

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAFE ARC TECH., LLC,
Petitioner,

v.

AL-AZEM,
Patent Owner.

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

**PETITION FOR *INTER PARTES REVIEW*
OF U.S. PATENT NO. 9,545,775**

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PETITIONER’S EXHIBIT LIST

Exhibit No.	Description
1001	U.S. Patent No. 9,545,775 (“the ’775 patent”)
1002	File History of U.S. Patent No. 9,545,775
1003	Expert Declaration of Dr. David Brookstein, Sc.D.
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”)

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.

Safe Arc Technology, LLC (“Petitioner” or “Safe Arc”) petitions for *Inter Partes* Review (“IPR”) of claims 1-12 (“the Challenged Claims”) of U.S. Patent No. 9,545,775 (“the ’775 patent”). Compelling evidence presented in this Petition demonstrates that Safe Arc will prevail. The Grounds presented in this Petition are supported by the opinions of Dr. David Brookstein, Sc.D., as set forth in his Declaration, submitted along with this Petition as Ex1003.

I. STATEMENT OF PRECISE RELIEF REQUESTED

Petitioner requests review under 35 U.S.C. § 311 of claims 1-12 of the ’775 patent and their cancellation in view of the following:

Prior Art References	
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

The ’775 patent was filed May 1, 2012, and claims priority to a provisional application filed on May 2, 2011. Each of the above references pre-dates May 1, 2012, by more than one year and is available as a prior art reference under pre-AIA 35 U.S.C. §§ 102(a) and (b), regardless of whether the ’775 patent is entitled to the priority date of its provisional, which Petitioner does not concede.

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

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 with multiple heat-resistant panels, engaged together via hook-and-loop fasteners such as Velcro. While Velcro is not air-tight, it provides sufficient air resistance to maintain a pressure differential between the interior and exterior of the enclosure.

As noted by Dr. Brookstein, the abstract of the ’775 patent describes a panel of a welding enclosure having both a male and female fastener on a single panel. Ex1003, ¶29. As Dr. Brookstein also explains, the panels disclosed in the ’775

patent are generally thin, square-shaped panels, with a front side and a rear side.

Ex1003, ¶30. 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. *Id.* 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. Dr. Brookstein’s reasoned opinion is a POSITA (as defined below) would understand that this description indicates that the panels are made from a textile fabric. Ex1003, ¶30.

The specification of the ‘775 patent discloses 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. Ex1003, ¶58. Each of these elements was in the prior art, however. Ex1003, ¶59. Modular pressurized welding habitats with Velcro® (i.e., hook-and-loop) connectors were well known before the earliest possible priority date of the ‘775 patent, and it was nothing more than a design choice to determine how to arrange well-known hook-

and-loop connectors to connect the panels together. Ex1003, ¶¶60-61. 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. Ex1003, ¶¶60-61.

As will be explained, the first set of claims of the '775 patent (claims 1-4) are nothing more than a routine combination of **Wardlaw (US 2008/0282652) (Ex1004)** (modular hot work habitat with panels, connected together via VELCRO) with **Ferrante (US 5,713,089) (Ex1005)** (use of clamp-style hook-and-loop fasteners for edge connections) and the second set of claims (claims 5-12) simply add **Ballinger (US 3,715,843) (Ex1006)**'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 in this Petition and the opinions of Dr. Brookstein.

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

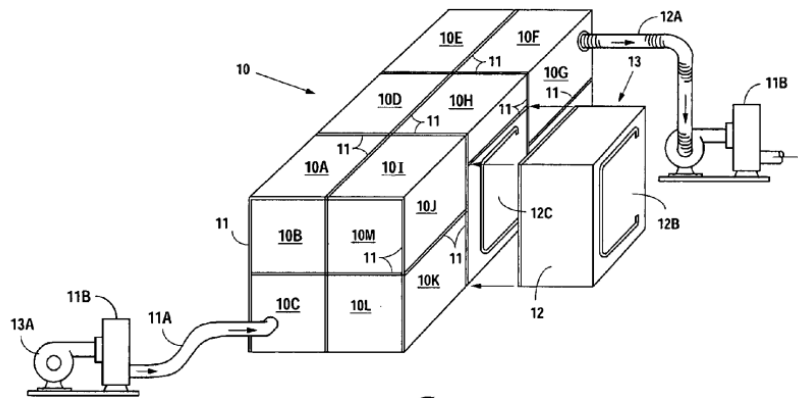
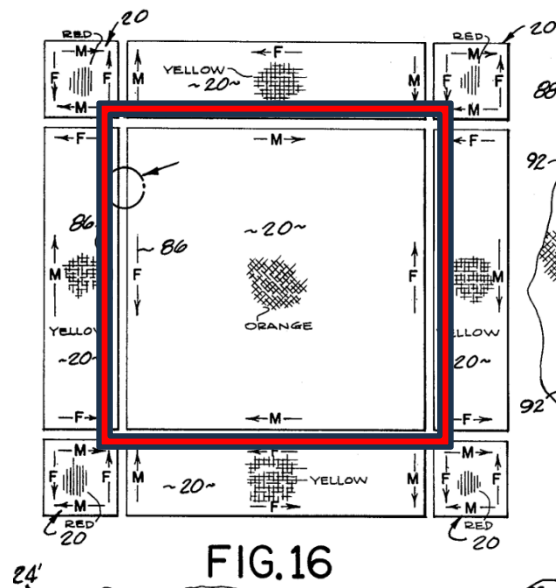
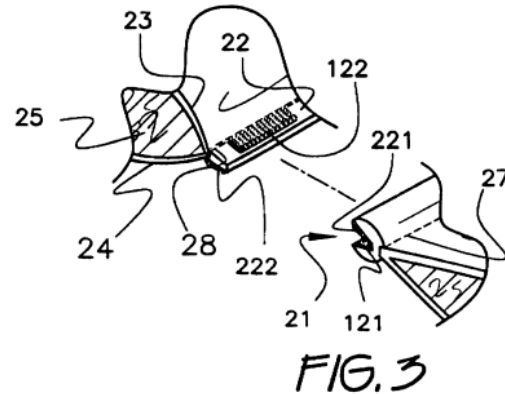
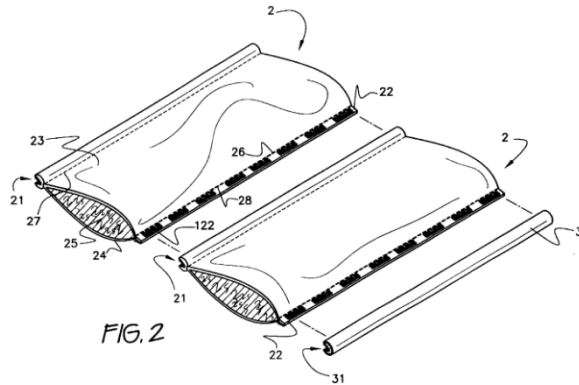


Fig. 1

Ballinger (US 3,715,843) provides a panelized structure of heat-resistant material with instructions on how to place cooperating male and female fasteners, namely **M** fasteners on two opposite edges of the panel and **F** fasteners on the remaining two opposite edges of the panel. **Ballinger's Fig. 16 (annotated):**



Ferrante (US 5,713,089) shows a clamp style hook-and-loop fastener with male and female connectors for connecting panels together.



No patent should have issued for such a routine combination of known and analogous prior art elements into a predictable and obvious assembly, such as that disclosed and claimed in the '775 patent.

II. THE '775 PATENT

A. Overview

The '775 patent is entitled, "Attachment Systems and Methods Usable to Form Enclosures." The abstract of the '775 patent describes a panel of a welding enclosure, including the clamp-style fasteners and 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.”

B. Prosecution History

As introduced above, like the claims of the ’775 patent, Wardlaw is directed to a pressurized modular welding habitat with panels connected together via VELCRO, and differs from the challenged claims only in how the VELCRO connectors on the panels are arranged. Wardlaw was made known to the Examiner during prosecution, but the Examiner failed to realize the proximity of Wardlaw to the claims under examination and therefore materially erred in not rejecting the applied-for claims over Wardlaw. *Ecto World, LLC v. RAI Strategic Holdings, Inc.*, IPR2024-01280, Paper 13 (PTAB May 19, 2025) (precedential as to § A); *Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 (PTAB Dec. 15, 2017) (precedential as to § III.C.5, first paragraph).

The prosecution of the ’775 patent was relatively brief. After an initial rejection (Ex1002, 130-33) and response (Ex1002, 96-107), the Examiner issued a final rejection and indicated that application claim 18, which recited “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, forms a seal adapted to maintain a pressure differential across opposing sides thereof” contained allowable subject matter. Ex1002, 73-79.

In response, Patent Owner amended independent application claim 8, which would issue as claim 1, to recite “wherein the engagement between the first panel and the second panel forms a seal adapted to maintain a pressure differential across opposing sides thereof” and amended application claim 12, which would issue as claim 5, to recite the limitations of application claim 18. Ex1002, 61-67. The Examiner then issued another final rejection. Ex1002, 49-54. Patent Owner successfully traversed the final rejection, and the Examiner allowed the application. Ex1002, 41-44; Ex1002, 14-15 (discussing references not at issue here).

Wardlaw, which was cited in an information disclosure statement, was never discussed by the Examiner or used in a rejection. MPEP § 609 (“Consideration by the examiner of the information submitted in an IDS means nothing more than considering the documents in the same manner as other documents in Office search files are considered by the examiner while conducting a search of the prior art in a proper field of search.”). However, by allowing the claims of the ’775 patent over Wardlaw, the Office erred in a manner that was material to the patentability of challenged claims. This Petition satisfies the second part of *Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6

(PTAB Feb. 13, 2020) (precedential) because Wardlaw was not a basis for rejection during examination, is not substantially the same as the prior art that the Examiner did apply during prosecution, and it includes specific teachings that “impact patentability of the challenged claims.” *Id.* at 8 n.9. In particular, like the challenged claims, Wardlaw is directed to a pressurized modular welding habitat with panels connected together via VELCRO, and differs from the challenged claims only in how the VELCRO connectors are arranged. Moreover, even though Wardlaw was known to the Examiner, the Examiner did not issue any prior art rejections based on Wardlaw during examination, so the Examiner materially erred by overlooking Wardlaw’s teachings. No reasonable Examiner could have found that Wardlaw does not teach a pressurized modular welding habitat with hook and loop (i.e., VELCRO) panel connections such as that recited in the challenged claims. *See, e.g.*, claims 1 and 5 (directed to an “enclosure); claim 4 (reciting that the panels are formed “at least partially of a heat resistant material.”).

Ferrante and Ballinger were not before the Examiner during prosecution.

III. LEVEL OF ORDINARY SKILL

A person of ordinary skill in the art (“POSITA”) relevant to the ’775 patent would be familiar with the technical field relating to methods of attachment (e.g., fasteners) and their uses (for example, to secure pieces of material together to form an enclosure). Ex1003, ¶21. A POSITA at the time of the invention 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. Ex1003, ¶23. Work experience can substitute for formal education and additional formal education can substitute for work experience. Ex1003, ¶23.

IV. CLAIM CONSTRUCTION

A. The Claim Terms Should All Be Given Their Ordinary Meanings

The Board construes claims under *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). 37 C.F.R. §42.100(b) (2018). 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. *Phillips*, 415 F.3d at 1314–19. Claims should only be construed to the extent necessary to resolve a controversy. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017). No claim terms need to be construed by the Board at this time, and all should be given their ordinary meanings to the extent they are not indefinite.

Certain elements of the claims are ambiguous and may be subject to indefiniteness challenges. For example, as discussed in more detail below, dependent claims 6 and 7 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, the claim recites “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.” Neither the claims nor the specification of the ’775 patent disclose or explain the magnitude of the “distance” of the offset, thus creating a question of whether these claims establish the boundaries of the invention with reasonable certainty as required under 35 U.S.C. § 112(b). However, under long-established precedent, if prior art may be applied, §112 defects will not prevent a separate determination of obviousness. *Ex parte Tanksley*, 26 USPQ2d 1384, 1387 (BPAI 1991) (reaching merits where claim meaning was sufficiently clear to apply the prior art); *accord Samsung Elecs. Am. v. Prisia Eng’g*, 948 F.3d 1342, 1355 (Fed. Cir. 2020) (“[T]hat the claim is subject to invalidation on the ground of indefiniteness ... does not speak to whether the claim is also invalid for obviousness”).

B. The Petition Includes Alternate Grounds To Address Two Possible Interpretations of “First Portion” and “Second Portion”

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,” there are

four claimed sides or surfaces. Petitioner reserves the right to assert in District Court litigation that these claims are indefinite.

As addressed in Grounds 1 and 2 below, Petitioner’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 each be the same *type* of portion of a fastening medium. Similarly, the claims do not recite that the second portions must each be the same *type* of portion of a fastening medium. For the purposes of this IPR, Petitioner interprets the claims to allow for two “first portions” respectively interacting with two “second portions,” and presents Grounds 1 and 2 based on this interpretation.

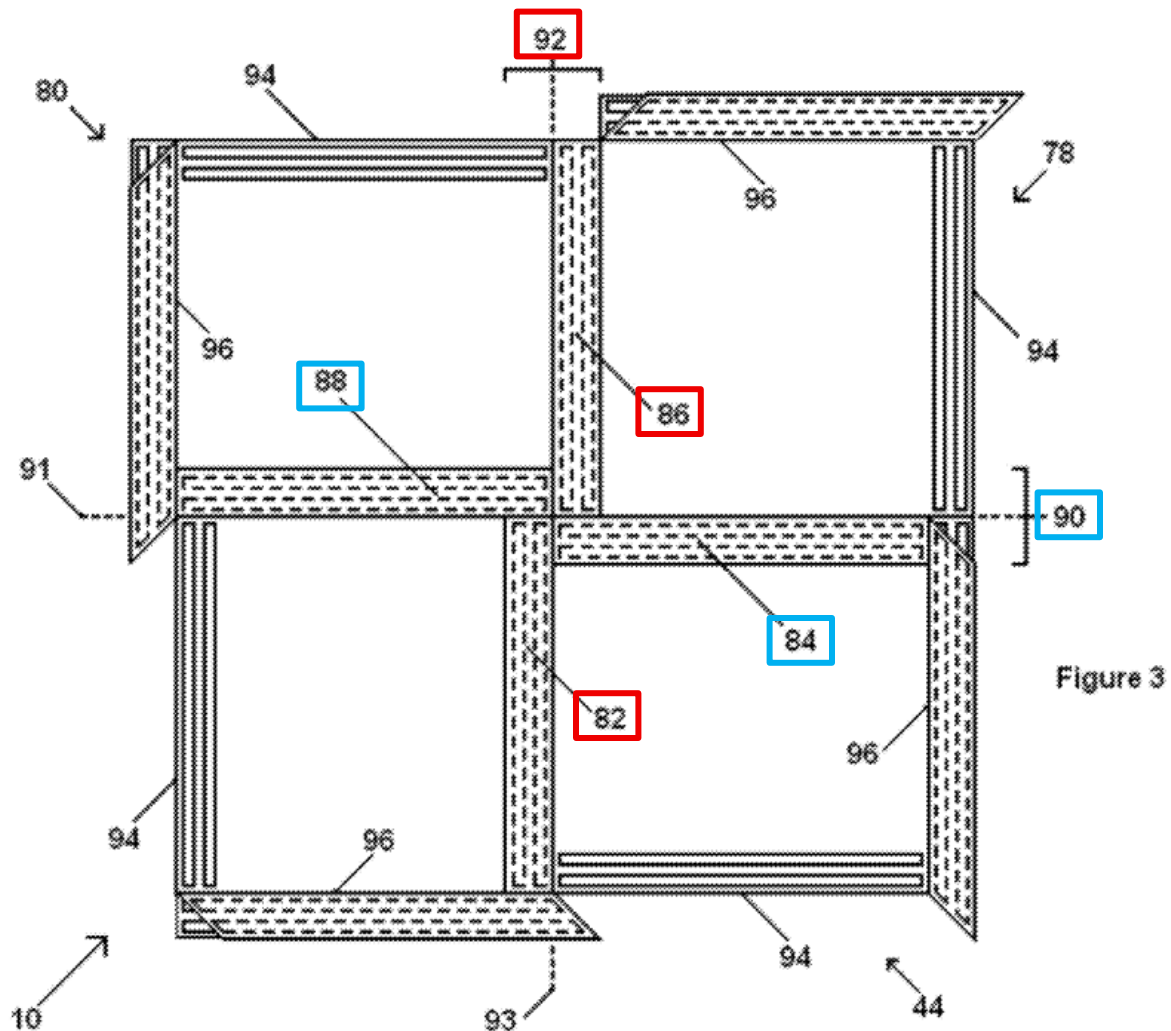
Nevertheless, to the extent that Patent Owner argues that the “first portions” must all be the same type of fastener (*e.g.*, hooks), and that the “second portions” must also be the same type of fastener (*e.g.*, loops), Petitioner presents alternative Ground 1A and 2A. These alternatives, Ground 1A and 2A, address how the challenged claims are unpatentable even if Patent Owner argues to add an unclaimed “type” requirement 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.”

C. The Petition Applies a Plain & Ordinary Meaning of “Offset” in Claims 6 and 7

Also, as introduced above, dependent claims 6 and 7 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, the claim recites “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.”

Petitioner understands these recitations to be described in the ’775 patent with respect to the embodiment shown in Fig. 3, reproduced below:



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.

Neither the claims nor the specification of the '775 patent disclose or explain the magnitude of the “distance” of the offset. Ex1003, ¶57. Rather, the '775 patent distinguishes an offset from a situation where engagements are “in linear alignment with one another.” '775 patent, 10:31-34. 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. Given this disclosure, 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. *See, e.g., Sigray, Inc. v. Carl Zeiss X-Ray Microscopy, Inc.*, 137 F.4th 1372, 1380 (Fed. Cir. 2025) (“The plain meaning of “between 1 and 10” includes tiny, even undetectable, magnification, and Zeiss has pointed to nothing compelling a contrary conclusion.”); *see also* Ex1003, ¶57. Similarly, the plain

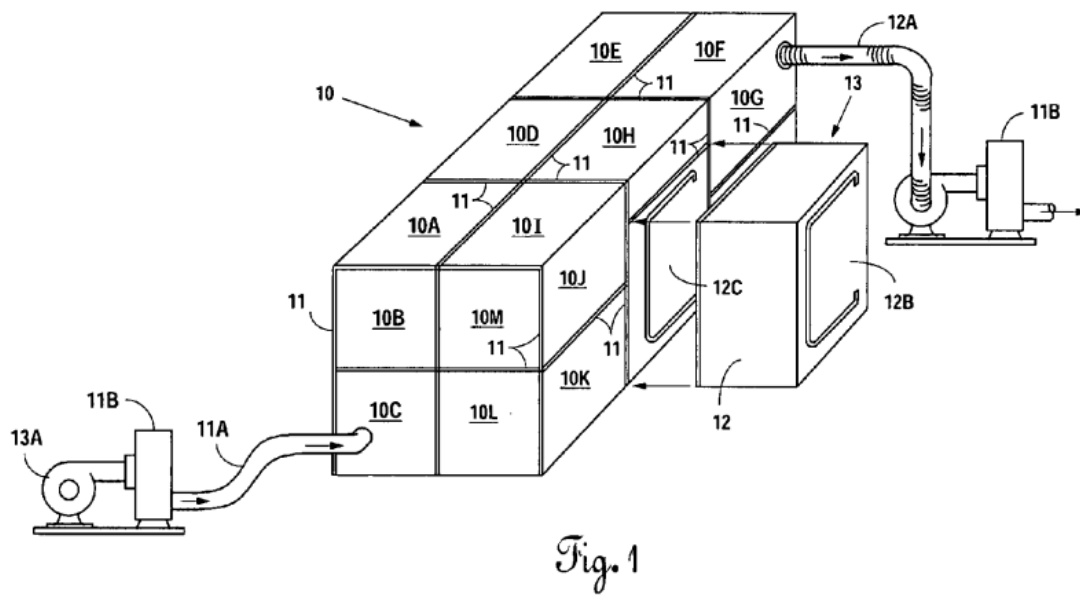
meaning of “offset,” without disclosed or claimed quantitative measures of offset, includes tiny, even undetectable, offset. Ex1003, ¶57. Petitioner adopts this interpretation for the purposes of this IPR, but reserves the right to assert in District Court litigation that these claims are indefinite for failure to establish the metes and bounds of the invention.

V. CLAIMS 1–12 ARE UNPATENTABLE OVER THE PRIOR ART

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

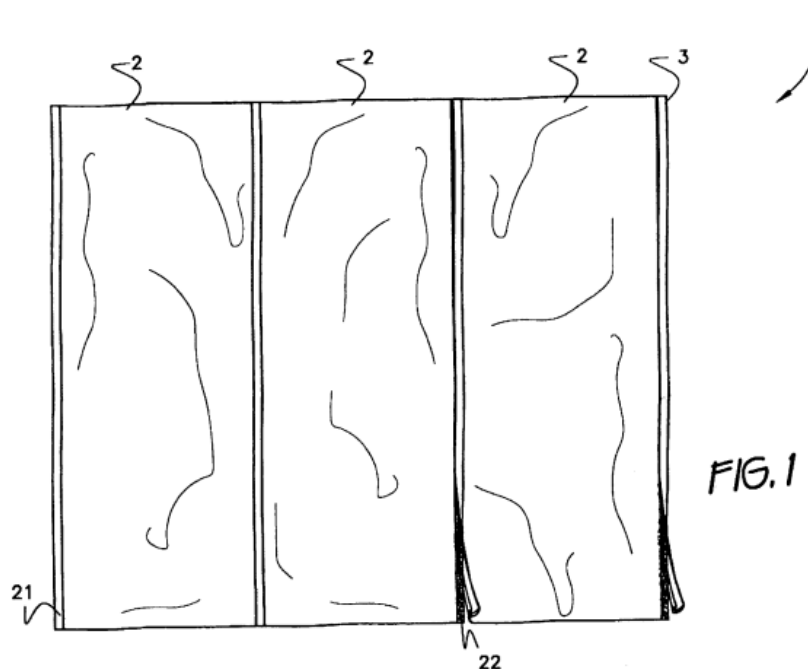
1. Wardlaw

Wardlaw is analogous art to the '775 patent because Wardlaw discloses a “modular welding ... enclosure unit.” Wardlaw, [0017]; Ex1003, ¶65. 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):

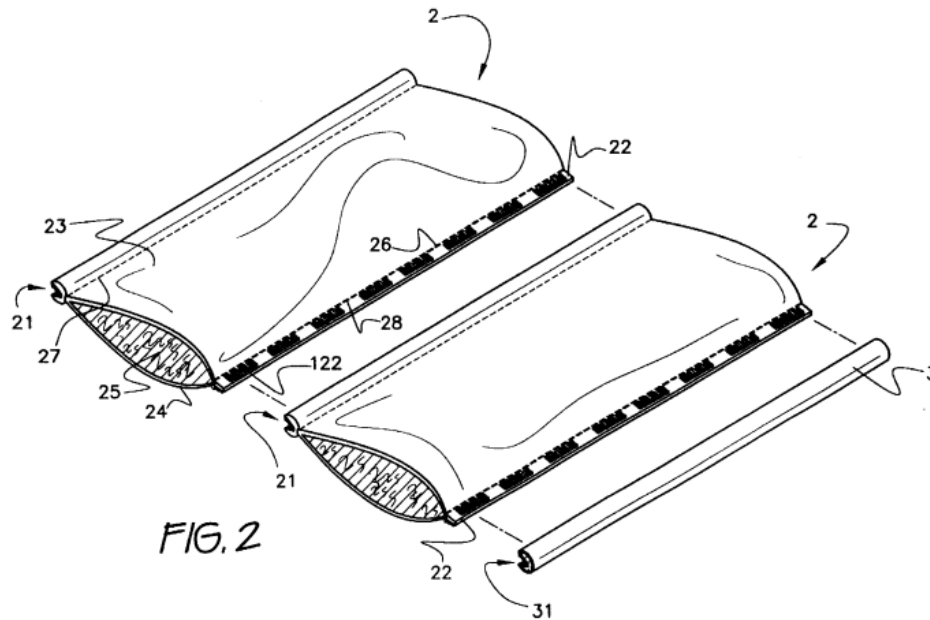


2. Ferrante

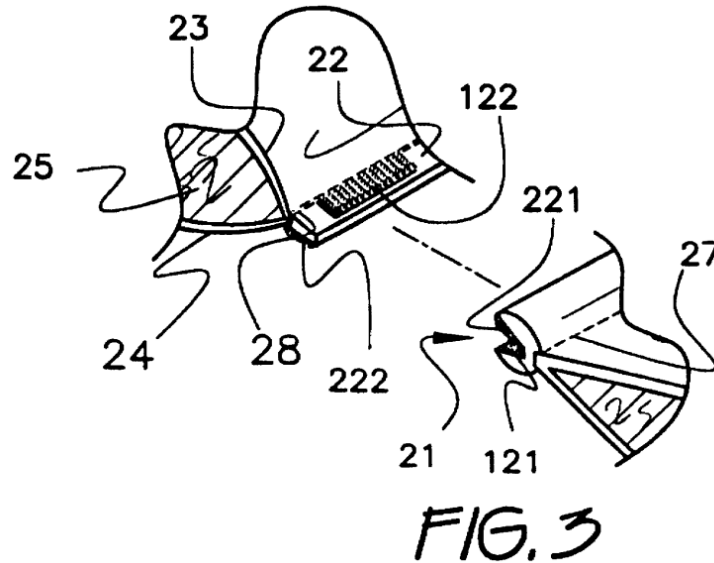
As shown in Fig. 1 of Ferrante, Ferrante discloses a “modular quilted blanket 1 that includes a plurality of panel sections 2 and a capping strip 3” (Ferrante, 2:65-67):



As shown in Fig. 2, “[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):



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):



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 Fig. 2 and 3) or continuously. Ferrante, 3:35-39.

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.

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.”).

3. Motivation to Combine Wardlaw and Ferrante

As discussed by Dr. Brookstein, 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. Ex1003, ¶71.

Ferrante is analogous art to Wardlaw as Wardlaw does not provide details concerning the construction of its hook-and-loop fasteners needed to fasten its modular panels together. Ex1003, ¶72. A POSITA therefore would have looked to known techniques to securely attach modular panels together, such as disclosed in Ferrante. Ex1003, ¶72. Wardlaw expressly calls for the use of hook-and-loop fasteners, thus making Ferrante very pertinent to Wardlaw. Wardlaw, [0026]; Ex1003, ¶71-72.

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; Ex1003, ¶73. 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. Ex1003, ¶73. 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 called for by Wardlaw with the more secure tongue-and-groove clamping fastener of Ferrante. Ex1003, ¶73.

Additionally, as Dr. Brookstein opines, 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. Ex1003, ¶74.

Such a combination of these references render obvious the claims of the ’775 patent as discussed below. Ex1003, ¶75.

4. Independent Claim 1: [1.pre] “An enclosure comprising:”

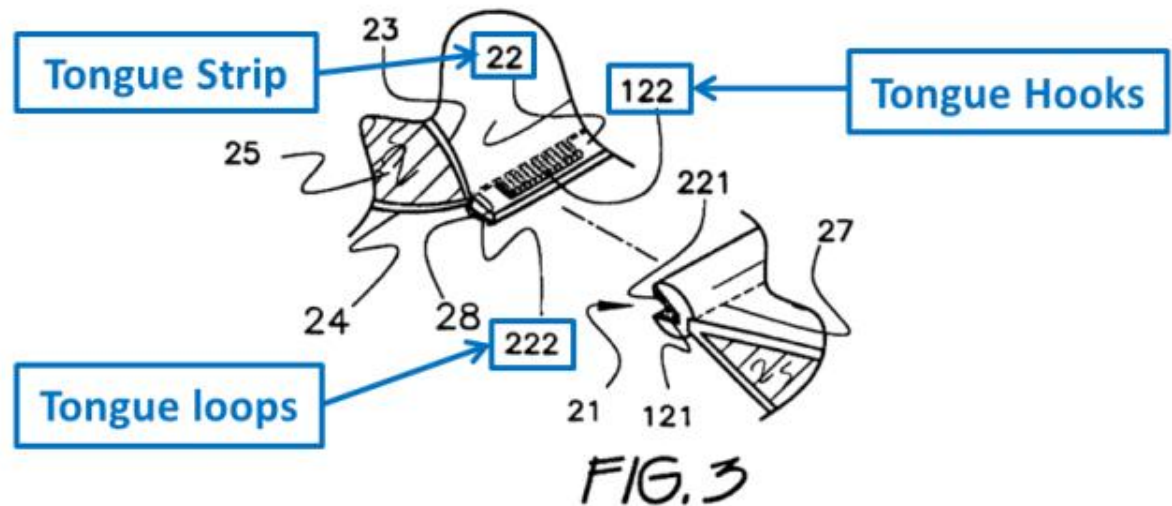
To the extent that the preamble is limiting, the combination would include “an enclosure.” Wardlaw, [0017]. Wardlaw expressly discloses a “modular welding ... enclosure unit.” *Id.*; Ex1003, ¶76.

- a) [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”**

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”:

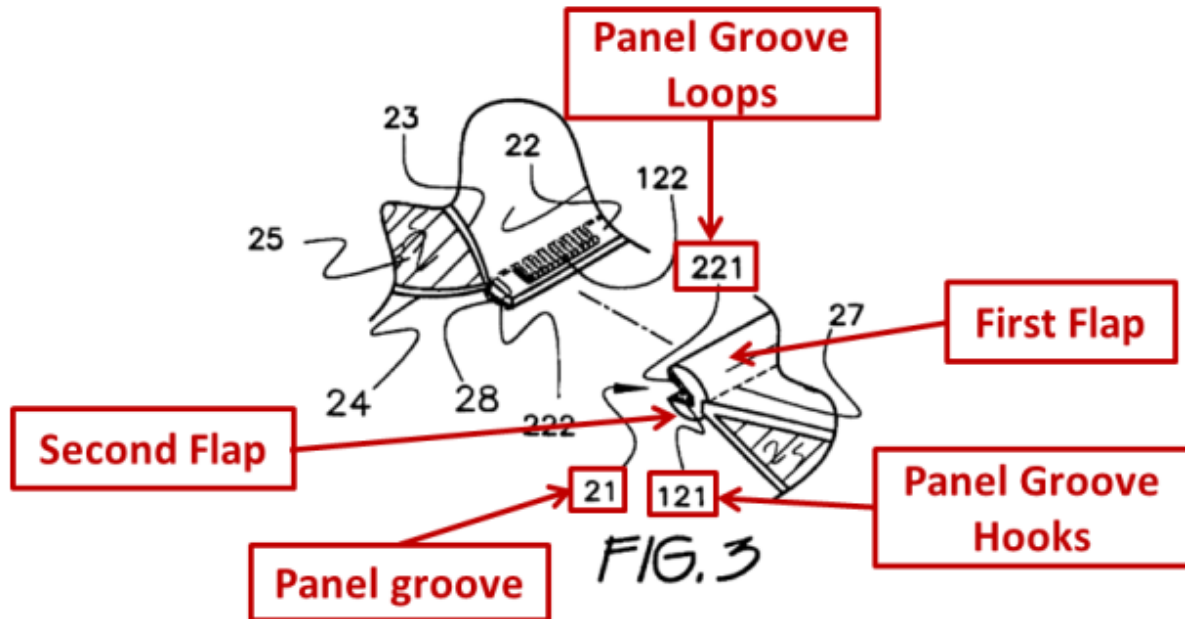


The combination would also include, on each side of the tongue, a portion of a hook and loop fastener, as Ferrante discloses placing a portion of a hook and loop fastener on each side of its tongue (front and rear), meeting the requirement of “the front side and the rear side each comprise a first portion of a fastening medium thereon.” Ex1003, ¶¶77-78.

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

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:

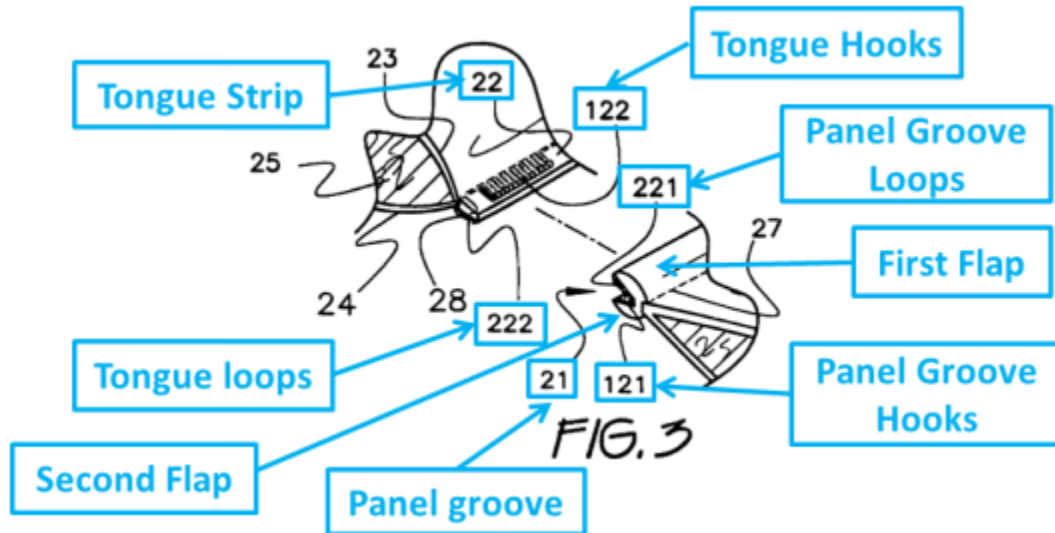


Ex1003, ¶79.

- c) [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,”

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:



Ex1003, ¶80.

- d) [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.”

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 absolutely 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." Ex1003, ¶81.

5. 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."

The combination discloses this element for the same reasons stated with regard to element [1.d]. Ex1003, ¶82.

6. 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."

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"). Ex1003, ¶83.

7. 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."

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-M 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.”). Ex1003, ¶84.

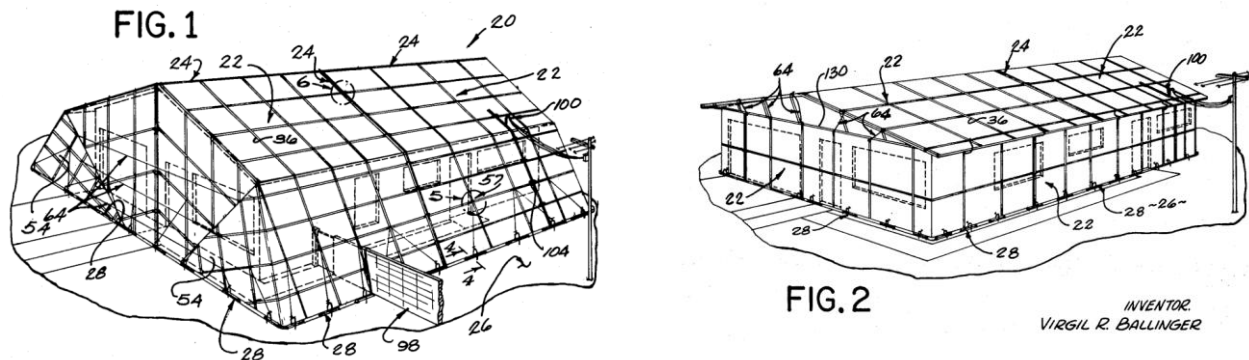
B. Ground 2: The Combination of Wardlaw, Ferrante, and Ballinger Renders Obvious Claims 1-12

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. Ex1003, ¶85. Ballinger, in combination with the Ground 1 art addressed above, renders obvious each challenged claim. Ex1003, ¶85.

1. Ballinger

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.

The protective cover of Ballinger is modular, allowing it to cover structures of various sizes. Ex1003, ¶87. For example, as shown in Figs. 1 and 2 of Ballinger, walls of the enclosure can include four or more modular panels.



residential building lying within a predetermined range of sizes and shapes.”

Ballinger, 3:42-51; *see also* Ex1003, ¶87.

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):

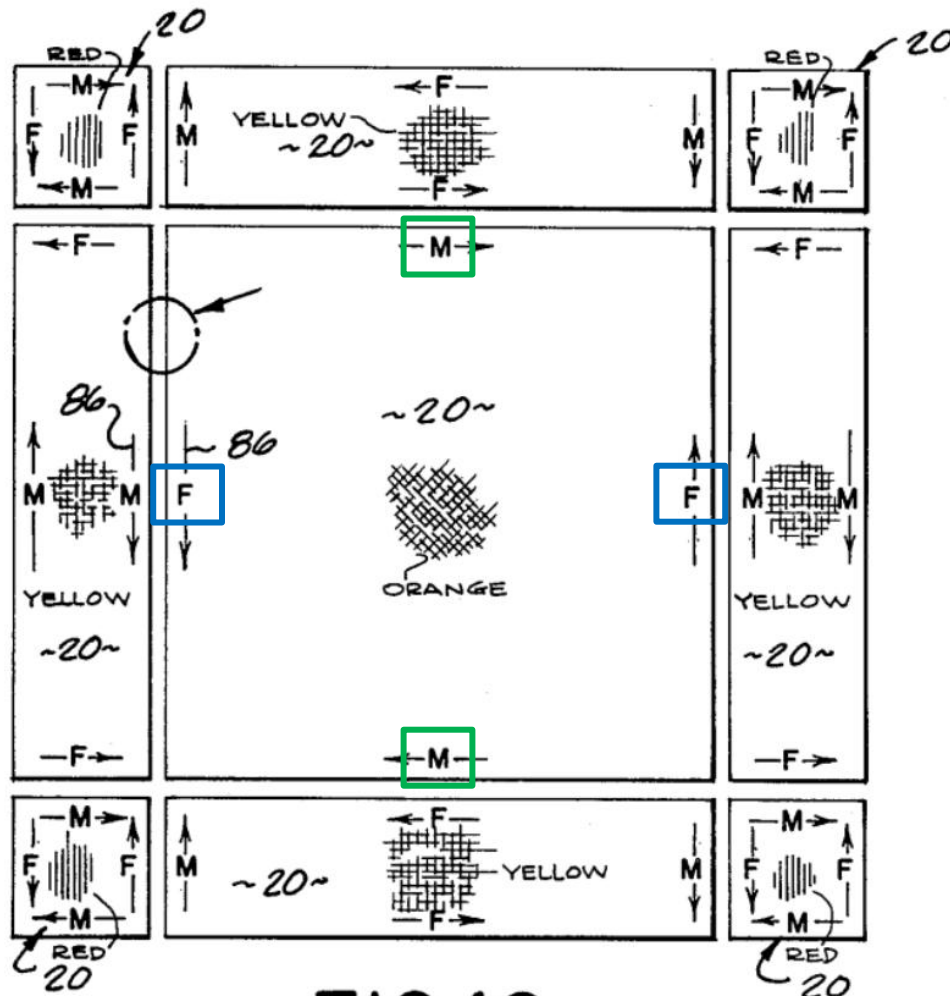


FIG. 16

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).

Ex1003, ¶88. 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.

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):

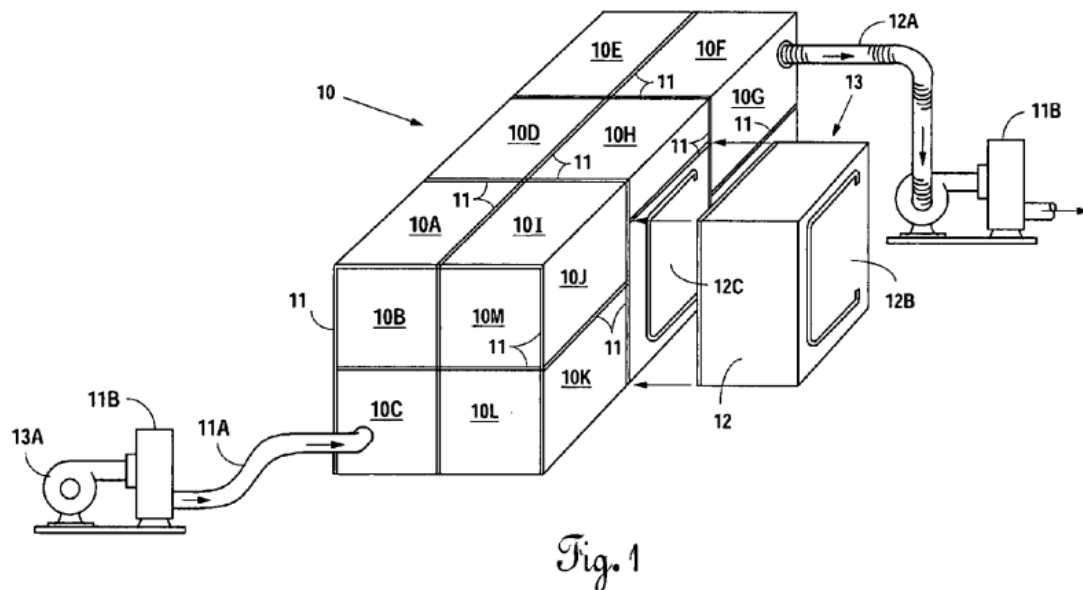
The above-described exemplary arrangement is such that irrespective of how the panel portions are assembled, provided that the blue and green edge junction coding and identification means are always positioned adjacent to each other, it will be found that the ***adjacent junction elements will always 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*.

2. Motivation to Combine Wardlaw, Ferrante, and Ballinger

As noted above in Ground 1, 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. Ex1003, ¶92.

A POSITA would have recognized that Wardlaw discloses an enclosure with multiple panels on the walls of the enclosure and would seek improvements to fasten multiple panels together. Ex1003, ¶93.



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.

Ballinger is analogous art to Wardlaw because both Wardlaw and Ballinger disclose modular enclosures of heat-resistant material, constructed using multiple panels on a wall. Ex1003, ¶95. A POSITA would therefore look to techniques to attach multiple modular panels together, such as disclosed in Ballinger. Ex1003, ¶95. The fact that Ballinger also contemplates hook and loop fasteners makes it very pertinent to Wardlaw, since Wardlaw expressly calls for the use of hook and loop fasteners and has multiple panels on the walls of the enclosure. Wardlaw, Fig. 1, [0026]; Ex1003, ¶65. 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. Ex1003, ¶95.

As Dr. Brookstein explains, 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. Ex1003, ¶96.

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; Ex1003, ¶96. 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. Ex1003, ¶96.

Such a combination would render obvious the claims of the ’775 patent as discussed below. Ex1003, ¶97.

3. Independent Claim 1: [1.pre] “An enclosure comprising:”

To the extent that the preamble is limiting, the Ground 2 combination discloses this feature for the same reasons presented above in Ground 1. Ex1003, ¶98.

- a) [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”**

The Ground 2 combination discloses this feature for the same reasons presented above in Ground 1. Ex1003, ¶99.

- b) [1.b] “a second panel having a female edge with a first flap and a second flap extending therefrom,

The Ground 2 combination discloses this feature for the same reasons presented above in Ground 1. Ex1003, ¶100.

- c) [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,”

The Ground 2 combination discloses this feature for the same reasons presented above in Ground 1. Ex1003, ¶101.

- d) [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.”

The Ground 2 combination discloses this feature for the same reasons presented above in Ground 1. Ex1003, ¶102.

4. 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.”

The Ground 2 combination discloses this feature for the same reasons presented above in Ground 1. Ex1003, ¶103.

5. 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.

The Ground 2 combination discloses this feature for the same reasons presented above in Ground 1. Ex1003, ¶104.

6. 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.”

The Ground 2 combination discloses this feature for the same reasons presented above in Ground 1. Ex1003, ¶105.

7. Independent Claim 5: [5.pre] “An enclosure comprising:”

To the extent that the preamble is limiting, the combination includes “an enclosure.” Wardlaw, [0017]; Ex1003, ¶106.

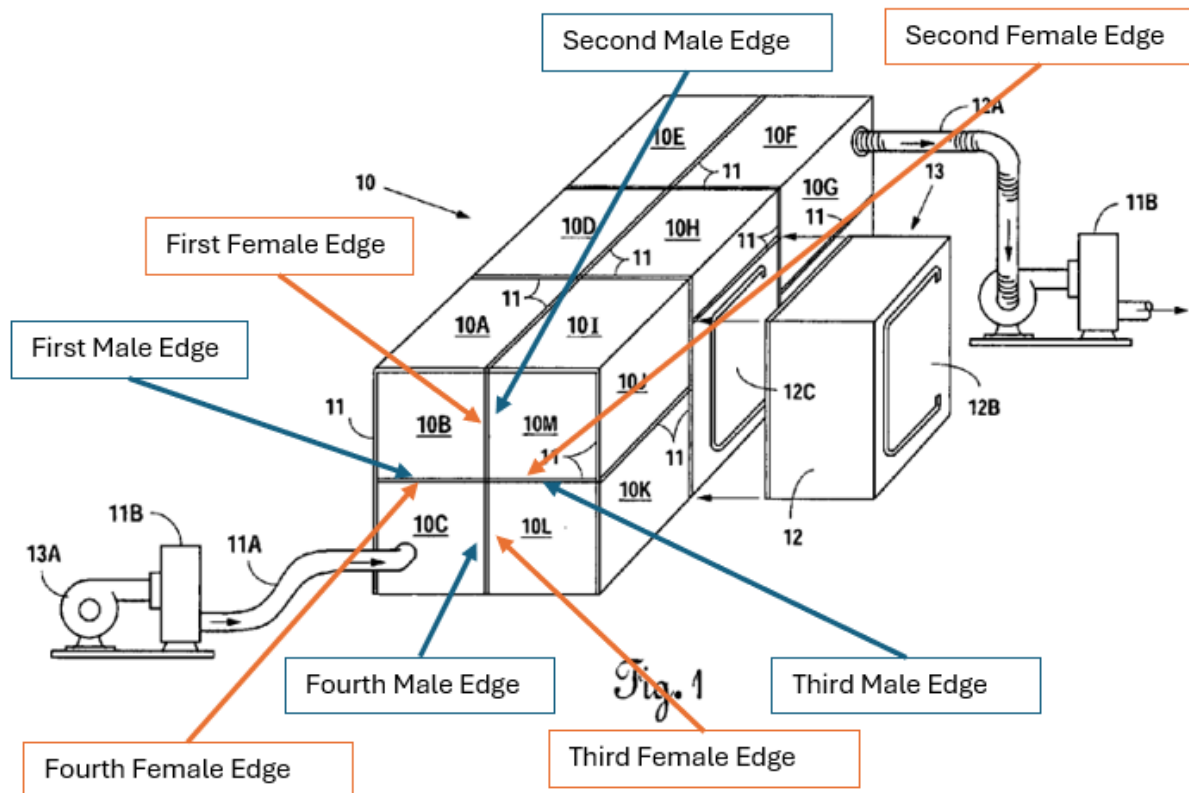
a) [5.a] “a wall comprising a first panel, a second panel, a third panel, and a fourth panel,”

The combination includes walls with four panels, such as those disclosed in Fig. 1 of Wardlaw and Figs. 1 and 2 of Ballinger. Ex1003, ¶107.

b) [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,”

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. Ex1003, ¶108.



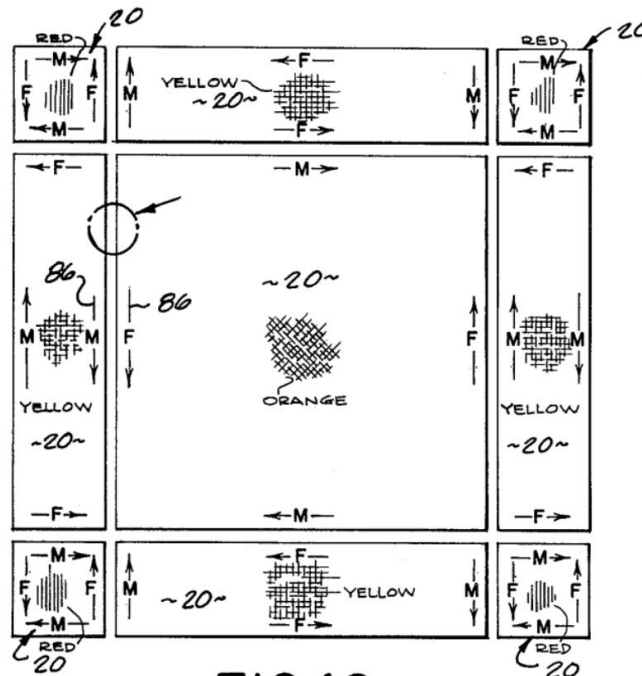


FIG.16

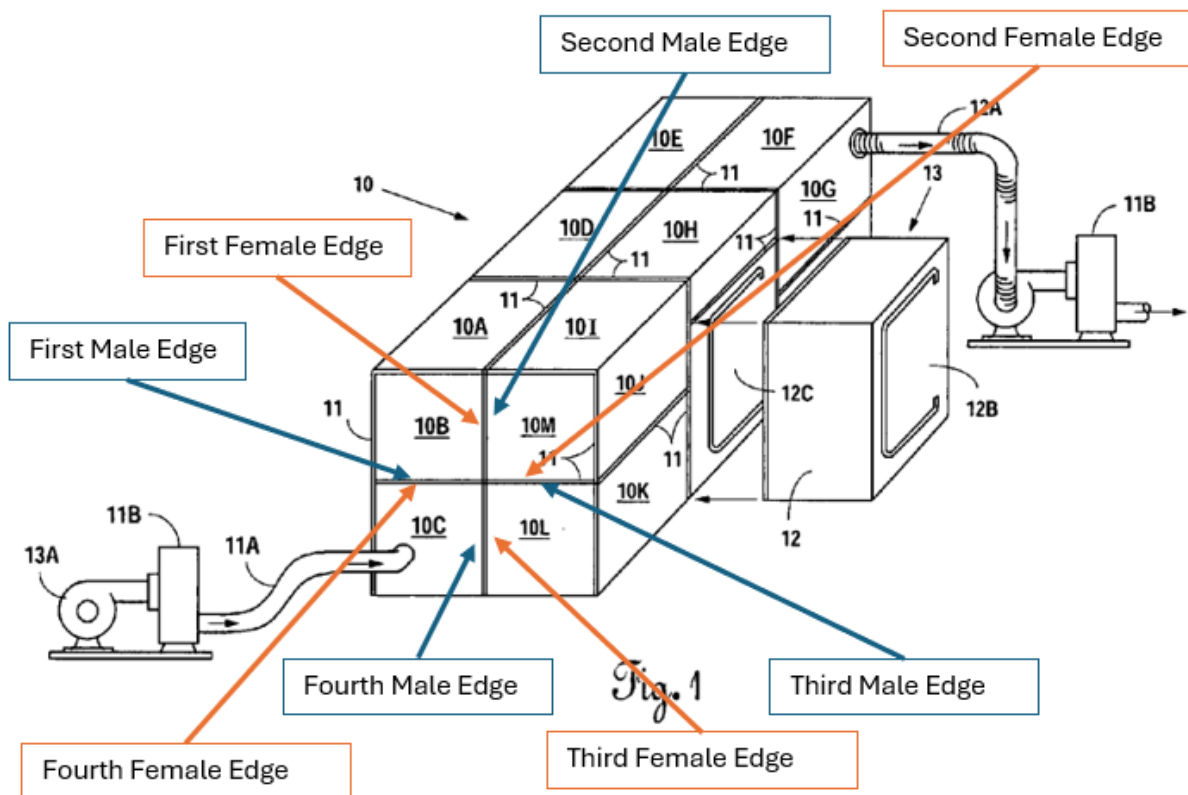
Ex1003, ¶109,

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. Ex1003, ¶110.

- c) [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,”

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. Ex1003, ¶111.



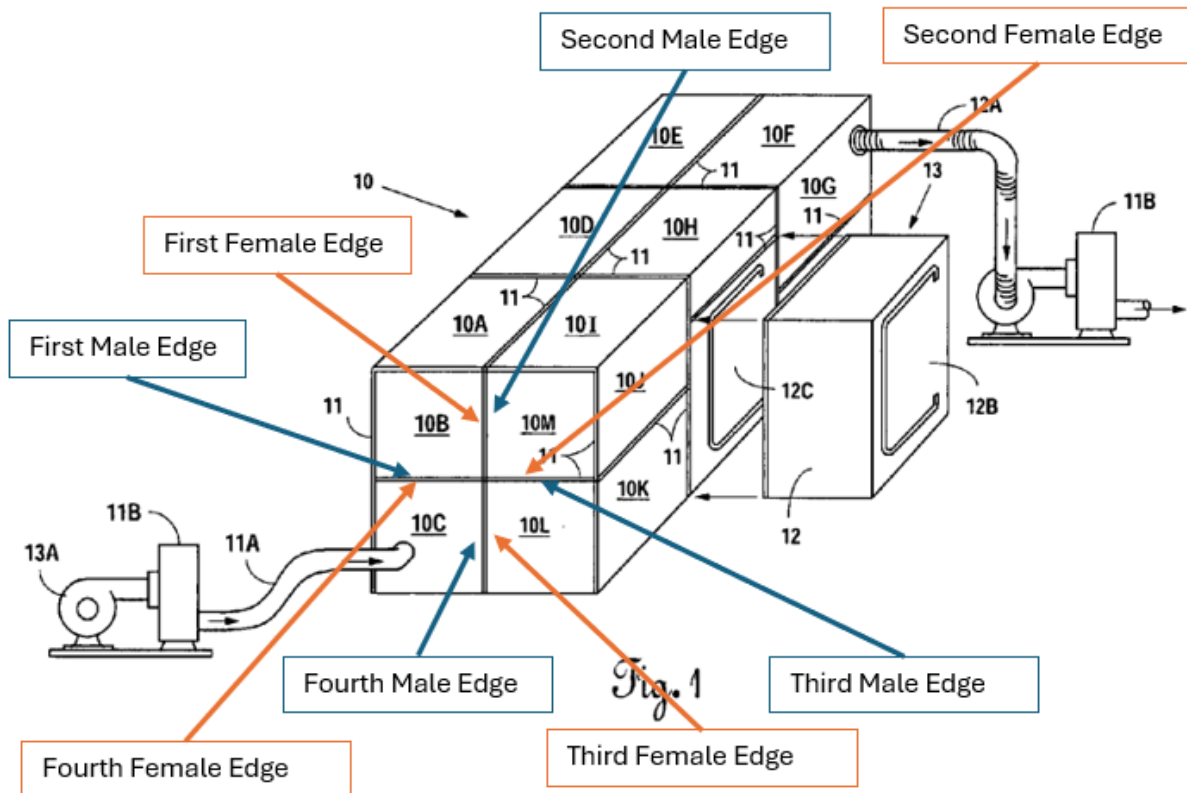
As to the additional recitations in element [5.c] concerning the male and female edges, such features would be present in the combination for the same

reasons as stated above for elements [1.a] to [1.c] of Ground 1 and element [5.b] of Ground 2. Ex1003, ¶112.

- d) **[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,”**

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

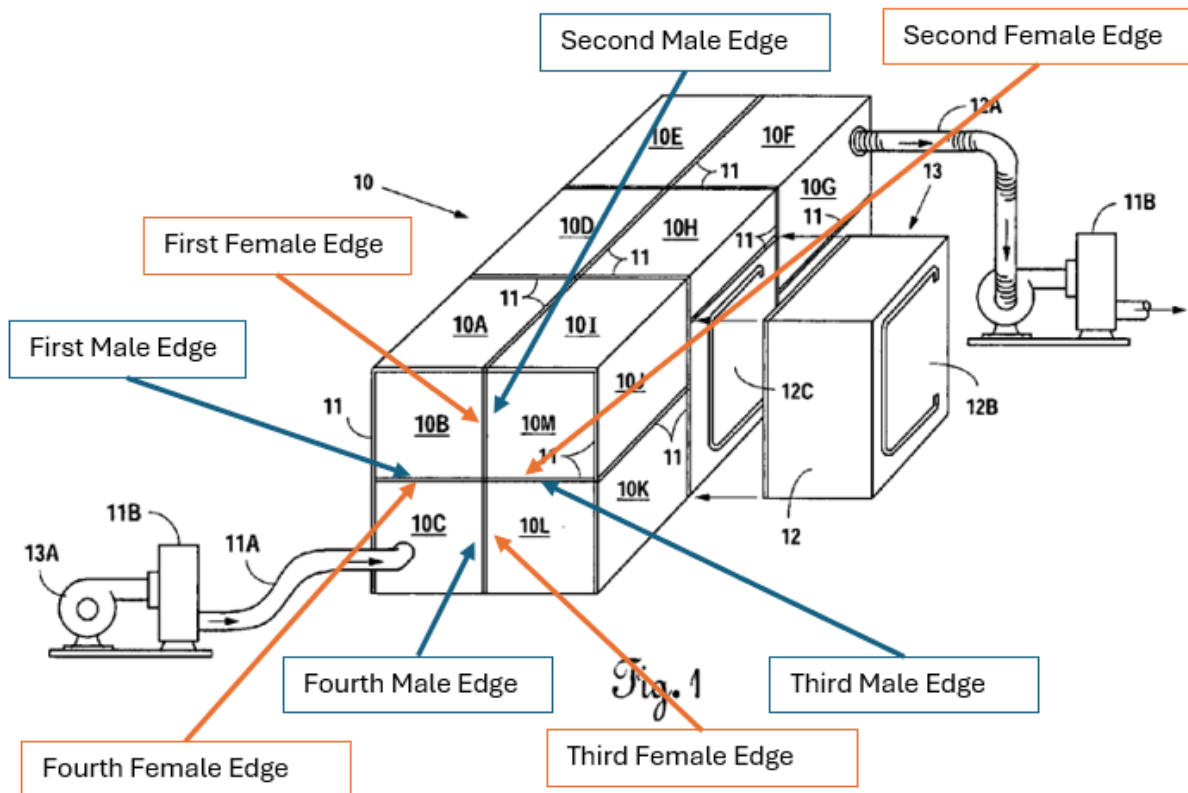
have a third male edge and a third female edge.



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. Ex1003, ¶¶113-114.

- e) [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,”

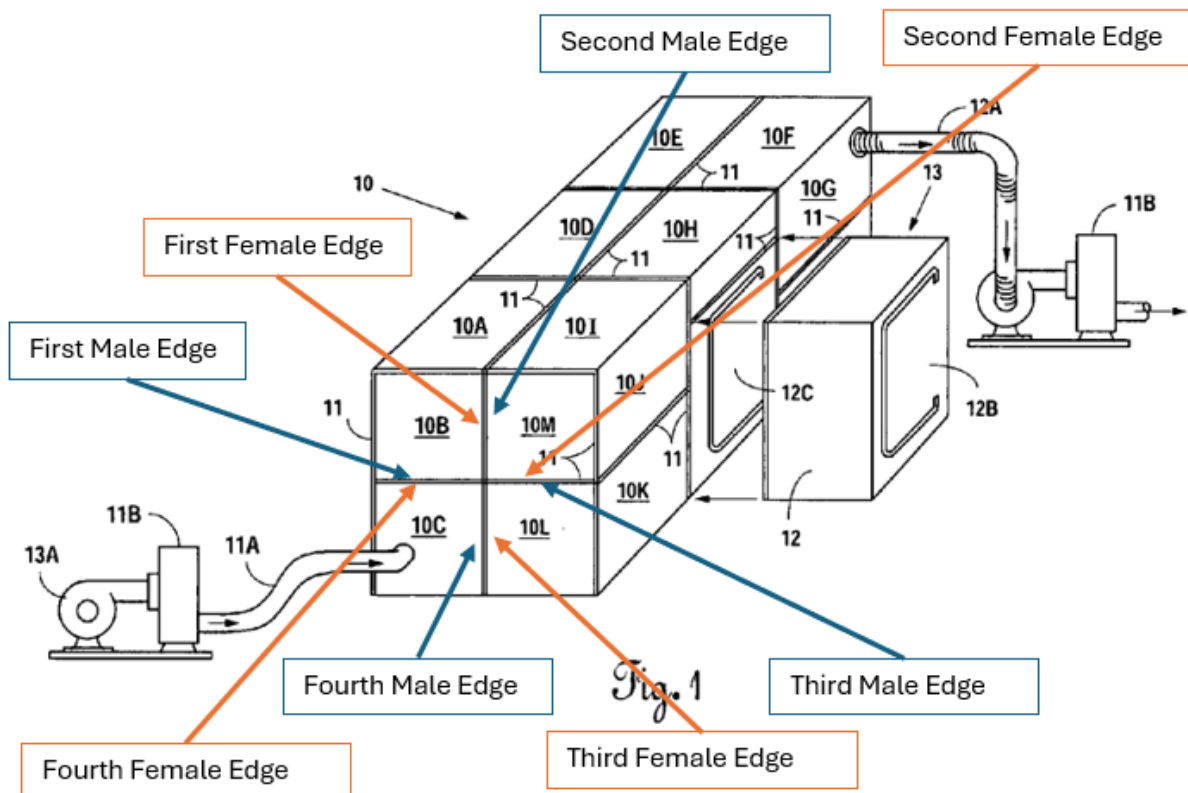
As noted with regard to element [5.b], the combination discloses elements [5.b] to [5.f] as a quadrant of any four adjacent panels on a wall would include the male and female edges engaged as recited in elements [5.b] to [5.f]. For example, as shown in annotated Fig. 1 of Wardlaw as modified by Ballinger 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.



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. Ex1003, ¶¶115-116.

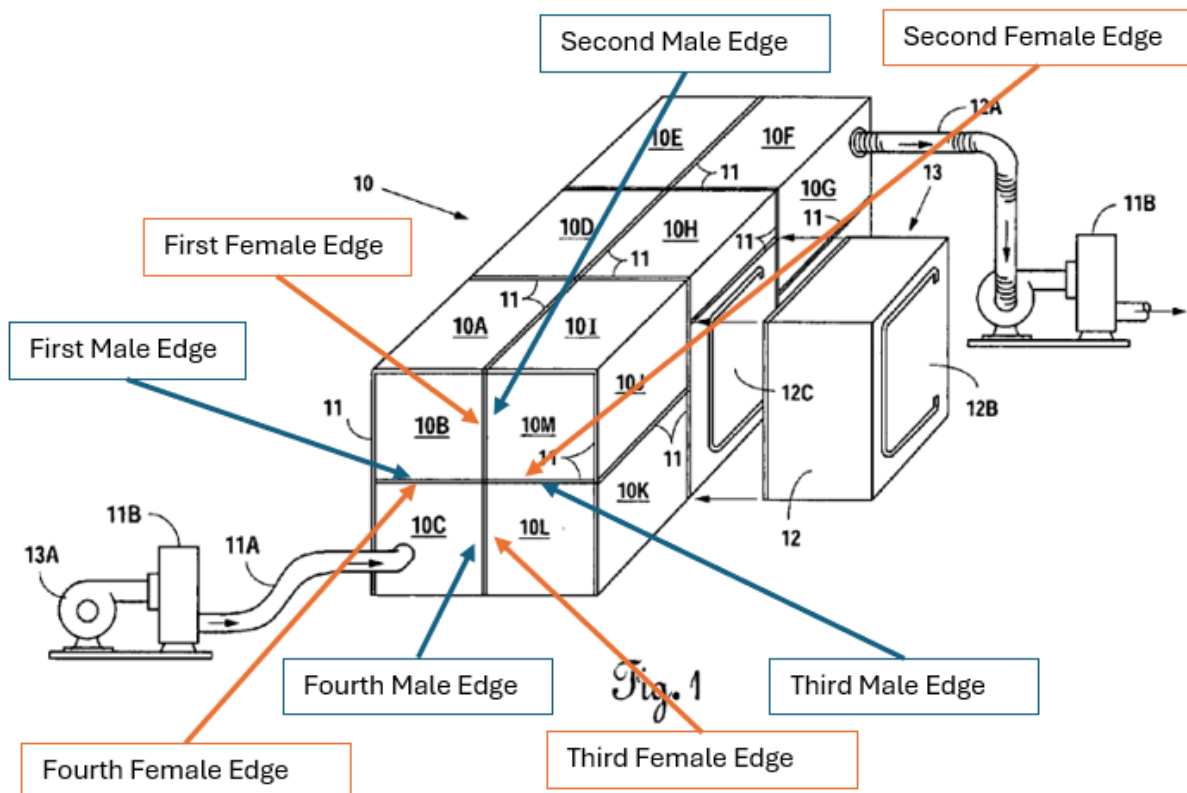
f) [5.f.i] “wherein the second panel is engaged with the first panel via engagement between the first female edge and the second male edge,”

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. Ex1003, ¶117.



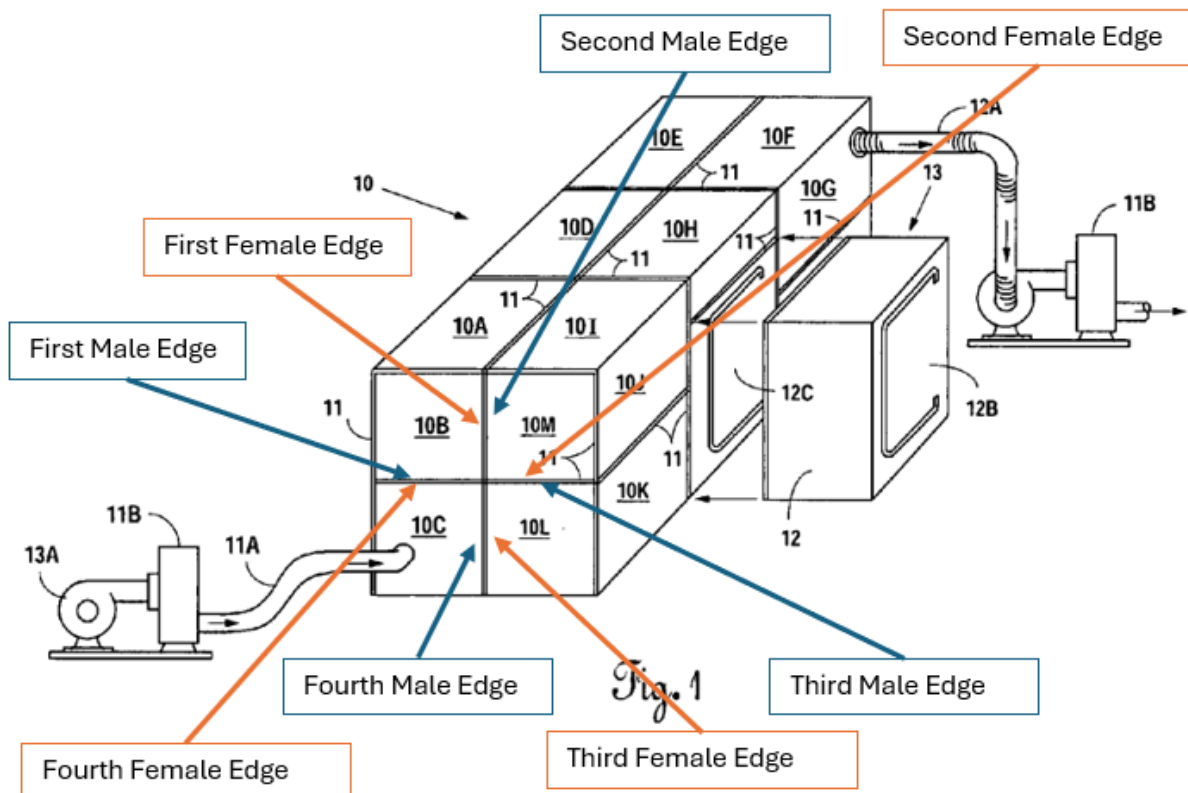
g) [5.f.ii] “wherein the third panel is engaged with the second panel via engagement between the second female edge and the third male edge,”

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. Ex1003, ¶118.



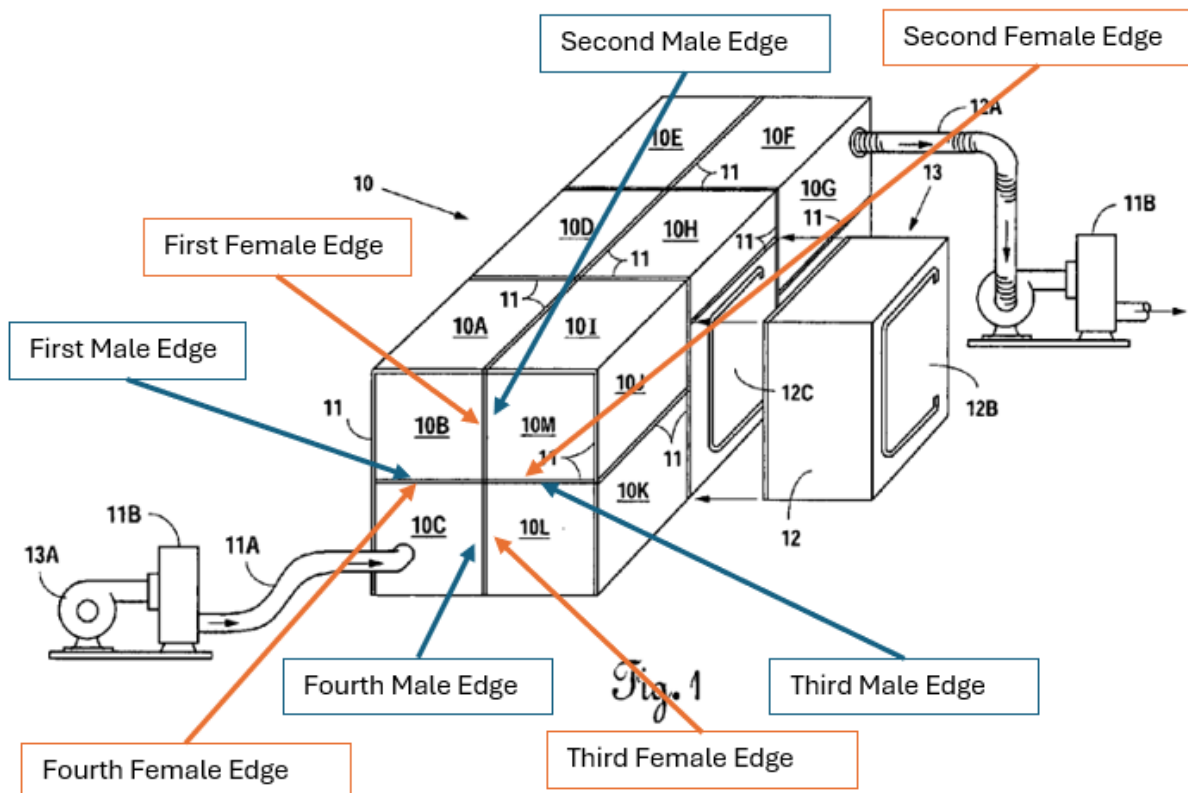
- h) [5.f.iii] “wherein the fourth panel is engaged with the third panel via engagement between the third female edge and the fourth male edge, and”

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. Ex1003, ¶119.



- i) [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”

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. Ex1003, ¶120.



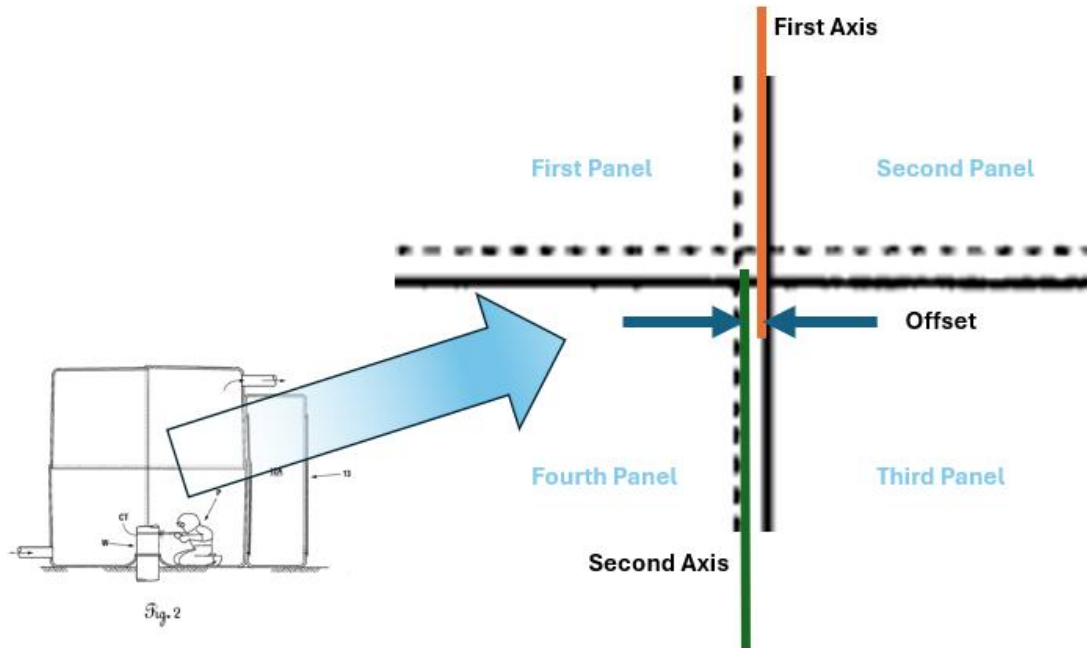
- j) **[5.g] “wherein the engagement between the first panel and the second panel, engagement between the second panel and the third panel, engagement between the third panel and the fourth panel, engagement between the fourth panel and the first panel, or combinations thereof, forms a seal adapted to maintain a pressure differential across opposing sides thereof.”**

Similar to element [1.d] in Ground 1, the combination would have engagements to 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-M forming the unit 10 do not have to be absolutely 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.” Ex1003, ¶121.

- 8. 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.”**

The combination would render obvious the claimed “overlapping engagement.” As Dr. Brookstein explains, 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. Ex1003, ¶122.

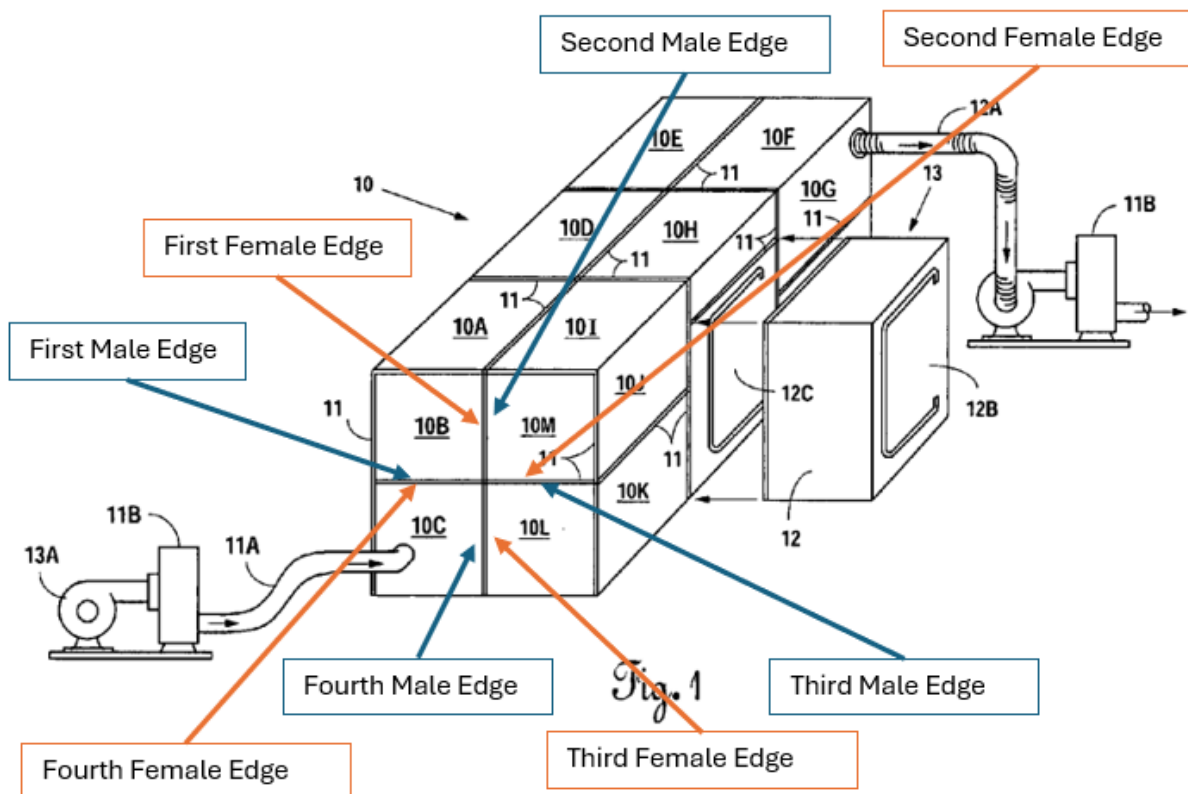
As shown in the annotated copy of Fig. 2 of Wardlaw (with annotated zoom), the combination would include a first axis (orange) and a second axis (green) with points on each axis that overlaps engagement points between the first panel and second panel and the third panel and fourth panel, respectively. As shown, such axes are perpendicularly offset to form an overlapping engagement between a first portion of the wall and a second portion of the wall. Ex1003, ¶123.



In addition, as explained by Dr. Brookstein, 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. Ex1003, ¶¶124-125. 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. Ex1003, ¶126. 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.

Ex1003, ¶126. Moreover, as Dr. Brookstein explains, a POSITA would have understood that hook-and-loop fasteners allow for connectivity in non-linear fashion, and this is actually an 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. Ex1003, ¶126.



As Dr. Brookstein also explains, a POSITA would know that not perfect linear alignment, like that shown below would have a relatively minor effect on the adhesiveness of the hook and loop fastening system. Ex1003, ¶127. 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. Ex1003, ¶127.

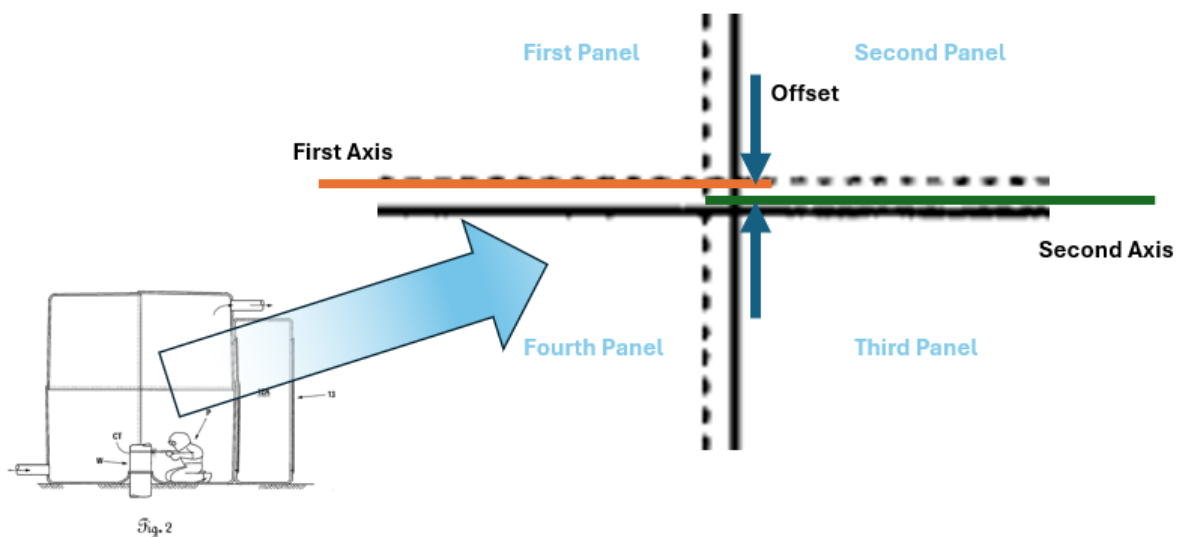
Dr. Brookstein also explains the obviousness of avoiding construction elements that have seams or bonds that are perfectly linear. Ex1003, ¶128. As he explains, construction by “bricking,” or offsetting adjacent seams of a wall such as by staggering the positioning of vertical seams of adjacent courses 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 these common engineering principles of avoiding seams that are perfectly aligned, as would have been understood by a POSITA. Ex1003, ¶128.

9. 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.”

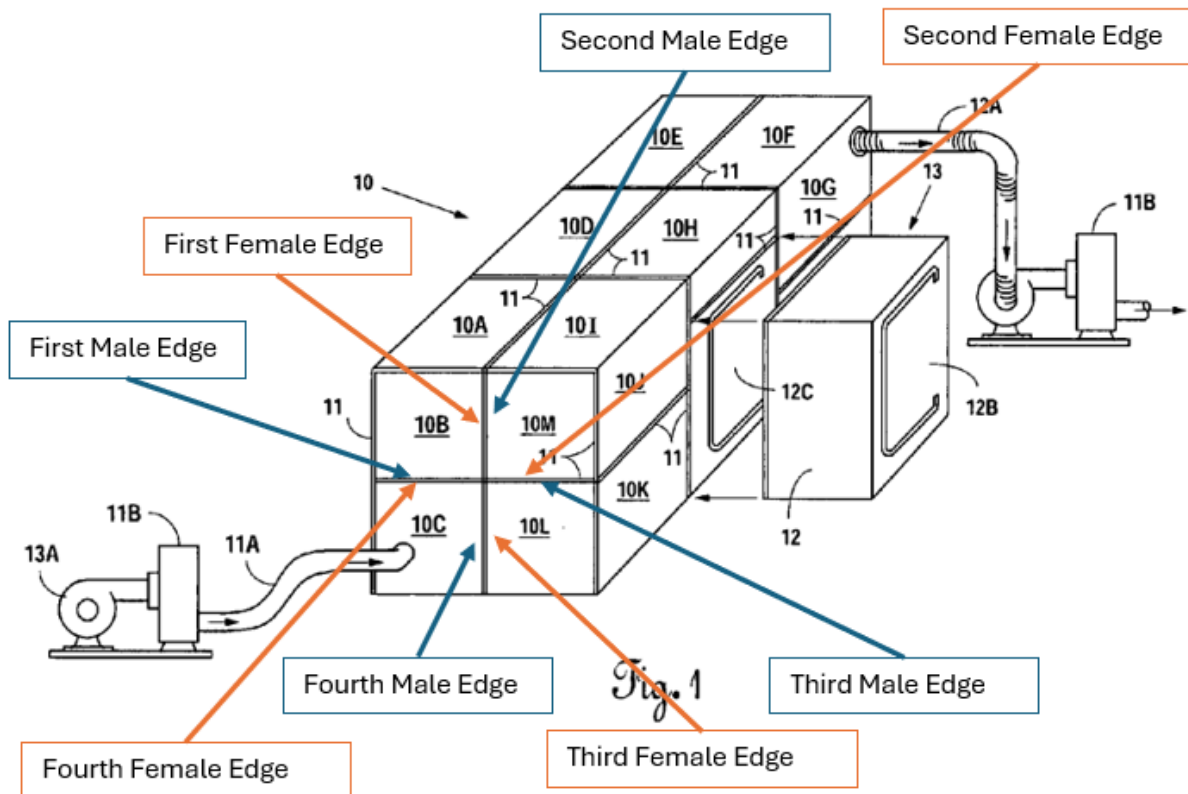
The combination would render obvious the claimed “overlapping engagement” of claim 7 obvious, as claim 6 is similar to claim 7, and rendered obvious by the combination for the same reasons as stated above concerning claim 6. Ex1003, ¶129.

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. Ex1003, ¶130.

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 axes are perpendicularly offset to form an overlapping engagement between a first portion of the wall and a second portion of the wall. Ex1003, ¶131.

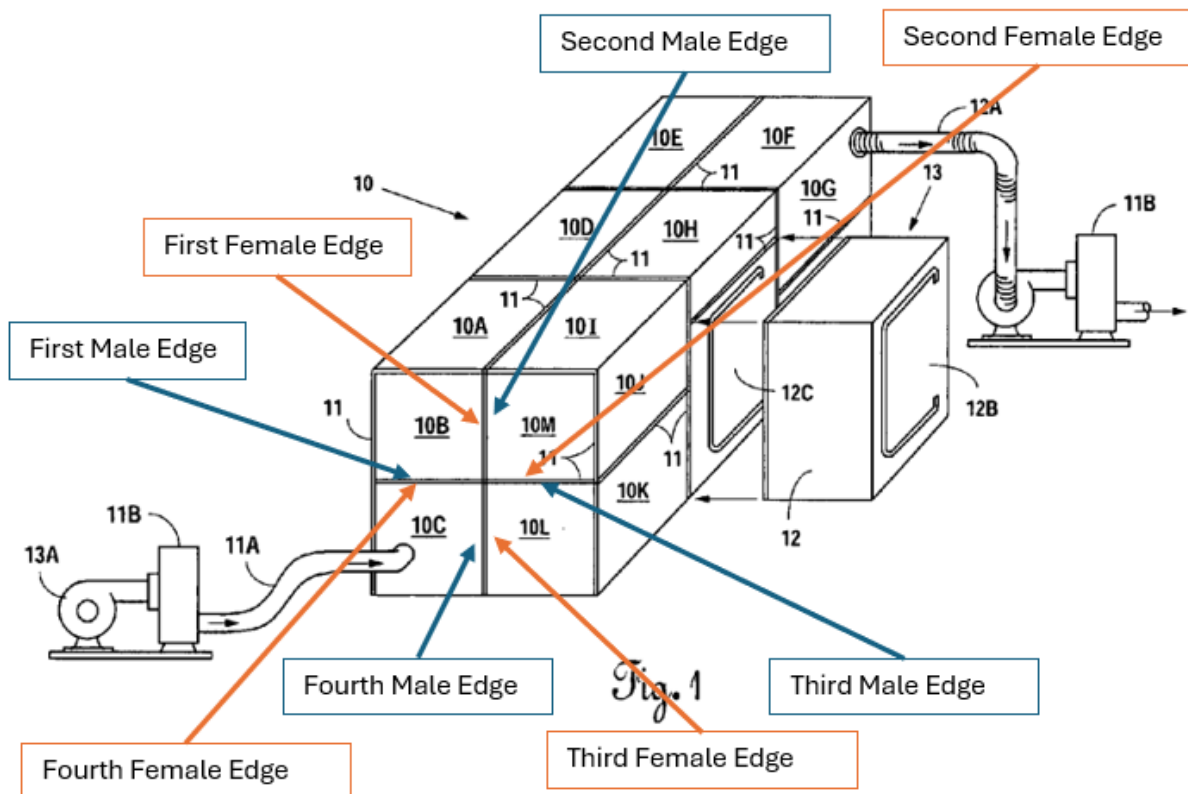


In addition, for example, as shown in annotated Fig. 1 of Wardlaw as modified by Ballinger below for the front facing quadrant of panels 10B, 10M, 10C, and 10L, a POSITA would have understood that the engagement of the second panel 10M and third panel 10L would not be perfectly aligned, and therefore 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. Ex1003, ¶132. The understanding of a POSITA in this regard is the same as explained above for claim 6. Ex1003, ¶132.

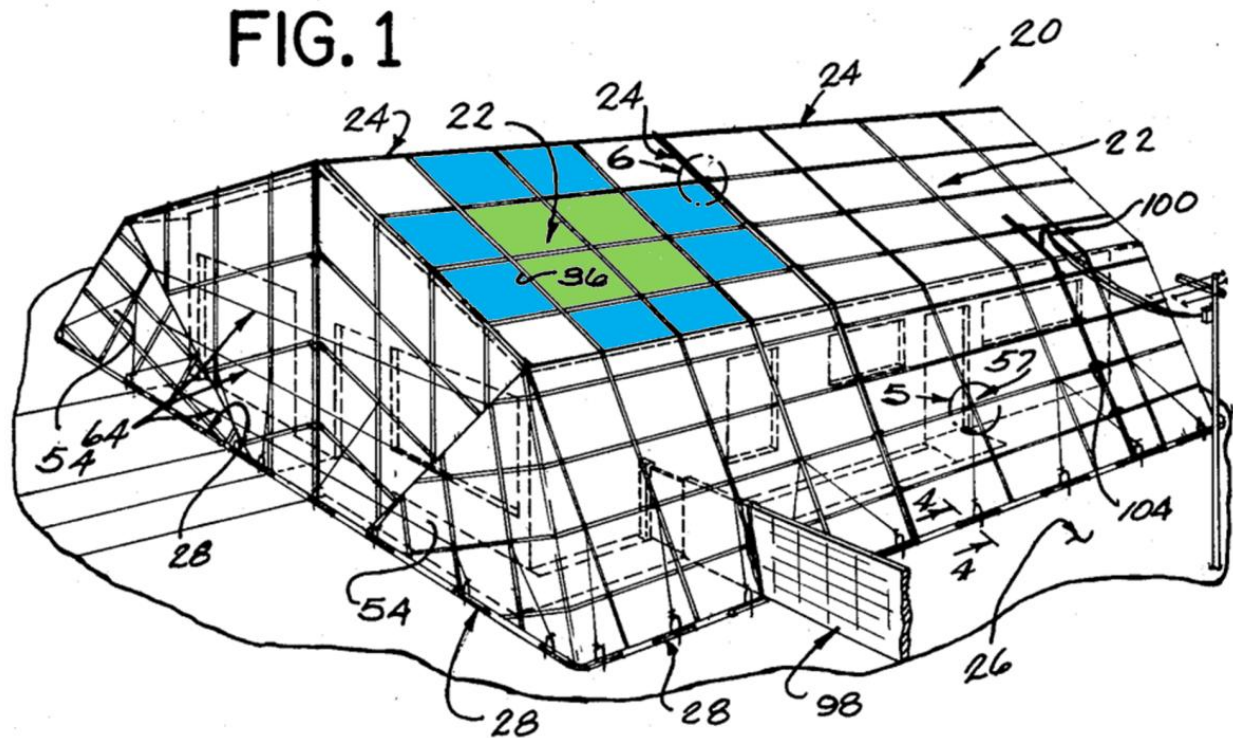


10.Claim 8: “The enclosure of claim 5, wherein the first panel, the second panel, the third panel, the fourth panel, or combinations thereof, further comprise at least one additional edge having a front side and a rear side, wherein the front side and the rear side each comprise a first portion of the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

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. Ex1003, ¶133.



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 8 for the reasons stated above. Ex1003, ¶134.



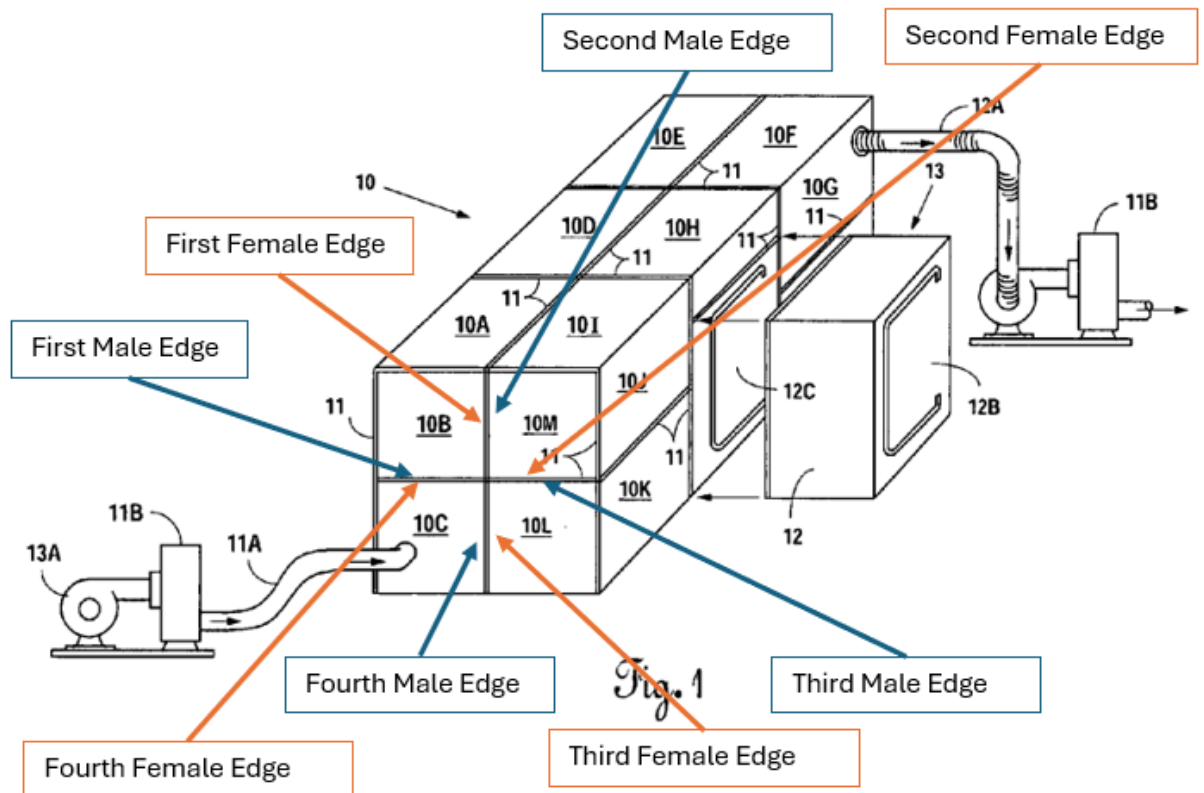
11.Claim 9: “The enclosure of claim 5, further comprising at least one additional edge having a first flap and a second flap extending therefrom, wherein the first flap and the second flap each have an inner edge comprising a second portion of the fastening medium for engagement with at least one additional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

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. Ex1003, ¶135. 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.

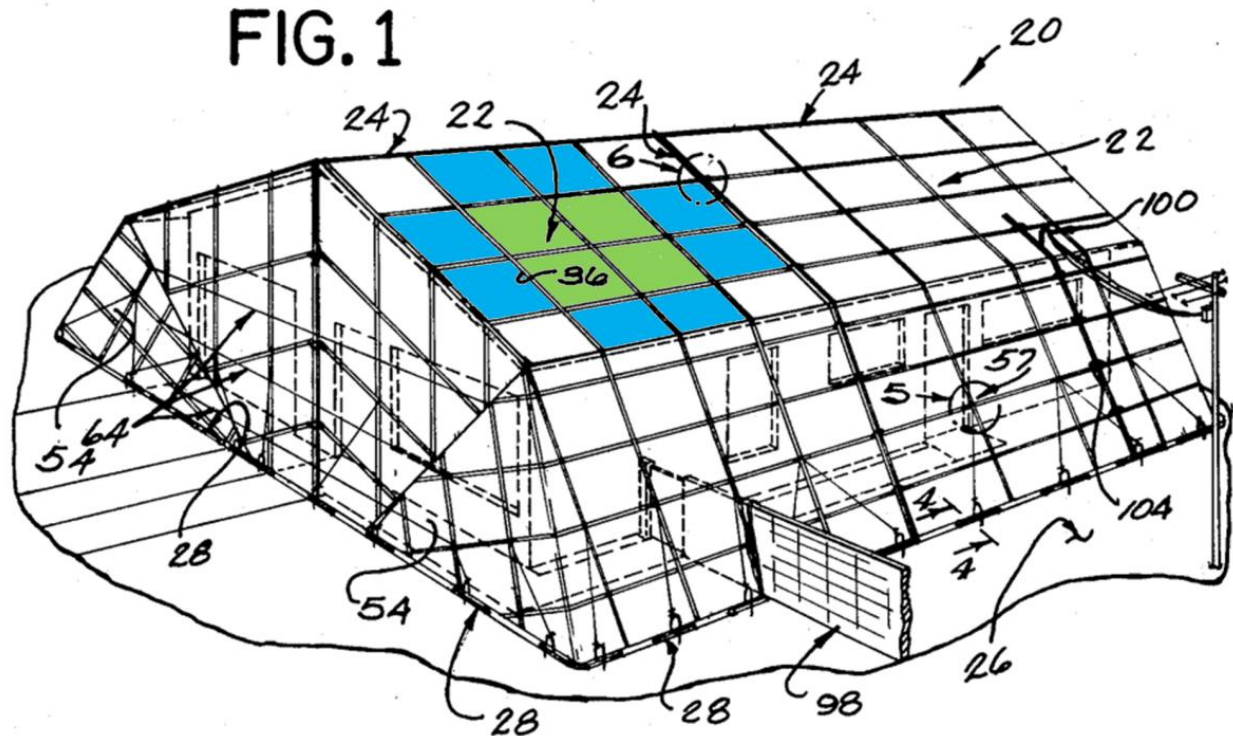
Ex1003, ¶135. Also, panel 10L would have an opposite female portion disposed across from the third female edge to engage panel 10K, as suggested by Ballinger, and have the features of the groove of Ferrante's tongue-and-groove fastener.

Ex1003, ¶135.



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. Ex1003, ¶136.



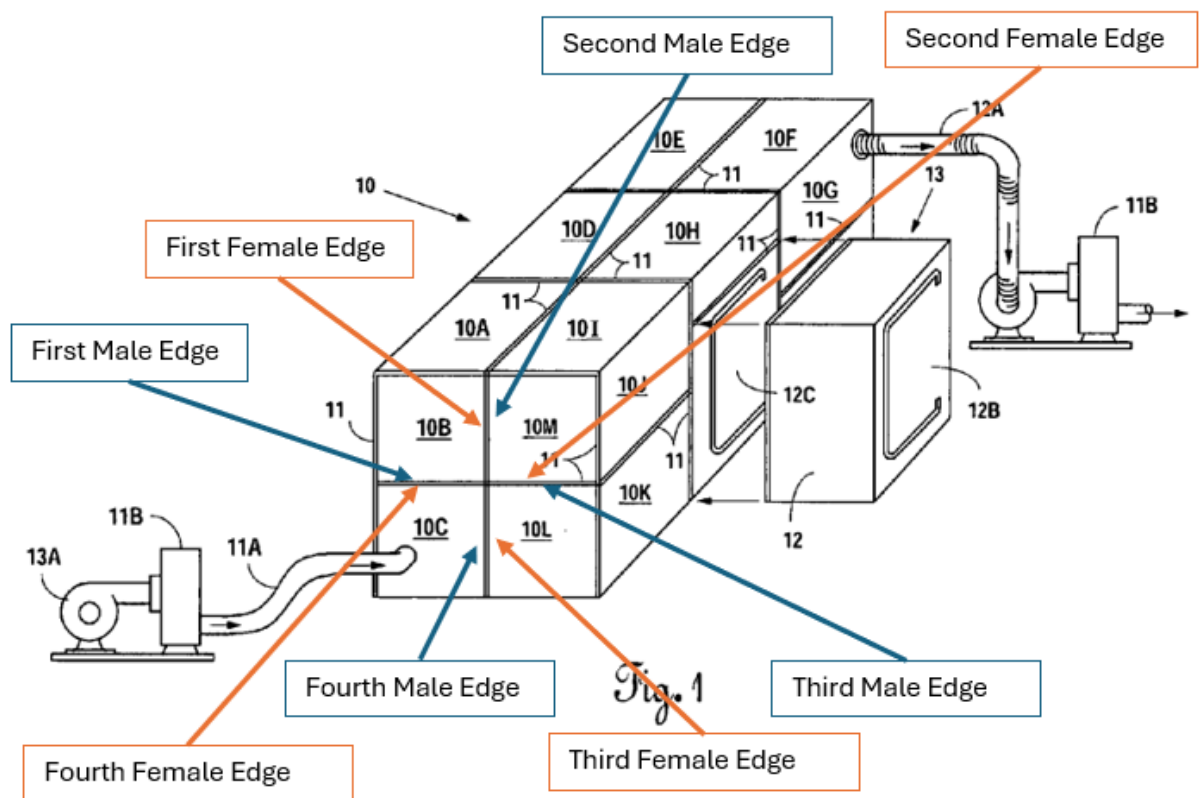
12.Claim 10: “The enclosure of claim 5, wherein each first portion of the fastening medium, each second portion of the fastening medium, or combinations thereof, comprise a plurality of strips of a hook and loop fastening medium.”

The combination would render obvious the requirements of claim 10 for the same reasons as stated in Ground 1 with regard to claim 3. Ex1003, ¶137.

13.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.”

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. Ex1003, ¶138.



14.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.”

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. Ex1003, ¶139.

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

1. Independent Claim 1: [1.pre] “An enclosure comprising:”

To the extent that the preamble is limiting, the Ground 1A combination discloses this feature for the same reasons presented above in Ground 1. Ex1003, ¶140.

a) [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”

The Ground 1A combination discloses this feature for the same reasons presented above in Ground 1. As noted above in Section IV, 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. Ex1003, ¶141.

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

The Ground 1A combination discloses this feature for the same reasons presented above in Ground 1. Ex1003, ¶142.

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,”

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. Ex1003, ¶143. 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. Ex1003, ¶143.

- d) **[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.”**

The Ground 1A combination discloses this feature for the same reasons presented above in Ground 1. Ex1003, ¶144.

- 2. **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.”**

The Ground 1A combination discloses this feature for the same reasons presented above in Ground 1. Ex1003, ¶145.

- 3. **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.**

The Ground 1A combination discloses this feature for the same reasons presented above in Ground 1. Ex1003, ¶146.

4. 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.”

The Ground 1A combination discloses this feature for the same reasons presented above in Ground 1. Ex1003, ¶147.

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

1. Independent Claim 1: [1.pre] “An enclosure comprising:”

The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2. Ex1003, ¶148.

- a) [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”**

The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2. Ex1003, ¶149.

- b) [1.b] “a second panel having a female edge with a first flap and a second flap extending therefrom,**

The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2. Ex1003, ¶150.

- c) [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,”

The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2. Ex1003, ¶151.

- d) [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.”**

The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2. Ex1003, ¶152.

- 2. 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.”**

The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2. Ex1003, ¶153.

- 3. 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.**

The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2. Ex1003, ¶154.

- 4. 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.”**

The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2. Ex1003, ¶155.

5. Independent Claim 5: [5.pre] “An enclosure comprising:”

To the extent that the preamble is limiting, the Ground 2A combination discloses this feature for the same reasons presented above in Ground 2. Ex1003, ¶156.

a) [5.a] “a wall comprising a first panel, a second panel, a third panel, and a fourth panel,”

The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2. Ex1003, ¶157.

b) [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,”

The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2. Ex1003, ¶158.

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. Ex1003, ¶159.

- c) **[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,”**

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. Ex1003, ¶160.

- d) **[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,”**

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. Ex1003, ¶161.

- e) **[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,”**

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. Ex1003, ¶162.

- f) **[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,”**

The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2. Ex1003, ¶163.

- g) **[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,”**

The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2. Ex1003, ¶164.

- h) **[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”**

The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2. Ex1003, ¶165.

- i) **[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”**

The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2. Ex1003, ¶166.

- j) **[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.”**

The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2. Ex1003, ¶167.

- 6. **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.”**

The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2. Ex1003, ¶168.

- 7. 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.”**

The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2. Ex1003, ¶169.

- 8. 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.”**

The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2. Ex1003, ¶170.

- 9. 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.”**

The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2. Ex1003, ¶171.

- 10.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.”**

The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2. Ex1003, ¶172.

11.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.”

The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2. Ex1003, ¶173.

12.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.”

The Ground 2A combination discloses this feature for the same reasons presented above in Ground 2. Ex1003, ¶174.

VI. THE BOARD SHOULD INSTITUTE REVIEW

Petitioner believes that discretionary denial is unwarranted. If Patent Owner requests discretionary denial, Petitioner intends to utilize the bifurcated briefing process contemplated by the March 26, 2025, Stewart Memorandum in rebuttal, and will address discretionary denial factors—including as they relate to 35 U.S.C. § 325(d) and *Wardlaw*—in that briefing as instructed by the Director. *See, e.g.,*

Learn about the new interim processes relating to institution in AIA

proceedings (available at <https://www.uspto.gov/about-us/events/learn-about-new-interim-processes-relating-institution-aia-proceedings>); <https://uspto.cosocloud.com/p9xpz6s4jn75/> (Video); FAQs for Interim Processes for PTAB Workload Management (<https://www.uspto.gov/patents/ptab/faqs/interim-processes-workload-management>).

VII. MANDATORY NOTICES

A. Related Matters

The '775 patent was asserted in the following litigation:

Al-Azem v. Safe Arc. Tech., LLC, Civ. No. 6-25-cv-00417 (W.D. La. Apr. 2, 2025) (“the Al-Azem litigation”).

B. Real Party-in-Interest

The Petitioner and real party-in-interest is Safe Arc Technologies, LLC.

The Patent Owner is Samer U. Al-Azem. In the Al-Azem litigation, Patent Owner asserts that “PetroHab [LLC] is the owner of U.S. Patent No. 9,545,775 (the ‘775 Patent’) and all right title and interest in the 775 Patent, including the right to sue and recover for all past infringements.”

C. Lead and Back-Up Counsel and Service Information

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VIII. GROUNDS FOR STANDING

Petitioner certifies the '775 patent is available for *inter partes* review and that Petitioner is not barred or estopped.

IX. CONCLUSION

For the reasons presented above, the Petition for institution of *inter partes* review should be granted and the challenged claims cancelled.

Dated: July 2, 2025

/Wayne M. Helge/

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CERTIFICATE OF WORD COUNT

The undersigned certifies that the foregoing PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 9,545,775 complies with the type-volume limitation in 37 C.F.R. § 42.24(a)(1)(i). According to the word-processing system's word count, the brief contains 12,657 words, excluding the parts of the brief exempted by 37 C.F.R. § 42.24(a).

By: /Wayne M. Helge/
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CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing Petition for *Inter Partes* Review of U.S. Patent No. 9,545,775, the associated Power of Attorney, and Exhibits EX1001 through EX1007 were served on this date by Priority Mail Express® (or by means at least as fast and reliable as Priority Mail Express®) to the correspondence address of record indicated in the Patent Office's Patent Center system for U.S. Patent No. 9,545,775:

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Dated: July 2, 2025

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