5.f] as a quadrant of any four adjacent panels on a wall would include the male and female edges engaged as recited in elements [5.b] to [5.f]. For example, as shown in annotated Fig. 1 of Wardlaw as modified by Ballinger below for the front facing quadrant of panels **10B**, **10M**, **10C**, and **10L**, a fourth panel **10C** is engaged with third panel **10L** via an engagement between the third female edge and the fourth male edge.

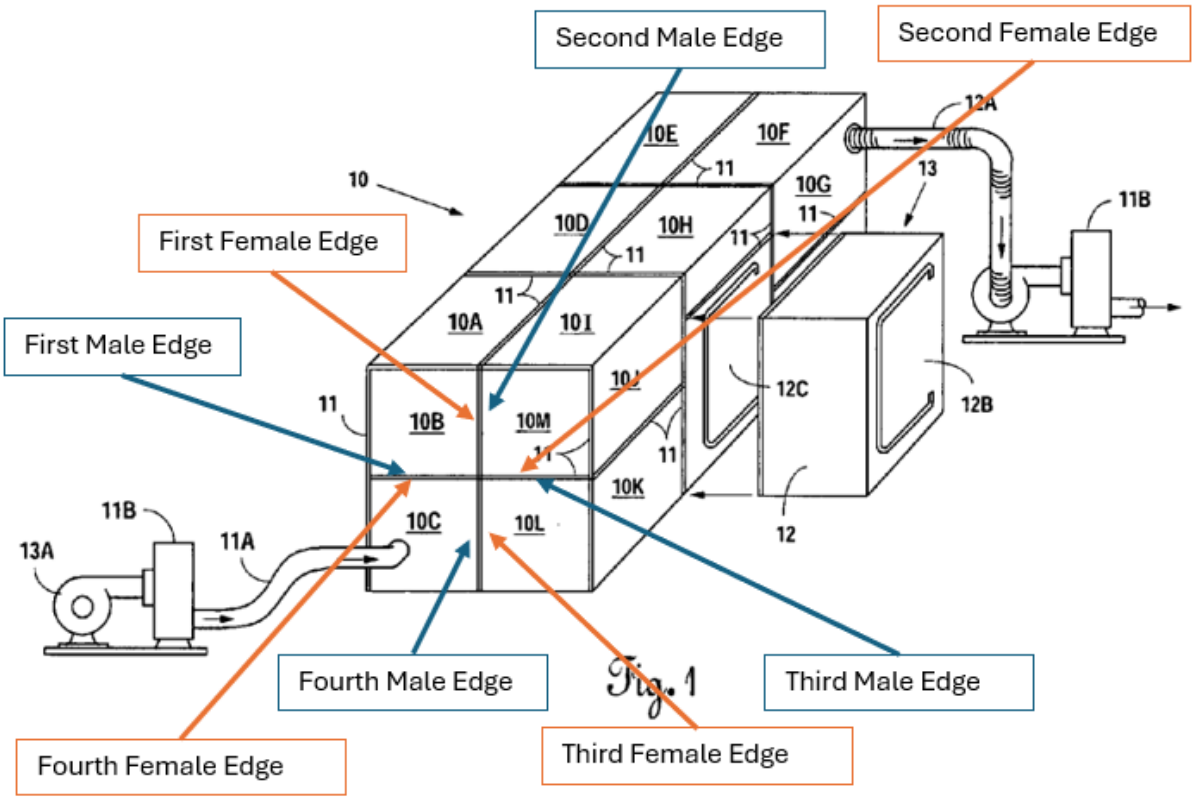


Fig. 1

(9) [5.f.iv] "wherein the first panel is engaged with the fourth panel via engagement between the fourth female edge and the first male edge; and"

120. As noted with regard to element [5.b], the combination discloses elements [5.b] to [5.f] as a quadrant of any four adjacent panels on a wall would include the male and female edges engaged as recited in elements [5.b] to [5.f]. For example, as shown in annotated Fig. 1 of Wardlaw as modified by Ballinger below for the front facing quadrant of panels **10B**, **10M**, **10C**, and **10L**, a first panel **10B** is engaged with fourth panel **10C** via an engagement between the fourth female edge and the first male edge.

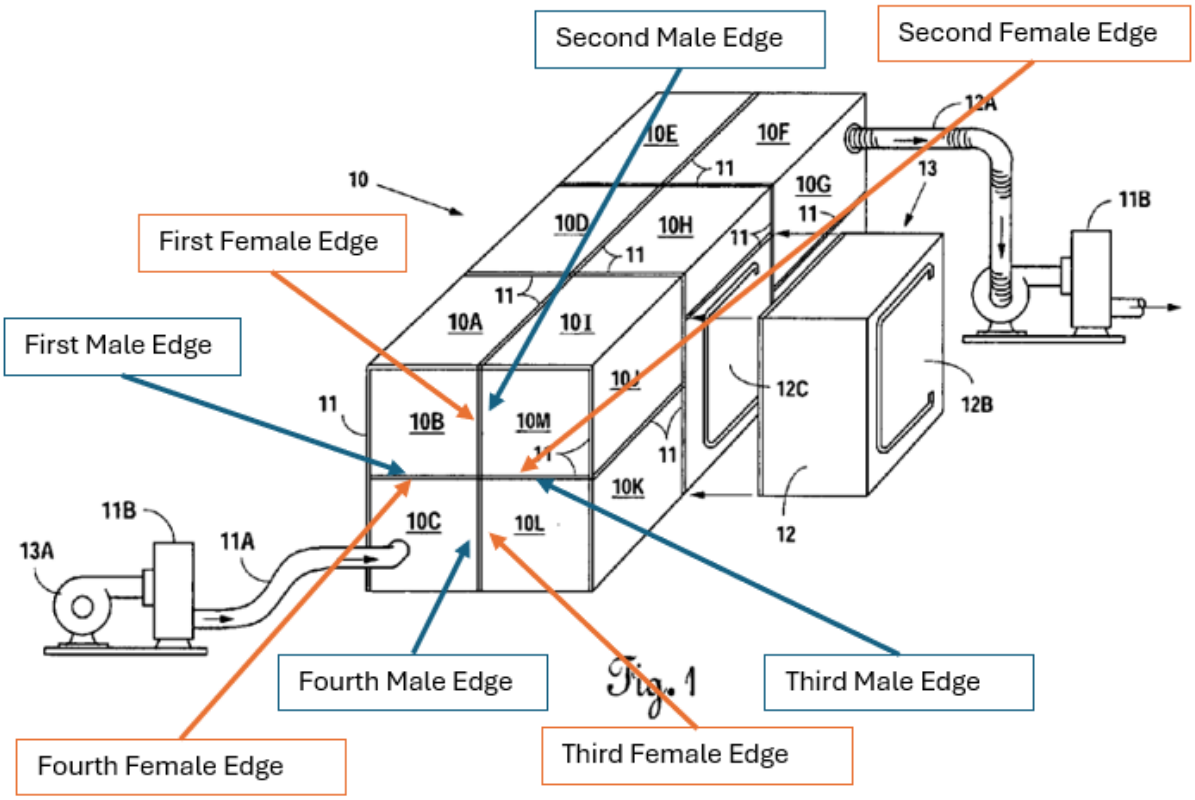


Fig. 1

(10) [5.g] "wherein the engagement between the first panel and the second panel, engagement between the second panel and the third panel, engagement between the third panel and the fourth panel, engagement between the fourth panel and the first panel, or combinations thereof, forms a seal adapted to maintain a pressure differential across opposing sides thereof."

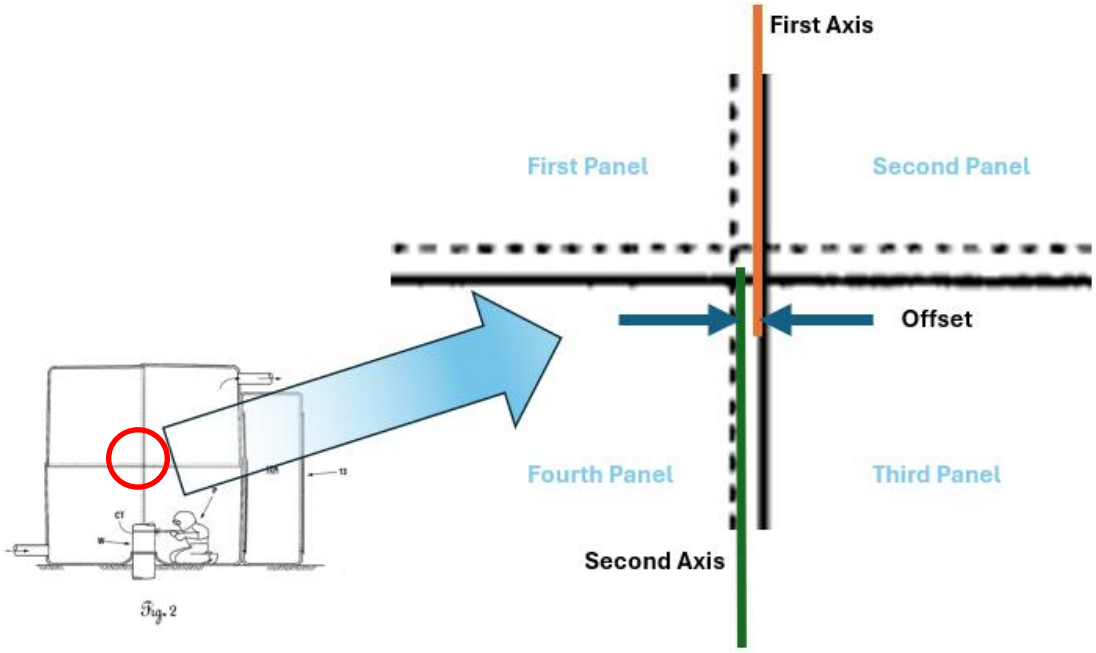
121. Similar to element [1.d] in Ground 1, the combination would have engagements would form "a seal adapted to maintain a pressure differential across opposing sides thereof." The hook-and-loop fastening system of Wardlaw maintains a "positive internal pressure," Wardlaw, [0053], as "the inflation members **10A-10M** forming the unit **10** do not have to be completely air tight at the interface of the VELCRO strips **11**, and only have to assure that the unit **10** may be inflated and maintained in inflated position during the welding or heating operation therewithin." Wardlaw, [0027]. As the tongue-and-groove clamping fastener of Ferrante also uses an interface of VECLRO strips, and simply provides increased fastening security relative to a generic hook-and-loop fastening system, a POSITA would have understood that the combination of Wardlaw and Ferrante would also maintain Wardlaw's "positive internal pressure." A POSITA would understand that a pressure differential from the inside of the Wardlaw enclosure to outside of the Wardlaw enclosure would only need be several psi to maintain

inflation and most heat-resistant textile fabrics would have a porosity to allow that pressure differential.

h) Claim 6: "The enclosure of claim 5, wherein engagement between the first panel and the second panel defines a first axis, and wherein engagement between the third panel and the fourth panel defines a second axis, and wherein the first axis is offset a distance from the second axis in a direction generally perpendicular to the first axis and the second axis to form an overlapping engagement between a first portion of the wall and a second portion of the wall."

122. The combination would render obvious the claimed "overlapping engagement." Claim 6 does not define how the axis of the first panel and the second panel (or the third panel and the fourth panel) is "defined," other than by being engaged. Thus, claim 6 allows a POSITA to define the first axis to be any line that overlaps engagement points between the first panel and the second panel and to define the second axis to be any line that overlaps engagement points between the third panel and the fourth panel.

123. As shown in the annotated copy of Fig. 2 of Wardlaw (with annotated zoom), the combination would include a first axis (orange) and a second axis (green) with points on each axis that overlaps engagement points between the first panel and second panel and the third panel and fourth panel, respectively. As shown, such axis are perpendicularly offset to form an overlapping engagement between a first portion of the wall and a second portion of the wall.



124. In addition, a POSITA would be familiar with the relaxed tolerance requirements allowed by the use of hook-and-loop fasteners. Tolerances are a fundamental concept in the art, and mechanical engineering, textile engineering and manufacturing generally. Tolerance, at a general level, refers to the acceptable limits of variation in a physical dimension or parameter. When designing or assembling components—like using hook and loop fasteners—tolerances help ensure that parts fit and function properly, even if they aren't matched with perfect precision.

125. With regard to the combination, a POSITA designing two panels to connect at their edges using the clamping hook-and-loop fasteners of Ferrante would understand that it would have been obvious for a POSITA to allocate a wide tolerance for the connection as it would still ensure a secure connection because

hook-and-loop fasteners are relatively forgiving compared to other fasteners, such as zippers. Providing such a wide tolerance would make assembly faster and easier, as each connection would not require precise alignment.

126. Thus, a POSITA would understand that hook-and-loop fasteners such as VELCRO are not designed to be connected in perfect linear alignment, and allow for easy non-linear connectivity. For example, as shown in annotated Fig. 1 of Wardlaw below for the front facing quadrant of panels **10B**, **10M**, **10C**, and **10L**, a POSITA would understand that in implementation the engagement of the first panel **10B** and fourth panel **10C** would not be perfectly aligned relative to the engagement axis between the second panel **10M** and the third panel **10L**, and therefore would have had some offset, especially as the claim does not recite any quantitative value for the amount of "offset" required to satisfy the claim. In particular, a POSITA would understand that a lack of perfect alignment between adjacent panel engagements is expected and would provide the claimed "offset" upon fabrication of Wardlaw's modular welding enclosure, which is not assembled in a controlled environment but rather on site in the field, where the welding is to be performed. Moreover, a POSITA would have understood that hook-and-loop fasteners allow for connectivity in non-linear fashion, and this is actually an inherent and well-known advantage of these fasteners, because it allows for improved flexibility of the connection and assembly speed in the field without

requiring perfect linear alignment of every panel.

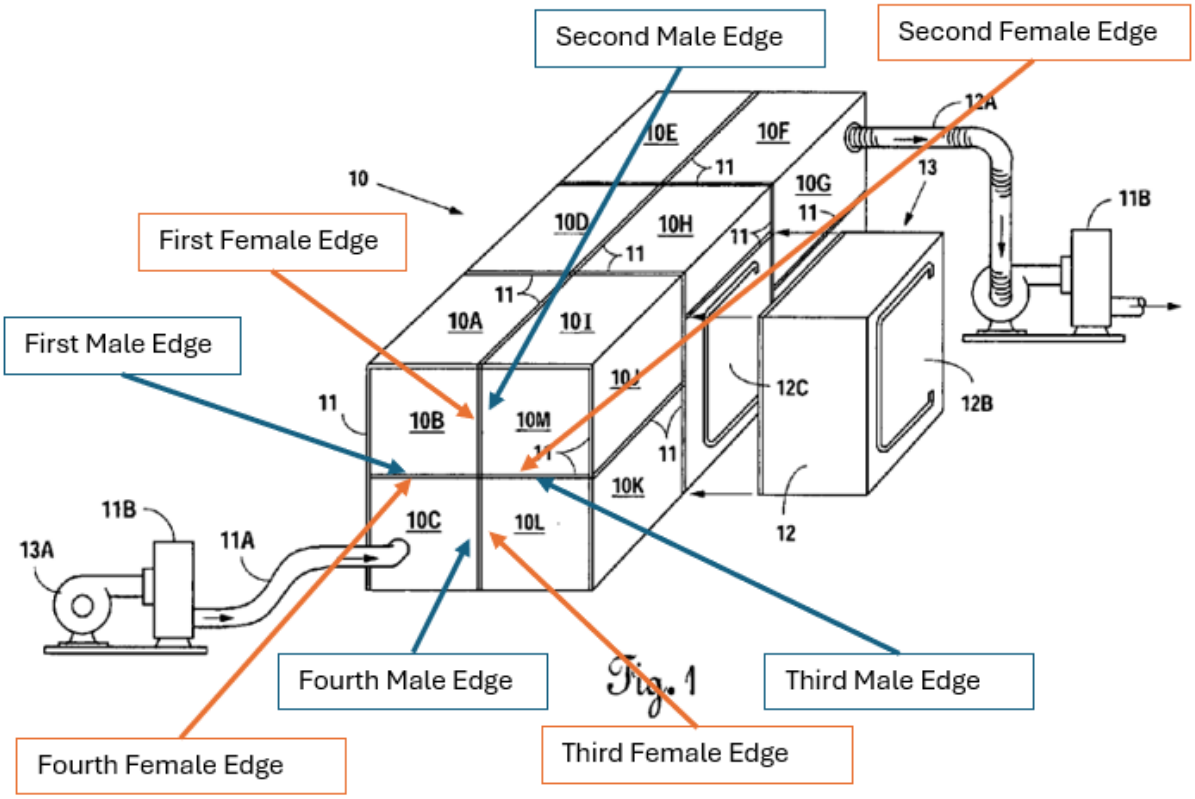
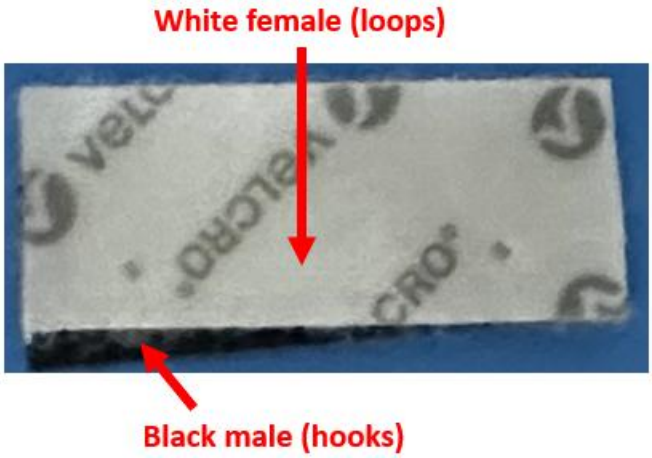


Fig. 1

127. A POSITA would know that not perfect linear alignment, like that shown below would have a relatively minor effect of the adhesiveness of the hook and loop fastening system. This is because a POSITA would have understood that not every hook needs to engage a loop in order to establish a secure connection in the fastener.



128. Moreover, construction by "bricking," that is offsetting adjacent seams of a wall such as by staggering the positioning of vertical seams of adjacent courses of bricks in a brick wall, would have been well-known to a POSITA for promoting the interlocking strength and therefore improving the strength of the wall. To the extent some intentional, larger offset were to be required by the claim, a POSITA would find such an arrangement obvious based on common engineering principles that would have been understood by a POSITA.

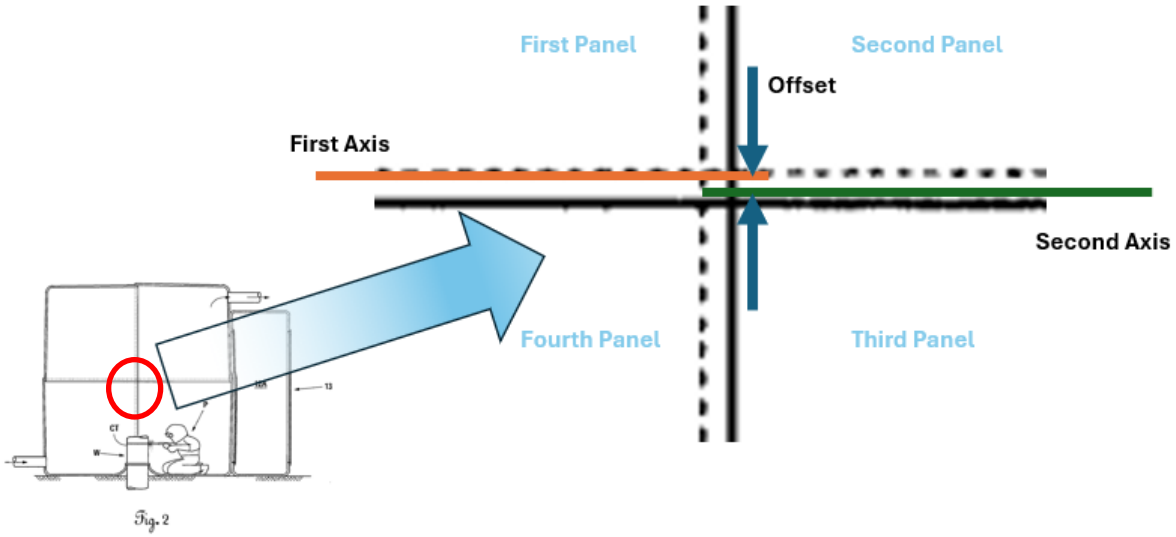
i) Claim 7: "The enclosure of claim 5, wherein engagement between the second panel and the third panel defines a first axis, and wherein engagement between the fourth panel and the first panel defines a second axis, and wherein the first axis is offset a distance from the second axis in a direction generally perpendicular to the first axis and the second axis to form an overlapping engagement between a first portion of the wall and a second portion of the wall."

129. The combination would render obvious the claimed "overlapping engagement" of claim 7 obvious, as claim 6 is similar to claim 7, and rendered

obvious by the combination for the same reasons as stated above concerning claim 6.

130. Like claim 6, claim 7 does not define how the axis of the second panel and the third panel (or the fourth panel and the first panel) is "defined," other than by being engaged. Thus, claim 6 allows a POSITA to define the first axis to be **any** line overlapping engagement points between the second panel and the third panel and to define the second axis to be any line overlapping engagement points between the fourth panel and the first panel.

131. As shown in the annotated copy of Fig. 2 of Wardlaw (with zoom), the combination would include a first axis (green) and a second axis (orange) with points on each axis overlapping engagement points between the second panel and third panel and the fourth panel and first panel, respectively. As shown, such axis are perpendicularly offset to form an overlapping engagement between a first portion of the wall and a second portion of the wall.



132. In addition, for example, as shown in annotated Fig. 1 of Wardlaw as modified by Ballinger below for the front facing quadrant of panels **10B**, **10M**, **10C**, and **10L**, a POSITA would have understood that the engagement of the second panel **10M** and third panel **10L** would not be perfectly aligned, and therefore would have had some offset, relative to the engagement between the fourth panel **10C** and the first panel **10B**, especially as the claim does not recite any value for the amount of "offset" required. The understanding of a POSITA in

this regard is the same as explained above for claim 6.

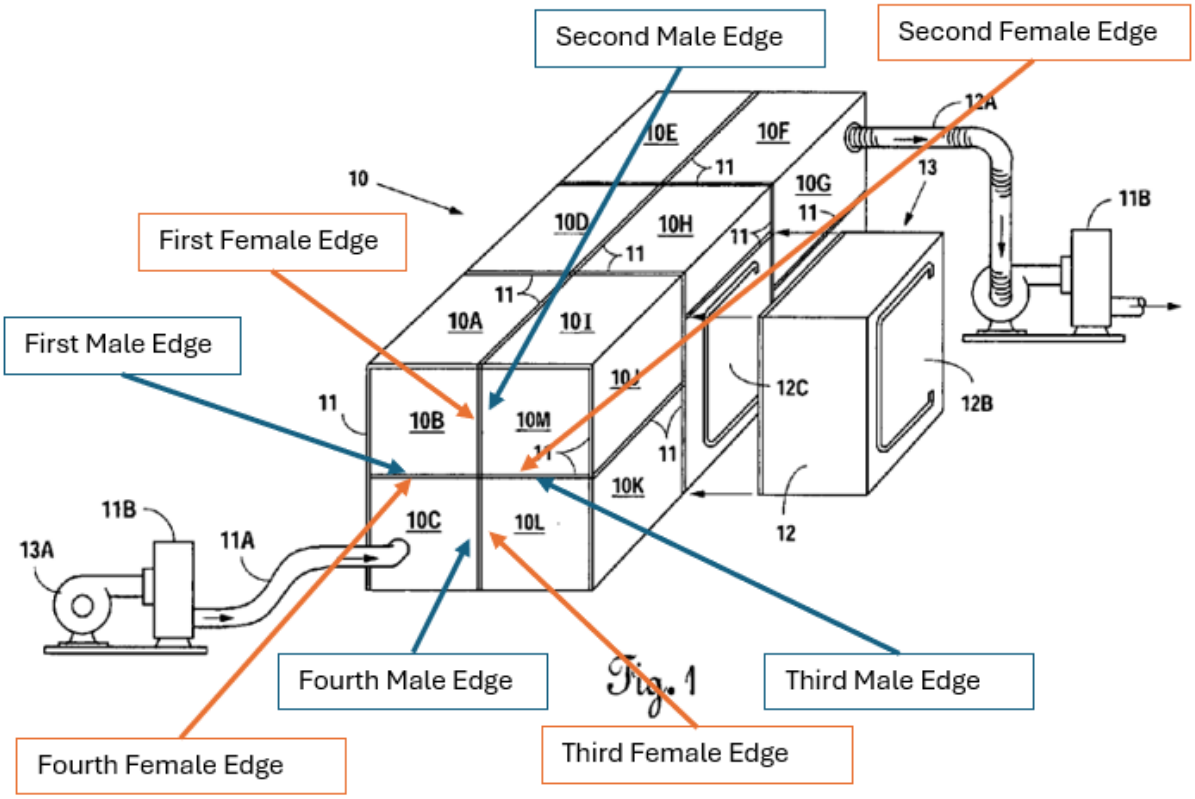


Fig. 1

j) Claim 8: "The enclosure of claim 5, wherein the first panel, the second panel, the third panel, the fourth panel, or combinations thereof, further comprise at least one additional edge having a front side and a rear side, wherein the front side and the rear side each comprise a first portion of the fastening medium thereon for engagement with at least one additional panel."

133. The combination renders obvious the recitations of claim 8. For example, as shown in annotated Fig. 1 of Wardlaw as modified by Ballinger below for the front facing quadrant of panels **10B**, **10M**, **10C**, and **10L**, panel **10B** would have an opposite male portion disposed across from the first male edge to engage

panel 10A as suggested by Ballinger and have the features of the tongue of Ferrante's tongue-and-groove fastener. Similarly, panel **10M** would have an opposite male portion disposed across from the second male edge to engage panel **10J** as suggested by Ballinger and have the features of the tongue of Ferrante's tongue-and-groove fastener.

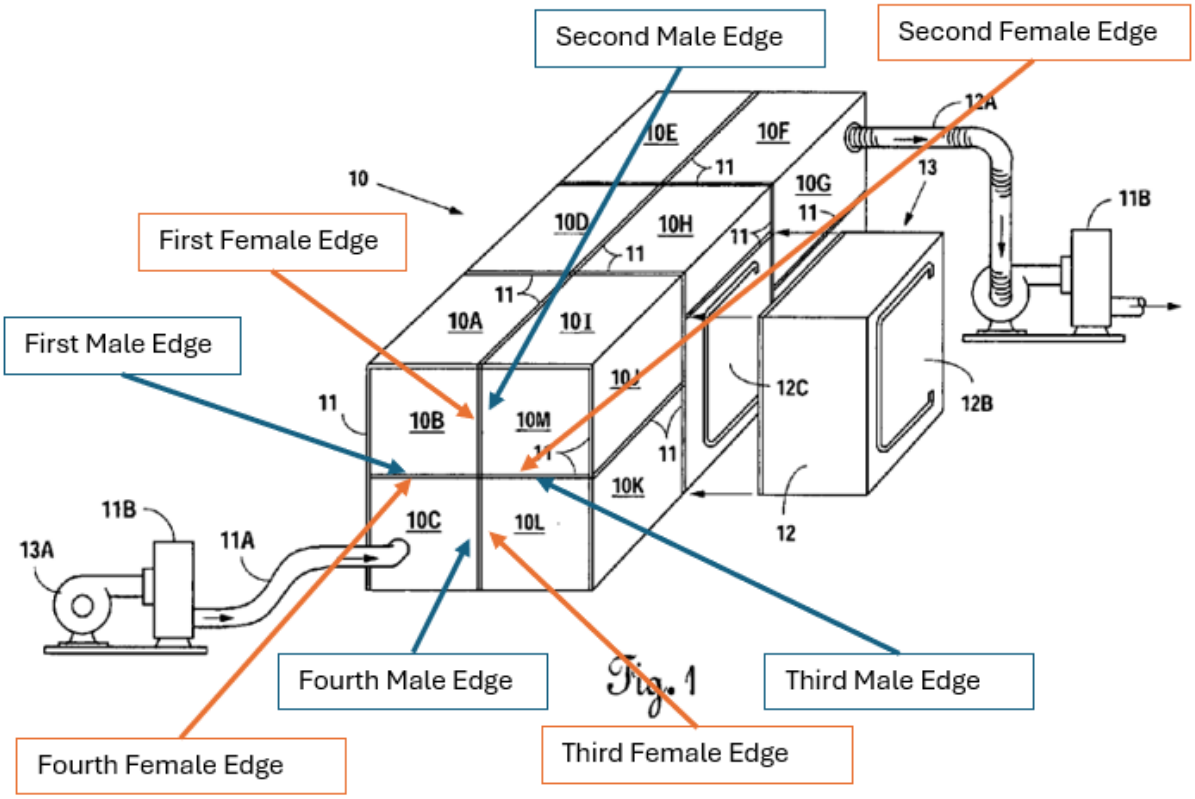
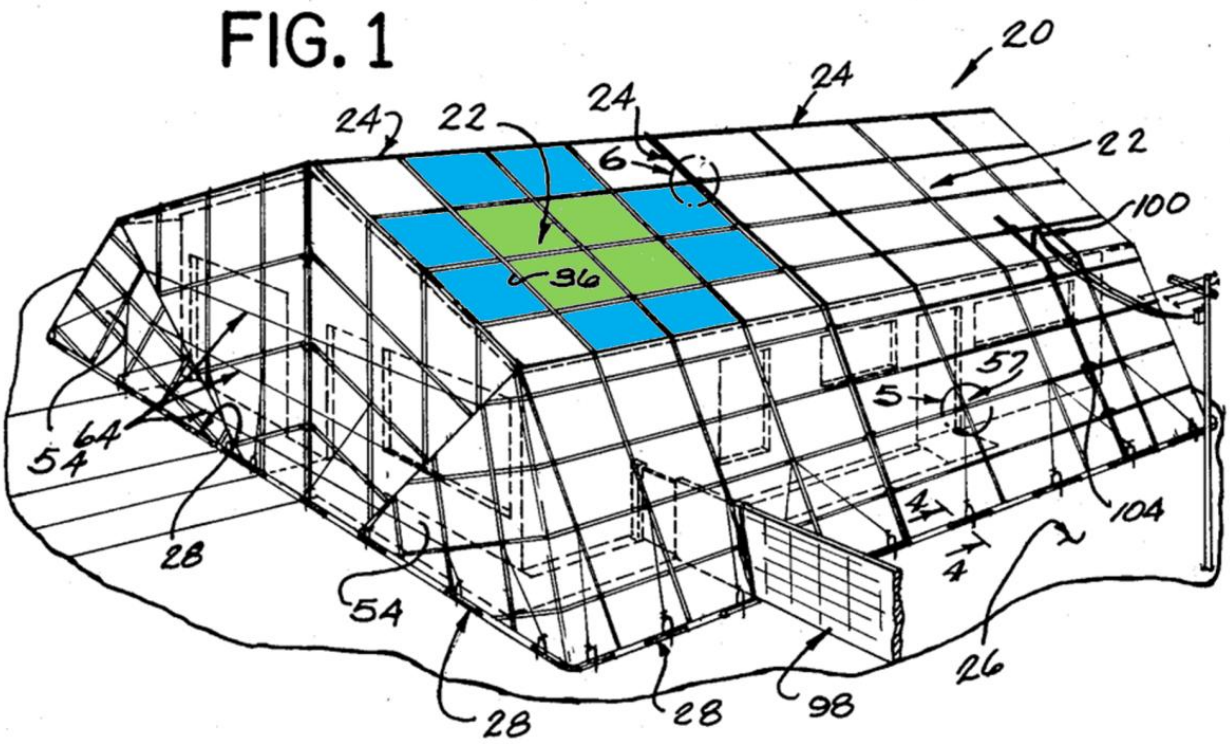


Fig. 1

134. Moreover, due to the modular nature of the enclosure, the number of panels in the combination is not limited, and depending on the size of the wall and the enclosure required for a particular use, it would have been obvious to a POSITA that it could include, as shown in annotated Fig. 1 of Ballinger below, a

quadrant of panels (in green) surrounded by other panels (in blue), which would satisfy the requirements of claim 8 for the reasons stated above:



k) Claim 9: "The enclosure of claim 5, further comprising at least one additional edge having a first flap and a second flap extending therefrom, wherein the first flap and the second flap each have an inner edge comprising a second portion of the fastening medium for engagement with at least one additional panel."

135. The combination renders obvious the recitations of claim 9. For example, as shown in annotated Fig. 1 of Wardlaw as modified by Ballinger below for the front facing quadrant of panels **10B**, **10M**, **10C**, and **10L**, panel **10B** would have an opposite female portion disposed across from the first female edge to engage the unshown panel on the left side of the Fig. 1 as suggested by Ballinger

and have the features of the groove of Ferrante's tongue-and-groove fastener. Similarly, panel **10M** would have an opposite female portion disposed across from the second female edge to engage panel **10I** as suggested by Ballinger and have the features of the groove of Ferrante's tongue-and-groove fastener. Also, panel **10L** would have an opposite female portion disposed across from the third female edge to engage panel **10K** as suggested by Ballinger and have the features of the groove of Ferrante's tongue-and-groove fastener.

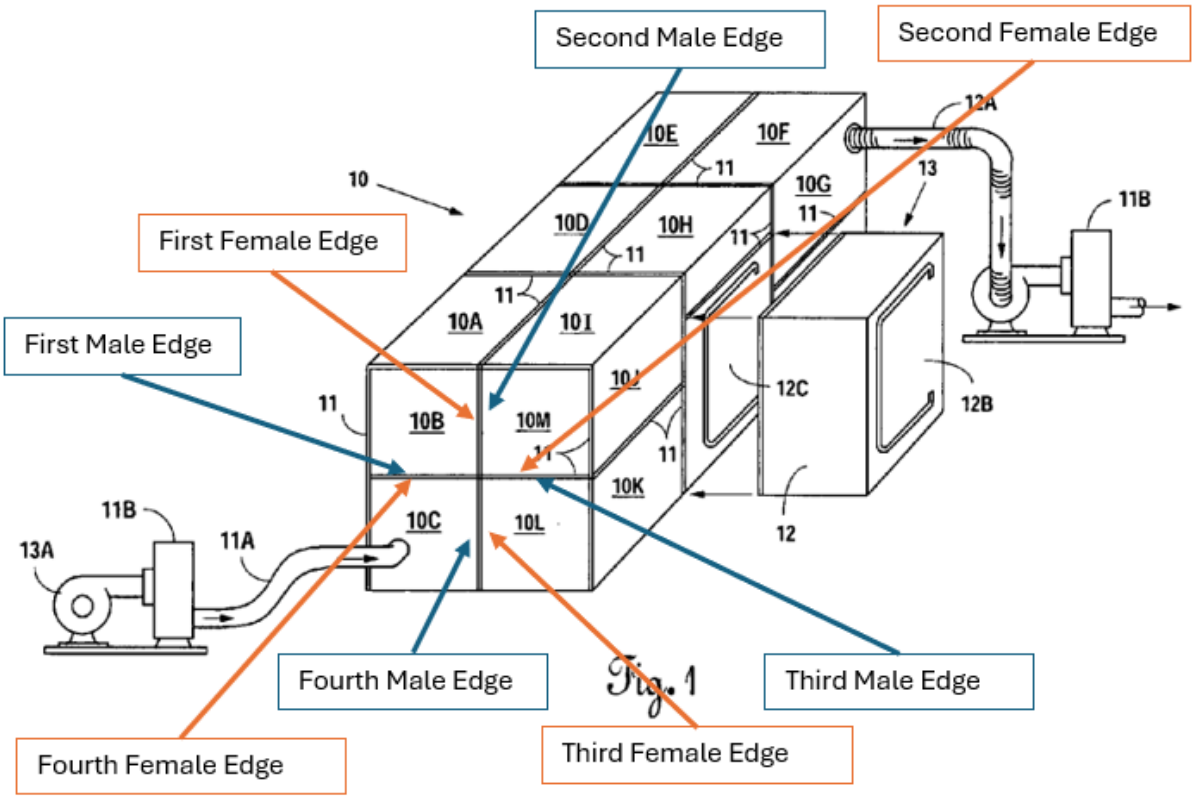
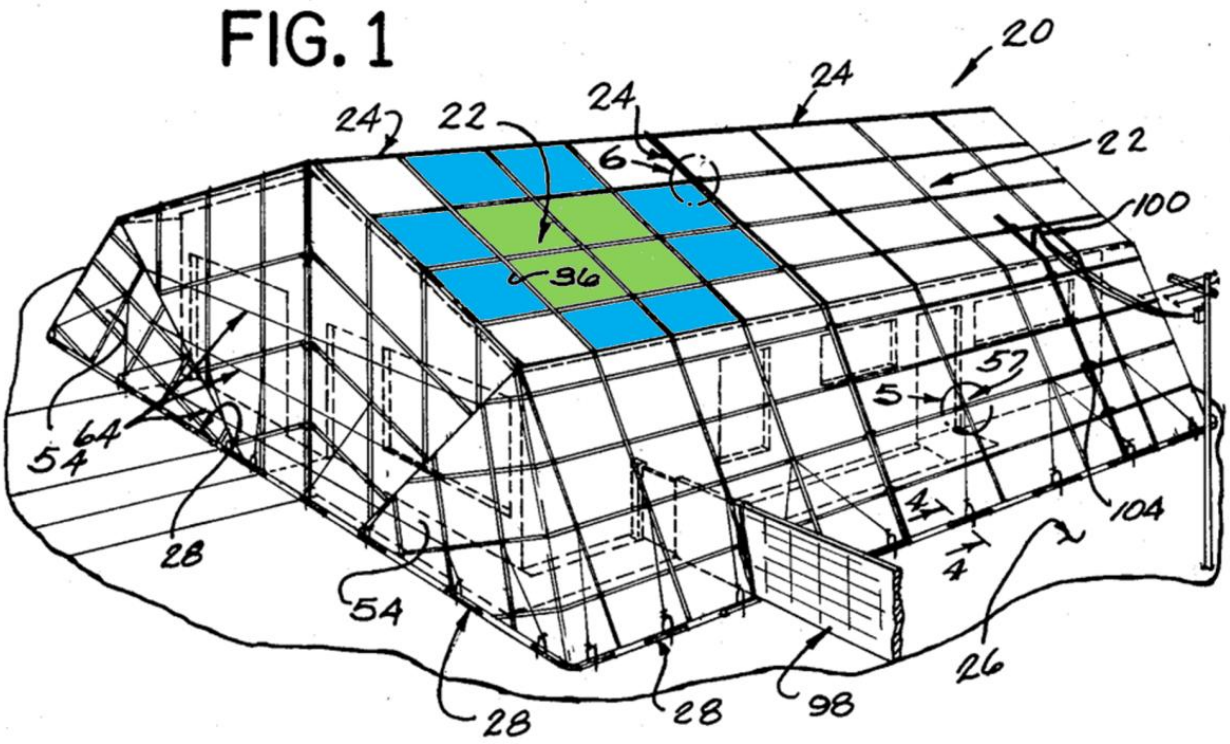


Fig. 1

136. Moreover, due to the modular nature of the enclosure, the number of panels in the combination is not limited, and depending on the size of the wall required for a particular use, it would have been obvious to a POSITA that it could

include, as shown in annotated Fig. 1 of Ballinger below, a quadrant of panels (in green) surrounded by other panels (in blue), which would satisfy the requirements of claim 9 for the reasons stated above:



l) Claim 10: "The enclosure of claim 5, wherein each first portion of the fastening medium, each second portion of the fastening medium, or combinations thereof, comprise a plurality of strips of a hook and loop fastening medium."

137. The combination would render obvious the requirements of claim 10 for the same reasons as stated in Ground 1 with regard to claim 3.

m) Claim 11: "The enclosure of claim 5, further comprising at least one additional wall engaged with the wall to form an enclosed space adapted for performing hot work, for containing a pressure differential therein, or combinations thereof."

138. The combination renders obvious the recitations of claim 11 to provide an "enclosed space adapted for performing hot work, for containing a pressure differential therein, or combinations thereof" for similar reasons as stated with regard to elements [1.d] and [5.g]. In addition, as shown in annotated Fig. 1 of Wardlaw below for the front facing quadrant of panels 10B, the front facing quadrant engages with at least top (e.g., panels **10A** and **10I**) and side walls (e.g., panels **10J** and **10K**) in Wardlaw.

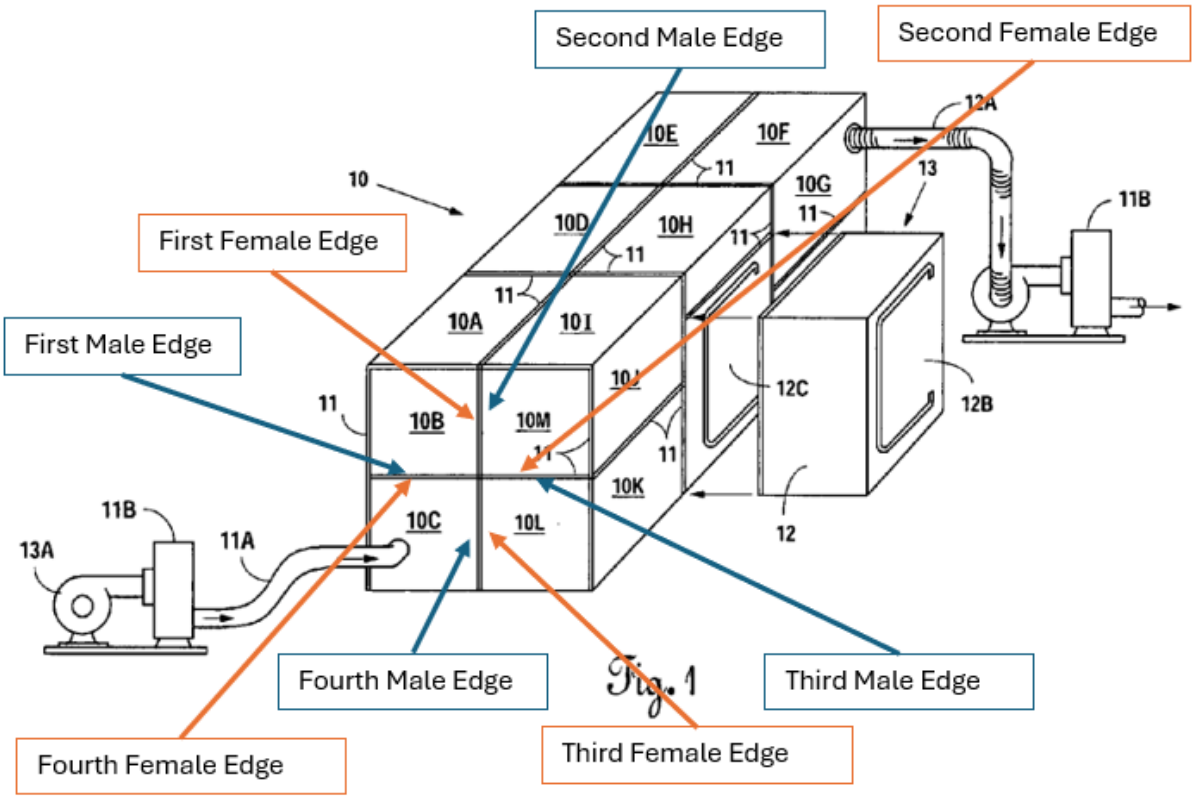


Fig. 1

n) Claim 12: "The enclosure of claim 5, wherein engagement between the first panel and the second panel, engagement between the second panel and the third panel, engagement between the third panel and the fourth panel, engagement between the fourth

panel and the first panel, or combinations thereof, comprise engagement between a first of said flaps and one of the front sides and a second of said flaps and one of the rear sides via engagement between the first portion and the second portion of the fastening medium."

139. The combination renders obvious the recitations of claim 12. As explained with regard to element [1.c], as suggested by the tongue-and-groove fastener of Ferrante, the grooves of the combination would include first and second flaps that engage the tongues of the combination in the manner recited.

3. Ground 1A: The Combination of Wardlaw and Ferrante Renders Obvious Claims 1-4 (alternate construction)

a) Independent Claim 1: [1.pre] "An enclosure comprising:"

140. To the extent that that the preamble is limiting, the Ground 1A combination discloses this feature for the same reasons presented above in Ground 1.

(1) [1.a] "a first panel having a male edge with a front side and a rear side, wherein the front side and the rear side each comprise a first portion of a fastening medium thereon; and"

141. The Ground 1A combination discloses this feature for the same reasons presented above in Ground 1. As noted above in Section V.B, this limitation does not require that the "first portion" of the fastening medium be of the same type on the front side and the rear side of the male edge. That is, the claim does not require if the first portion on the front side is of a "hook" type that

the rear side also be "hooks," for example. In other words, the "first portion" on the front side of the male edge could be "hooks" and "first portion" on the rear side could be "loops" for a hook-and-loop fastening medium. Nevertheless, if such a "type" aspect were to be required, it would have been obvious to a POSITA in view of Ferrante. A POSITA would have two well-known and predictable choices—to use the same type of the fastening medium ("hooks" or "loops") on both sides of the male edge or to use alternate types of fastening medium on each side ("hooks" on one side the top and "loops" on the other)—and a POSITA would have found it obvious to use either choice as a routine selection of known alternatives.

(2) [1.b] "a second panel having a female edge with a first flap and a second flap extending therefrom,

142. The Ground 1A combination discloses this feature for the same reasons presented above in Ground 1.

(3) "wherein the first flap and the second flap each have an inner surface comprising a second portion of the fastening medium thereon adapted for engagement with the first portion of the fastening medium, wherein the first flap engages the front side and the second flap engages the rear side via engagement between the first portion and the second portion of the fastening medium,"

143. The Ground 1A combination discloses this feature for the same reasons presented above in Ground 1. As noted above in Section IV and for the claimed "first portion," this limitation does not require that the "second portion" of the fastening medium be of the same type on the first and second flaps. That is, the claim does not require if the second portion is of a "loop" type on the first flap that the second flap also have "loops," for example. In other words, the "second portion" on the first flap could be "hooks" and the "second portion" "loops" for the second flap for a hook-and-loop fastening medium. Nevertheless, if such a "type" aspect were to be required, it would have been obvious to a POSITA in view of Ferrante. A POSITA would have two well-known and predictable choices—to use the same type of the fastening medium ("hooks" or "loops") on both flaps to use alternate types of fastening medium on each flap ("hooks" on one side the top and "loops" on the other)—and a POSITA would have found it obvious to use either choice as a routine selection of known alternatives.

(4) [1.d] "wherein the engagement between the first panel and the second panel forms a seal adapted to maintain a pressure differential across opposing sides thereof."

144. The Ground 1A combination discloses this feature for the same reasons presented above in Ground 1.

b) Claim 2: "The enclosure of claim 1, wherein engagement between the first flap and the front side, engagement between the second flap and the rear side, or combinations thereof, forms a seal adapted to maintain a pressure differential across opposing sides thereof."

145. The Ground 1A combination discloses this feature for the same reasons presented above in Ground 1.

c) Claim 3: "The enclosure of claim 1, wherein the first portion of the fastening medium, the second portion of the fastening medium, or combinations thereof, comprise a plurality of strips of a hook and loop fastening medium.

146. The Ground 1A combination discloses this feature for the same reasons presented above in Ground 1.

d) Claim 4: "The enclosure of claim 1, wherein the first panel, the second panel, or combinations thereof, is formed at least partially from a heat resistant material."

147. The Ground 1A combination discloses this feature for the same reasons presented above in Ground 1.

4. Ground 2A: The Combination of Wardlaw, Ferrante, and Ballinger Renders Obvious Claims 1-12 (alternate construction)

a) Independent Claim 1: [1.pre] "An enclosure comprising:"

148. The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2.

(1) [1.a] "a first panel having a male edge with a front side and a rear side, wherein the front side and the rear side each comprise a first portion of a fastening medium thereon; and"

149. The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2.

(2) [1.b] "a second panel having a female edge with a first flap and a second flap extending therefrom,

150. The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2.

(3) [1.c] "wherein the first flap and the second flap each have an inner surface comprising a second portion of the fastening medium thereon adapted for engagement with the first portion of the fastening medium, wherein the first flap engages the front side and the second flap engages the rear side via engagement between the first portion and the second portion of the fastening medium,"

151. The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2.

(4) [1.d] "wherein the engagement between the first panel and the second panel forms a seal adapted to maintain a pressure differential across opposing sides thereof."

152. The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2.

b) Claim 2: "The enclosure of claim 1, wherein engagement between the first flap and the front side, engagement between the second flap and the rear side, or combinations thereof, forms a seal adapted to maintain a pressure differential across opposing sides thereof."

153. The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2.

c) Claim 3: "The enclosure of claim 1, wherein the first portion of the fastening medium, the second portion of the fastening medium, or combinations thereof, comprise a plurality of strips of a hook and loop fastening medium.

154. The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2.

d) Claim 4: "The enclosure of claim 1, wherein the first panel, the second panel, or combinations thereof, is formed at least partially from a heat resistant material."

155. The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2.

e) Independent Claim 5: [5.pre] "An enclosure comprising:"

156. To the extent that that the preamble is limiting, the Ground 2A combination discloses this feature for the same reasons presented above in Ground 2.

(1) [5.a] "a wall comprising a first panel, a second panel, a third panel, and a fourth panel,"

157. The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2.

(2) [5.b] "wherein the first panel comprises a first male edge having a front side and a rear side and a first female edge having at least two flaps extending therefrom, wherein the front side and the rear side each comprise a first portion of a fastening medium thereon, and wherein said at least two flaps each have an inner surface comprising a second portion of the fastening medium thereon,"

158. The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2.

159. With regard to the recitations in elements [5.b] to [5.e] that a male edge has "a front side and a rear side" and a female edge has "at least two flaps extending therefrom, wherein the front side and the rear side each comprise a first portion of a fastening medium thereon, and wherein said at least two flaps each have an inner surface comprising a second portion of the fastening medium

thereon," the combination would have these features for the same reasons as stated above for elements [1.a] to [1.c] of Ground 1A.

(3) [5.c] "wherein the second panel comprises a second male edge having a front side and a rear side and a second female edge having at least two flaps extending therefrom, wherein the front side and the rear side each comprise a first portion of the fastening medium thereon, and wherein said at least two flaps each have an inner surface comprising a second portion of the fastening medium thereon,"

160. The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2. As to the additional recitations in element [5.c] concerning the male and female edges, such features would be present in the combination for the same reasons as stated above for elements [1.a] to [1.c] of Ground 1A and element [5.b] of Ground 2A.

(4) [5.d] "wherein the third panel comprises a third male edge having a front side and a rear side and a third female edge having at least two flaps extending therefrom, wherein the front side and the rear side each comprise a first portion of the fastening medium thereon, and wherein said at least two flaps each have an inner surface comprising a second portion of the fastening medium thereon,"

161. The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2. As to the additional recitations in element [5.d] concerning the male and female edges, such features would be present in the

combination for the same reasons as stated above for elements [1.a] to [1.c] of Ground 1A and element [5.b] of Ground 2A.

(5) [5.e] "wherein the fourth panel comprises a fourth male edge having a front side and a rear side and a fourth female edge having at least two flaps extending therefrom, wherein the front side and the rear side each comprise a first portion of the fastening medium thereon, and wherein said at least two flaps each have an inner surface comprising a second portion of the fastening medium thereon,"

162. The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2. As to the additional recitations in element [5.e] concerning the male and female edges, such features would be present in the combination for the same reasons as stated above for elements [1.a] to [1.c] of Ground 1A and element [5.b] of Ground 2A.

(6) [5.f.i] "wherein the second panel is engaged with the first panel via engagement between the first female edge and the second male edge,"

163. The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2.

(7) [5.f.ii] "wherein the third panel is engaged with the second panel via engagement between the second female edge and the third male edge,"

164. The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2.

(8) [5.f.iii] "wherein the fourth panel is engaged with the third panel via engagement between the third female edge and the fourth male edge, and"

165. The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2.

(9) [5.f.iv] "wherein the first panel is engaged with the fourth panel via engagement between the fourth female edge and the first male edge; and"

166. The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2.

(10) [5.g] "wherein the engagement between the first panel and the second panel, engagement between the second panel and the third panel, engagement between the third panel and the fourth panel, engagement between the fourth panel and the first panel, or combinations thereof, forms a seal adapted to maintain a pressure differential across opposing sides thereof."

167. The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2.

f) Claim 6: "The enclosure of claim 5, wherein engagement between the first panel and the second panel defines a first axis, and wherein engagement between the third panel and the fourth panel defines a second axis, and wherein the first axis is offset a distance from the second axis in a direction generally perpendicular to the first axis and the second axis to form an overlapping engagement between a first portion of the wall and a second portion of the wall."

168. The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2.

g) Claim 7: "The enclosure of claim 5, wherein engagement between the second panel and the third panel defines a first axis, and wherein engagement between the fourth panel and the first panel defines a second axis, and wherein the first axis is offset a distance from the second axis in a direction generally perpendicular to the first axis and the second axis to form an overlapping engagement between a first portion of the wall and a second portion of the wall."

169. The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2.

h) Claim 8: "The enclosure of claim 5, wherein the first panel, the second panel, the third panel, the fourth panel, or combinations thereof, further comprise at least one additional edge having a front side and a rear side, wherein the front side and the rear side each comprise a first portion of the fastening medium thereon for engagement with at least one additional panel."

170. The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2.

i) Claim 9: "The enclosure of claim 5, further comprising at least one additional edge having a first flap and a second flap extending therefrom, wherein the first flap and the second flap each have an inner edge comprising a second portion of the fastening medium for engagement with at least one additional panel."

171. The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2.

j) Claim 10: "The enclosure of claim 5, wherein each first portion of the fastening medium, each second portion of the fastening medium, or combinations thereof, comprise a plurality of strips of a hook and loop fastening medium."

172. The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2.

k) Claim 11: "The enclosure of claim 5, further comprising at least one additional wall engaged with the wall to form an enclosed space adapted for performing hot work, for containing a pressure differential therein, or combinations thereof."

173. The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2.

l) Claim 12: "The enclosure of claim 5, wherein engagement between the first panel and the second panel, engagement between the second panel and the third panel, engagement between the third panel and the fourth panel, engagement between the fourth panel and the first panel, or combinations thereof, comprise engagement between a first of said flaps and one of the front sides and a second of said flaps and one of the rear sides via engagement between the first portion and the second portion of the fastening medium."

174. The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2.

VI. CONCLUSION

This declaration and my opinions herein are made to the best of my knowledge and understanding, and based on the material available to me, at the time of signing this declaration. I declare under penalty of perjury under the laws of the United States of America that all statements made of my own knowledge are true and that all statements made on information and belief are believed to be true. I understand that willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. 1001) and may jeopardize the validity of the application or any patent issuing thereon.

By: _____
Dr. David Brookstein, Sc.D.

Dated: 7/27/2025

APPENDIX A

David Brookstein, Sc.D.
Professor Emeritus of Mechanical Engineering
Senior Associate Dean (retired)
Temple University College of Engineering

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david.brookstein@temple.edu

Education:

- Doctor of Science in the field of Mechanical Engineering, Minor Studies in Management from Sloan School of Management, Massachusetts Institute of Technology, 1976.
- Master of Science in Textile Technology, Massachusetts Institute of Technology, 1973.
- Bachelor of Textile Engineering, Georgia Tech, 1971.
- Harvard Business School Summer Program on Research Management, 1990.
- Harvard University Graduate School of Education MLE Program, 1998.
- Massachusetts Institute of Technology Professional Institute - Data and Models in Engineering, Science and Business, 2006
- Harvard University Graduate School of Education Institute for Education Management, 2007.
- Massachusetts Institute of Technology Professional Institute - Nanomaterials for Biological and Pharmaceutical Technologies – 2008
- MIT Sloan School Executive Education Program "Product Design, Development, and Management" – 2009
- MIT Professional Institute, "From Technology to Innovation: Putting Ideas to Work" - 2010
- MIT Professional Institute, "Mastering Innovation and Design Thinking" - 2019

Fellow of the American Society of Mechanical Engineers
Fellow of the Textile Institute (United Kingdom)

Professional Experience:

Temple University College of Engineering

2024-Present Professor Emeritus of Mechanical Engineering

2014-2024 Professor of Mechanical Engineering and Senior Associate Dean
Responsible for the Senior Design Capstone Courses for all engineering students
Responsible for engineering program accreditation from the Accreditation Board for Engineering and Technology (ABET)

Brookstein Consulting LLC

2000-present Engineering and Litigation Consultant in Fields of Textiles, Mechanical Assemblies made from Textile Materials, Garment Systems, Fibers, Fabrics and Composites

ICF Mercantile

2013-2014 Director of Market Development
Responsible for Technical and Market Development of antimicrobial, antifungal and flame-resistant textile fabrics. Development of new fabric systems for flame-resistant garments.

Montgomery County Community College (PA)

2012-2013 Dean for Science, Technology, Engineering and Mathematics (STEM)
Chief Academic Officer for all A.S. and A.A.S. programs in engineering, physical sciences, biological science and computer sciences

Philadelphia University (formerly Philadelphia College of Textiles and Science)

2010 – 2012 Executive Dean for University Research and Professor of Mechanical Engineering

1994 – 2010 Dean and Professor of Mechanical Engineering
School of Engineering & Textiles

2007 Executive Director of Institute for Textile and Apparel Product Safety

2008 Executive Director of Pennsylvania Advanced Textile Research and Innovation Center including Biomedical Textile Structures Laboratory

2005 Executive Director of Research for Philadelphia University

2004-2012 Principal Investigator – DoD Funded program – Laboratory for Engineered Human Protection (LEHP) – program focused on working with US Army to develop new garment-based soldier protection systems. The research and development program was to design, develop and produce prototype chemically protective garments with the required comfort using the latest materials produced in collaboration with selected suppliers.

MAG Industrial Automation Systems

2009-2012 Engineering consultant to worldwide manufacturer of engineered automation systems for the aerospace industry

Harvard University

2002 – 2003 Visiting Scholar (sabbatical)
Harvard University Center for Textile and Apparel Research (Division of Engineering and Applied Sciences and Harvard Business School) – Studied trends in patent applications involving textile structures

Albany International Research Co. - Mansfield, MA

1992 - 1994 Associate Director

1983 - 1992 Assistant Director

1980 - 1982 Senior Research Associate

Directed all activities of the professional engineering group responsible for contract research, development, and manufacture of advanced composite materials and technical polymeric materials and fabrics. Accomplishments include the working with NASA to develop new garment systems for astronauts, working with Rockwell International on textile-based thermal insulation for Space Shuttle, invention of braided fiberglass sucker rods, invention and development of the multilayer interlock braiding system for producing three dimensionally reinforced fibrous preforms for aerospace structures, the development of implantable biomedical devices such as sutures, vascular prostheses, orthopedic implants (knitted and woven) and the development of unique textile-based civil engineering structures. Engineering innovations led to 12 US patents and many other inventions protected by trade secret. Member of the senior management staff of the organization.

Northeastern University - Boston, MA

1981-1983 Adjunct Professor in Mechanical Engineering

Taught undergraduate courses in statics, dynamics, and mechanics of deformable bodies and material science.

Georgia Institute of Technology, College of Engineering

1975 - 1980 Assistant Professor of Textile Engineering

Taught and conducted research in the fields of textile and composites engineering with special emphasis on improving the energy efficiency of manufacturing systems. Obtained substantial

funding from US DOE and US DOD. Active participant in College of Engineering co-op undergraduate programs.

Also, during period as professor at Georgia Tech served as:

- Technical consultant for Levi Strauss (garment design in area of comfort);
- Union Carbide (melt blown carbon fiber manufacturing);
- Carborundum (boron fiber manufacturing; and
- Eastman Kodak (textured polyester stretch yarns)

Also. while at Temple University I have consulted for Edwards LifeSciences (textile-based cardiac prostheses)

Outside Professional Activities:

- Founding Member of the Greater Philadelphia University Council of Engineering Deans
- Chairman of the National Textile Center (NTC) Operating Board (20062007). NTC is a federally funded research consortium consisting of Georgia Tech, North Carolina State, Auburn, Clemson, Cornell, UMASS-Dartmouth, UC Davis and Philadelphia University.
- Advisory Board of the College of Engineering, Georgia Tech (19901995).
- President, The Fiber Society (1996)
- Chairman, Textile Engineering Division-American Society of Mechanical Engineers (1994-1996)

Memberships:

- American Society for Engineering Education (member of Engineering Deans Council)
- Institute of Industrial Engineers

- ASME - Textile Engineering Division, Chairman, 1980, 1994
- American Conference of Academic Deans
- The Fiber Society - Fiber Society Lecturer, 1986-1987, 1993-1994, President 1996
- SAMPE - Society for Advanced Materials and Process
- The Textile Institute (United Kingdom)

Awards and Honors:

- ✦ American Society of Mechanical Engineers (ASME) – Fellow, 1995
- ✦ ASME - Textile Engineering Division, Chairman, 1980, 1994
- ✦ The Fiber Society - Fiber Society Lecturer, 1986-1987, 1993-1994, President, 1996
- ✦ The Textile Institute (United Kingdom) – Fellow, 1992
- ✦ Georgia Tech Academy of Distinguished Engineering Alumni, 1999
- ✦ Techtextil Innovation Prize for Exemplary Development in the Field of Technical Textiles and Textile Reinforced Materials, 1993 (Germany)
- ✦ ASTM Harold Dewitt Smith Award, 1998 - for outstanding developments in textile fiber utilization in the design and development of three-dimensional fibrous composites for aerospace applications, biomedical implants, and oil extraction systems

Publications and Reports:

"Deductions about the False-Twist Process from Observations of the Variation of Torque on Detwisting at Heat Set Yarn," with Backer, S., and Thwaites, J.J., Journal of the Textile Institute, 67, p. 183-186, 1976.

"Transient Threadline Behavior in False-Twist Texturing," with Thwaites, J.J., and Backer, S., Journal of the Textile Institute, 67, 1976.

"Mechanics of Texturing Thermoplastic Yarns: Part III. Experimental

Observations of Torsional Behavior of the Texturing Threadline for Pre-Drawn PET Yarns," with Backer, S., Textile Research Journal, 46, pp. 802908, 1976.

"Mechanics of Texturing Thermoplastic Yarns: Part V. Steady State Mechanics of Drawing Texturing," Textile Research Journal, 47, p. 256-266, 1977

"Material-Process Interactions During False-Twist Texturing," with Backer, S., Journal of Applied Polymer Science: Applied Polymer Symposium, 31, p. 6382, 1977.
"Mechanics of Texturing Thermoplastic Yarns: Part VI. Transient Mechanics of Draw Texturing," with Backer, S., Textile Research Journal, 48, p. 198-218, 1978.

"On the Mechanics of Draw Texturing," Journal of Applied Polymer Science:
Applied Polymer Symposium, 33, p. 197-202, 1978

"Energy Consumption and Conservation: Textile Drying," ACS Symposium Series, 107/17, 1979

"All That Glitters is Not Gold," Textile World, October 1979

"Energy Conservation in the Textile Industry," ERDA - Phase I Report, DOE, April, 1977, Quarterly Reports, 1976 to 1977

"Energy Conservation in the Textile Industry, Department of Energy Phase II - Report, April 1978

"Processing of Pitch-Based Staple Carbon Fiber," Union Carbide Corporation, November 1977, Final Report.

"Low Thermal Conductivity of PAN-Based Carbon Fiber, Hercules, Inc., Monthly Reports and Final Report

"Development and Demonstration of Energy-Conserving Drying Modifications to Textile Processes Final Report. November 1979

"Optimization of Sucker Rod Pumping Using Novel Material-Systems Concepts," with Skelton, J. and Dent, R., Proceedings of the Sixth Symposium of Engineering Applications of Mechanics, Petroleum Society of CIM, 1982

"Mechanical Characterization of Braided Cylinder," with Tsiang, T.H., and Dent, J., Proceedings of the 29th SAMPE Meeting, 1984.

"Design and Development of a High Stability Truss Chord," with Helmke, R., and Kominos, C., Proceedings of the 30th SAMPE Meeting, 1985.

"Load-Deformation Behavior of Composite Cylinders with Integrally-Formed Braided and Machined Circular Holes," with Tsiang, T.H., Journal of Composite Materials, 19, September 1985.

"Braided Composites: Attachment Considerations, Proceedings of the Composites in Manufacturing, Los Angeles, CA, January 1986.

"Foam Assisted Drying,: with Skelton, J., Petterson, D.R., and Lauchenauer, F.,
Proceedings of the International Drying Symposium, Cambridge, MA, August 1986

"Joining Methods of Advanced Braided Composites," Composite Structures, 6, p. 87-95, 1986

"Structural Applications of Advanced Braided Composites," Proceedings of the SPE Advanced Polymers Composites Division, November 1988.

"Processing Advanced Braided Composite Structures," Proceedings of the WAM of ASME, Materials Division, November 1988.

"Interlocked Fiber Architecture: Braided and Woven," Proceedings of the 35th SAMPE Meeting, April, 1990.

"Evolution of Fabric Preforms for Composites," Journal of Applied Polymer Science: Applied Polymer Symposium, 47, p. 487-500, 1991.

"A Comparison of Multilayer Interlocked Braided Composites with Other 3-D Braided Composites," 3rd International Techtextil Symposium, 14-16, May 1991, Frankfurt.

"On the Mechanical Behavior of 3-D Multilayer Interlock Braided Composites," with Preller, T., and Brandt, J., DASA-Deutsche Aerospace, Proceedings of NASA Fiber-Tex '92.

"The Evolution of 3-D Composites," Fifth European Conference on Composite Materials," 7-10 April 1992, Bordeaux.

"The Solid Section Multilayer Interlock Braiding System," 4th International Techtextil Symposium, 4 June 1992, Frankfurt.

"On the Mechanical Properties of Three-Dimensional Multilayer Interlock Braided Composites, TECHTEXTIL Symposium, 1993, Frankfurt.
"3-D Braided Composites-Design and Applications," Sixth European Conference on Composite Materials," 20-24 September 1993, Bordeaux

"Concurrent Engineering of 3-D Textile Preforms for Composites," International Journal of Materials and Product Technology, Vol. 9, Nos 1/2/3, 1994.

"Advanced Textile Airbeams for Temporary Shelters, 6th TECHTEXTIL Symposium, 1994, Frankfurt.

"Physical Properties of Twisted Structures" with Ning Pan, Physical Properties of Twisted Structures II Industrial yarns, cords and ropes, Journal of Applied Polymer Science, V 83, 610-630.

‘‘A New Multidisciplinary Engineering Education Initiative’’, with Govindaraj, M and Tovia, F, American Society of Engineering Education, AC 2007-1064, 2007.

"Multi-component Multiple-layer Woven Textiles for Electronic

Applications."Govindaraj, Muthu, and Brookstein, David. Ambience 08 Smart Textiles-Technology and Design. Proc. of Ambience 08 International Scientific Conference. Boras, Sweden: The Swedish School of Textiles, University College of Boras, 2008. 72-78.

"On Current Research Associated with Textile and Apparel Product Safety", with Govindaraj, M and Pierantozzi, J , Proceedings of the 86th Textile Institute World Conference, Hong Kong 2008.

Written testimony to the US Senate Subcommittee of Consumer Protection, Product Safety and Insurance – "Formaldehyde in Textiles and Consumer Products", April 28, 2009

"Factors Associated with Textile Pattern Dermatitis Due to Contact Allergy to Dyes, Finishes, Foams and Preservatives" , Dermatologic Clinics, July 2009.

"Textile-Templated Electrospun Anisotropic Scaffolds for Tissue Engineering and Regenerative Medicine", Institute of Electrical and Electronic Engineers, Engineering in Medicine and Biology Society Annual Conference, Buenos Aires, September 2010.

"Creating an Infrastructure for Compressed Natural Gas Delivery for Automotive Transportation" - Industry Studies Association of the Alfred P. Sloan Foundation, Pittsburgh, May 2012

"Textile-templated electrospun anisotropic scaffolds for regenerative cardiac tissue engineering", Biomaterials 35 (2014) , pp. 8540-8552
H, Gözde Şenel Ayaz, Anat Perets, Hasan Ayaz, Kyle D. Gilroy, Muthu Govindaraj, David Brookstein and Peter I. Lelkes

"Shaping New Student Identity as Creatives" in the 21st Century Global Economy "with Keya Sadeghipour, American Society of Engineering Education, 2016

"Work in Progress: Rethinking How We Teach in Engineering Through a Course Redesign Initiative" with Shawn Fagan and Stephanie Fiore, American Society of Engineering Education, 2017

''Work in Progress: Introducing Design Thinking in First-Year Engineering Education'' with Keya Sadeghipour, Shawn Fagan and Cory Budischack, American Society of Engineering Education, 2020.

"Design and Development of a Protective Face Mask to Mitigate Community Spread and Prevent Wearer Infection from COVID - 19 Using Design Thinking", COMMONHealth, December 2020

"Public Health Protection Against Bioterrorism via Respiratory Pathogenic Viral and Bacterial Agents using Protective Face Masks" COMMONHealth, April 2021

PATENTS Consisting of Original Contributions to field of mechanical and textile engineering (Inventor or Co-Inventor):

1. U.S. Patent 4,290,170 "Device for Aligning and Attenuating Fiber Mats," A device for producing aligned carbon fiber webs for use in composites.

2. U.S. Patent 4,497,866 "Sucker Rod," An elliptical cross-section braided composite rod for pumping oil.

3. U.S. Patent 4,602,892 "Sucker Rod," A braided composite rod and coupling for pumping oil.

4. U.S. Patent 4,841,613 "Pressure Developer or Press Roll Containing Composite Material," A composite press roll with variation of radial stiffness.

5. U.S. Patent 4,909,127 "Braiders," A braider with non-circular braider tracks and a unique package carrier for use with braider.

6. U.S. Patent 5,004,474 "Prosthetic Anterior Cruciate Ligament Design," An artificial ligament device having a tubular woven ligament and being adapted for joining the ends of two bones.

7. U.S. Patent 5,357,839 "Solid Braid Structure" A 3-D system for producing braids.

8. U.S. Patent 5,358,758 "Structural Member" A fiber reinforced structural member produced from a complex woven fabric.

9. U.S. Patent 5,411,463 "Composite Roll and Method of Making" A fiber reinforced roll for papermaking.

10. U.S. Patent 5,501,133 ‘‘Apparatus for Making a Braid Structure’’ A novel manufacturing system for producing 3-D multilayer interlock braided textile and fiber reinforced composite structures.

11. U.S. Patent 5,697,969 ‘‘Vascular Prosthesis and Method for Implanting’’ A fibrous synthetic vascular graft with a combination of resorbable and non-resorbable layers.

12. U.S. Patent 7,144,830 B2 ‘‘Plural Layer Woven Electronic Textile, Article and Method’’

13. U.S. Patent 9,668,846 ‘‘Textile-Templated Electro spun Anisotropic Scaffolds for Tissue Engineering and Regenerative Medicine’’

US and European Patent Applications

1. US 2015/0292677 ‘‘Method of Manufacturing a Compressed Gas Cylinder’’

2. EPO 0 647 751 A2 ‘‘Braided Airbeams and method of making the same

Non-patented trade secret inventions developed at Albany International Research Co.

1. Fiber-reinforced composite rocket igniter for Small ICBM and Pegasus Air Launched Vehicle

2. Specialty vascular grafts and bio-absorbable orthopedic implants

3. New method for drying paper during the papermaking process

4. Complex, reduced delamination rocket motor exit cones

Summary of Testimony

The cases in which I have testified as an expert at trial or hearings are:

1. Herbert v. Avondale Indus., Inc., Case No. 2004-10015 in the Civil District Court the Parish of New Orleans, Louisiana (expert for Uniroyal Holdings, Inc.)

2. Parks v. A.P. Green Indus., Inc., Case No. 45DO1-9902 CT-154 in the Lake County Superior Court, Indiana (expert for Uniroyal Holdings, Inc)

3. DePuy Mitek, Inc (Johnson & Johnson) v. Arthrex, Inc., Case No. 1:04cv-12457-PBS in the U.S. District Court for the District of Massachusetts (expert for DePuy Mitek) – Patent Litigation

4. New Hampshire Ins. Co. v. Total Tool, Inc, Case No. 1:08-cv-05213-AJP in the United States District Court for the Southern District of New York (Expert for St. Paul Yacht Club).

5. United States Senate, Subcommittee of Consumer Protection, Product Safety and Insurance, Committee on Commerce, Science and Transportation "Formaldehyde in Textiles and Consumer Products."

6. Judkins v. HT Window Fashions, Case No. 2:07-cv-00251-GLL in the United States District Court for the Western District of Pennsylvania (Expert for HT Window Fashions) -Patent Litigation

7. Icon Outdoors, LLC. v. Core Resources, Inc., Case No. 1:11cv02967-RDB in United States District Court for the District of Maryland (Expert for Icon Outdoors) – Markman Hearing

8. F. Scott Cikowski & Denise Olack v. Regal Rugs, Inc., NO:

2225-C of 1999, Court of Common Pleas – Luzerne County, PA - Product Liability Litigation

9. LILLEBaby v. Ergobaby/Tula ITC Investigation No. 337-TA-1154 in the International Trade Commission (expert for Ergobaby/Tula) Patent Litigation

10. Heather Poole, et al. v. Twin Hill Acquisition Company, Inc., et al. SUPERIOR COURT OF THE STATE OF CALIFORNIA - IN AND FOR THE COUNTY OF ALAMEDA - Case No. RG17876798 (expert for the plaintiffs) Product Liability Litigation

11. Nike, Inc v. lulelemon USA Case No. 1:23-cv-00771-AS in the United States District Court for the Southern District of New York (Expert of lululemon USA) – Patent Litigation

The cases which I have served as an expert witness at for US Patent Trial and Appeal Board (PTAB) are:

1. Target Corporation (Petitioner) v. Destination Maternity Corporation (Patent Owner) IPR 2013-00530 (Expert for Patent Owner)
2. LaRose Industries, LLC (Petitioner) v. Choon's Design (Patent Owner) IPR 2014-00218 (Expert for Petitioner)
3. Ventex (Petitioner) v. Columbia Sportswear (Patent Owner) – IPR 2017-00651 (expert for Ventex)
4. Ce Soir Lingerie (Petitioner) v. Brazabra (Patent Owner) -IPR 2019-01491 (Expert for Petitioner)
5. Arun Agarwal (Petitioner) v. Sachin Jhunjhunwala (Patent Owner) PGR 2021-00071(Expert for Patent Owner)
6. Continental AG, (Petitioner) v. Gates Corporation (Patent Owner) IPR 2021-00466 (Expert for Patent Owner)
7. Edwards LifeSciences (Petitioner) v. Aortic Innovations (Patent Owner)– 2 cases – IPR 2023-01325 and IPR 2021-01151)
8. lululemon (Petitioner) v. Nike, Inc (Patent Owner) IPR – 3 cases-IPR 2023 - 01460, IPR 2024-00159, IPR 2024-01460 (Expert for Petitioner)
9. New Balance Athletics (Petitioner) v. Nike, Inc (Patent Owner) IPR-2024-00778 (Expert for Petitioner)

I have been deposed as an expert witness in following cases:

1. Intermark Fabric Corp. v. Microfibres, Inc., Case No. 3:02- cv01267- AVC in the United States District Court for Connecticut (expert for Microfibres, Inc)

2. Fabrite Laminating Corporation v. Shailendra Dusaj and Precision Custom Coatings, LLC, C369-03 Chancery Court of Bergen County, New Jersey (expert for Fabrite)

3. Atlanta Attachment v. Leggett & Platt, Inc., Case No. 1:05- cv-1071- ODE in the United States District Court for the Northern District of Georgia (expert for Legget & Platt, Inc.) Patent Litigation

4. Thermo-Ply v. Ohio Willow Wood, Case No. 8:05-cv- 00779-EAK- MAP in the United States District Court for the Middle District of Florida – Tampa Division (expert for Ohio Willow Wood) Patent Litigation

5. DePuy Mitek v. Arthrex, Inc., Case No. 1:04-cv-12457-PBS in the United States District Court for Massachusetts (expert for DePuy Mitek) Patent Litigation

6. Southern Mills v. Polartec, Case No. 1:07-cv-00893-BBM in the United States District Court for the District of North Georgia (expert for Polartec) Patent Litigation

7. Judkins v. HT Window Fashions, Case No. 2:07-cv-00251- GLL in the United States District Court for the Western District of Pennsylvania (Expert for HT Fashions) Patent Litigation

8. LeMans Corp. v. United States, Case No. 06-00038 in the U.S. Court of International Trade (expert for LeMans Corporation)

9. New Hampshire Ins. Co. v. Total Tool, Inc, Case No. 1:08- cv05213-AJP in the United States District Court for the Southern District of New York (Expert for St. Paul Yacht Club)

10. Thorpe et al v. Davol (C.R. Bard) , Inc. et al, Case No. 1:08-cv00463ML-LDA in the US District Court for Rhode Island (Expert for Thorpe)

11. McDavid Knee Guard, Inc and Stirling Mouldings LTD v. Nike USA Case No, No.: 1:08-cv-06584 in the United States District Court for the Northern District of Illinois, Eastern Division (Expert for Nike) Patent Litigation

12. The Kong Company, LLC v. VIP Products, LLC, C.D. California No.2:10cv07446-VBF –MAN (expert for plaintiff KONG). Patent Litigation

13. Seirus Innovative Accessories, Inc, v. Cabela's Inc., S.D. California No. 3:09cv-00102-H –WMC (expert for defendant Cabela's) Patent Litigation

14. United States of America, *ex rel.* Aaron Westrick v. Second Chance Body Armor, Inc., et al. (D.D.C. No. 04-0280-RWR) and United States of America v. Toyobo Co. LTD and Toyobo America, Inc. (D.D.C. No. 071144-RWR) (Expert for the USA) False Claims Act

15. Minor Stevens et al. v. Graco Children's Products Inc et al. S.D. Ohio No. 12CV-429 (Expert for Minor Stevens)

16. Jason Dane Harris and Rachel Marie Dabbs Harris v. Fisher-Price, Inc, Mattel, Inc. et al. N.D. Alabama, No.CV 13-00076 –KOB (expert for plaintiff)

17. Destination Maternity Corporation v. Target – *Inter Partes* Review USPTO PTAB Case No. 2013-00531 and Motion to Amend (expert for Destination Maternity Corporation)

18. Zippysack LLC et al. v. Ontel Products Corp, 1:15-cv- 07510 06584 in the United States District Court for the Northern District of Illinois, Eastern Division (Expert for Zippysack LLC) Patent Litigation

19. M-Edge v. LifeWorks Technology 1:2014-cv-0630 in the United States District Court for Maryland (Expert for LifeWorks Technology) Patent Litigation

20. Ventex (Petitioner) v. Columbia Sportswear (Patent Owner) – IPR 201700651 (expert for Ventex) *Inter Partes Review*

21. International Designs LLC. v. Hair Art International in the United States District Court for the Central District of California (expert for International Designs LLC) Patent Litigation

22. LILLEBaby v. Ergobaby/Tula ITC Investigation No. 337-TA- 1154 in the

International Trade Commissions (expert for Ergobaby/Tula) Patent Litigation

23. Continental AG, (Petitioner) v. Gates Corporation (Patent Owner) IPR 202100466 (Expert for Patent Owner)

24. Heather Poole, et al. v. Twin Hill Acquisition Company, Inc., et al. SUPERIOR COURT OF THE STATE OF CALIFORNIA - IN AND FOR THE COUNTY OF ALAMEDA - Case No. RG17876798 (expert for the plaintiffs) Product Liability Litigation

25. Nike, Inc v. lululemon Athletica, (Expert for lululemon) Patent Litigation IPR 2023-01460, IPR 2024-00159, IPR 2024-00960

26. Nike, Inc v. lulelemon Athletica (Expert for lululemon) in the United States District Court for Southern District of New York - Patent Litigation

Products that I have consulted on as an expert witness for either patent litigation (including PTAB trials and ITC Evidentiary Hearings),civil fraud, product liability or class action

<u>Patent cases</u>

- Mattress Pads
- Textile-based products for amputees
- Sutures and shoulder surgery implantable items
- Knitted fire-retardant fabrics and garments
- Window shades
- High performance athletic clothing including knitted athletic shoes
- Ski masks
- Maternity garments
- Dog toys
- Children's toys
- Children's blankets
- Thermal insulation garments
- Protective gloves

- Hunting jackets
- Textile manufacturing equipment
- Bed sheets and pillows
- Pool floats
- Hair Extensions
- Baby Carriers
- Digital Printed Garments
- Endless Drive Belts made from Textile Cords
- Bioprosthetic Artificial Heart Valves
- Foam based pillows
- Athletic Footwear

Product Liability Cases

- Hernia fabrics
- High performance fibers for ballistic vests
- Children's car seats
- Climbing ropes
- Construction straps
- Flame retardant clothing

Class Action Cases

- Bed Sheets
- Children Sleeping Apparatus
- Flight Attendant Uniforms

Civil Fraud Cases – Expert for US Department of Justice

- Degradation of Fibers for Bullet Proof Vests