Paper No. 1

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

COMMSCOPE TECHNOLOGIES LLC
Petitioner

v.

BELDEN CANADA ULC
Patent Owner

IPR2024-01218
U.S. Patent No. 10,795,107

PETITION FOR *INTER PARTES* REVIEW OF U.S. PAT. NO. 10,795,107 UNDER 35 U.S.C. §§ 311-319 AND 37 C.F.R. § 41.100 ET SEQ.

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Mandatory Notices

A. Real Parties-in-Interest

CommScope Technologies LLC, CommScope, Inc. of North Carolina, CommScope, Inc., are the real parties-in-interest.

B. Related Matters

The challenged patent was asserted against petitioner CommScope Technologies LLC in a complaint in *Belden Canada ULC v. CommScope, Inc. et al.,* Case No. 1:23-cv-00810-RGA (D. Del.) (served July 28, 2023).

C. Lead and Back-Up Counsel

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D. Service Information

Please address all correspondence and service to both counsel listed above. Petitioners consent to service by email at the email addresses listed.

Preliminary Matters

A. Standing

Petitioner certifies that IPR is available for the '107 Patent; Petitioner is not barred or estopped.

B. Identification of Challenge

Petitioner requests invalidation of claims 1-5, 8-13.

	Claims	Basis for Unpatentability
Ground 1	1-5, 8-13	Obvious: Fukui alone or when combined with Sedor
Ground 2	8-13	Anticipated: Fukui
Ground 3	1-5, 8-13	Obvious: Ground 1 further in view of Laarveld
Ground 4	1-5, 8, 10-13	Obvious: Sauter alone or when combined with Laarveld
Ground 5	1-5, 8, 10-13	Obvious: Sauter when combined with Fukui
Ground 6	1-5, 8, 10-13	Obvious: Either of Grounds 4 or 5 when further combined with Sedor

C. Supporting Declaration

Petitioner submits a declaration from Dr. Stephen Ralph (EX1003).

D. Fees

Petitioner authorizes the Patent Office to charge Deposit Account No. 502880 for the fee set forth in 37 C.F.R. § 42.15(a) and any other required fees.

Introduction

The ‘107 patent claims a modular fiber optic cassette system and method. The claims recite the conventional elements of fiber optic system, including a “case” and “tray.” The claims also recite limitations about the width of the cassettes and requires each cassette “touches” another cassette. The examiner allowed the claims because the closest art he was aware of had rails between the cassettes, and he concluded it would not be obvious to remove the rails to have the modules touch.

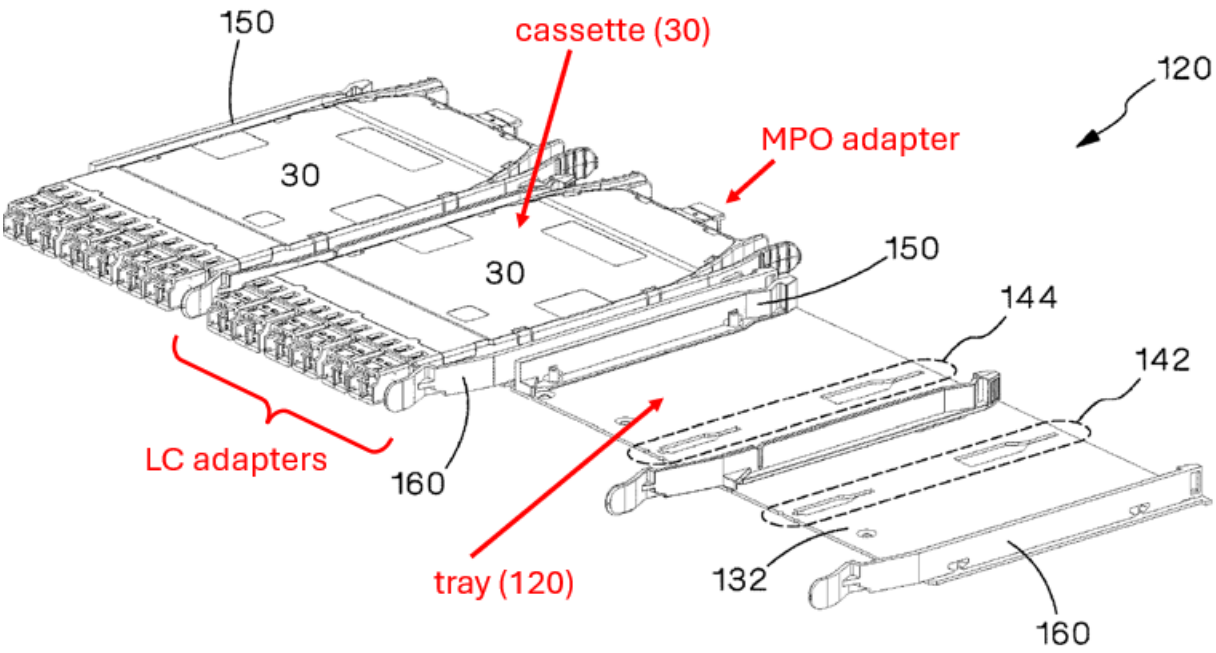
“Fukui” is a new reference. It does not have any rails between the cassettes and discloses the exact limitations the examiner believed were missing. Fukui teaches to place modules into areas that touch each other.

The petition also identifies an alternative ground based on “Sauter.” In the co-pending litigation, Patent Owner now reads the claims for infringement on rail-based systems. Patent Owner’s claim construction reads right on Sauter.

Technology Background

The technology at issue is fiber optic cassette systems. These systems are deployed in data rooms where high-capacity fiber optic cables are distributed to many subscriber connections.

The conventional elements are a case, tray, and cassettes (also called modules). The "Sedor" prior art reference, discussed during prosecution, shows a conventional cassette and tray:



EX1005, Fig. 8. A cassette has an "MPO" adapter port on the rear and "LC" adapters ports on the front for connecting fiber optic cables. MPO stands for "multiple-fiber push-on." "LC" stands for "Lucent Connector."

The trays of cassettes are stored in a protective case. Sedor illustrates a conventional case:

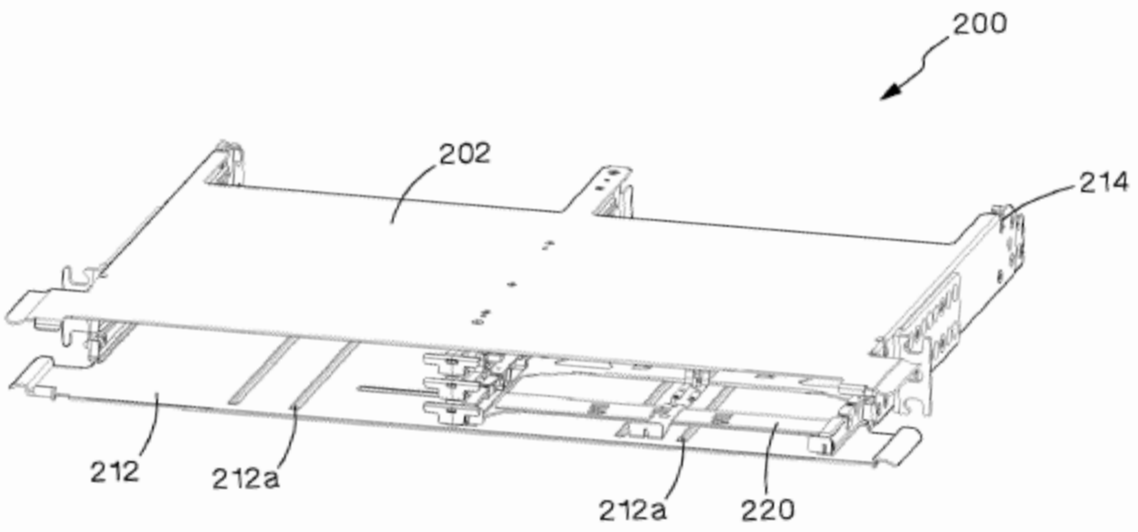


FIG.44

The trays slide in and out of the case to allow the operator to insert cassettes and plug in cables. The operator typically mounts the case in a rack using standard brackets.

Summary of the Challenged Patent

A. Disclosure of the '107 patent

The '107 patent discloses a modular fiber optic cassette system. EX1001, 1:14-15, 2:50-52, Title. Figure 1 is illustrative:

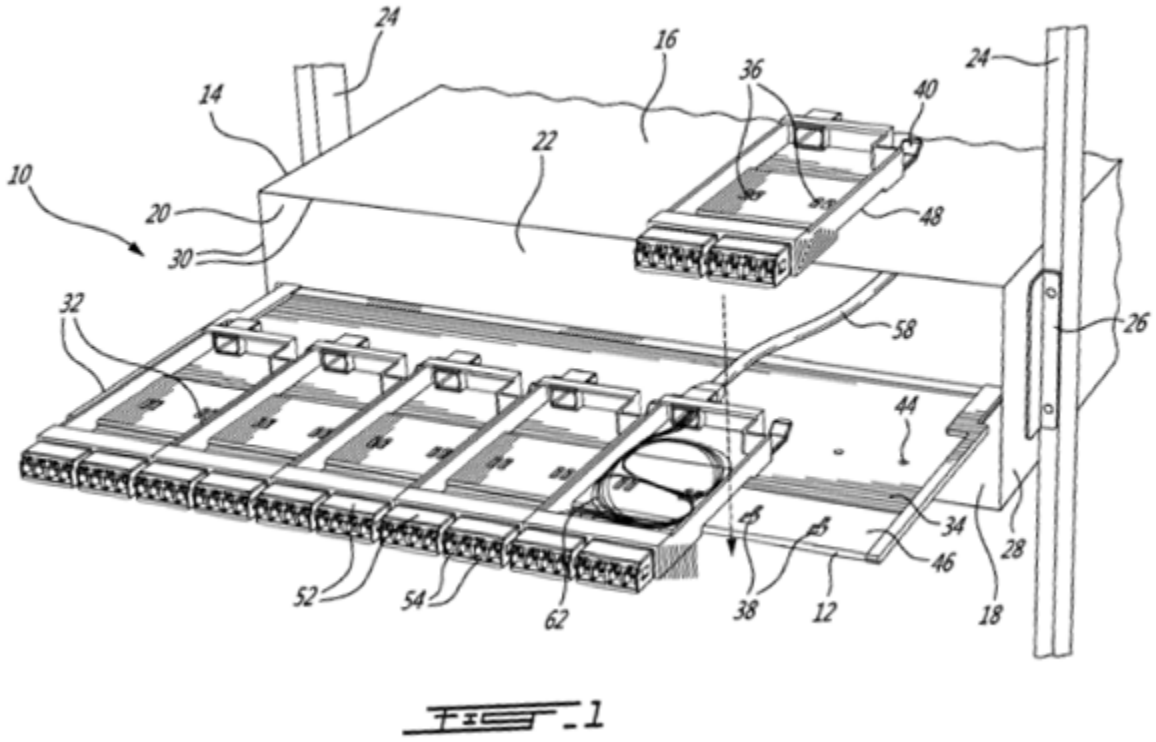


Fig. 1

EX1001, Fig. 1. The system comprises a case (14), sliding tray (12), and cassettes. EX1001, 2:52-53. The cassettes snap into apertures (44) on the tray. EX1001, 31-5:

The "modular" system accommodates cassettes with different widths. Each of the different widths is an "integer multiple" of a standardized width unit "W." EX1001, 3:42-45. The different multiples are W, 2W, 3W, 4W, and 6W. EX1001, 3:42-59, 4:11.

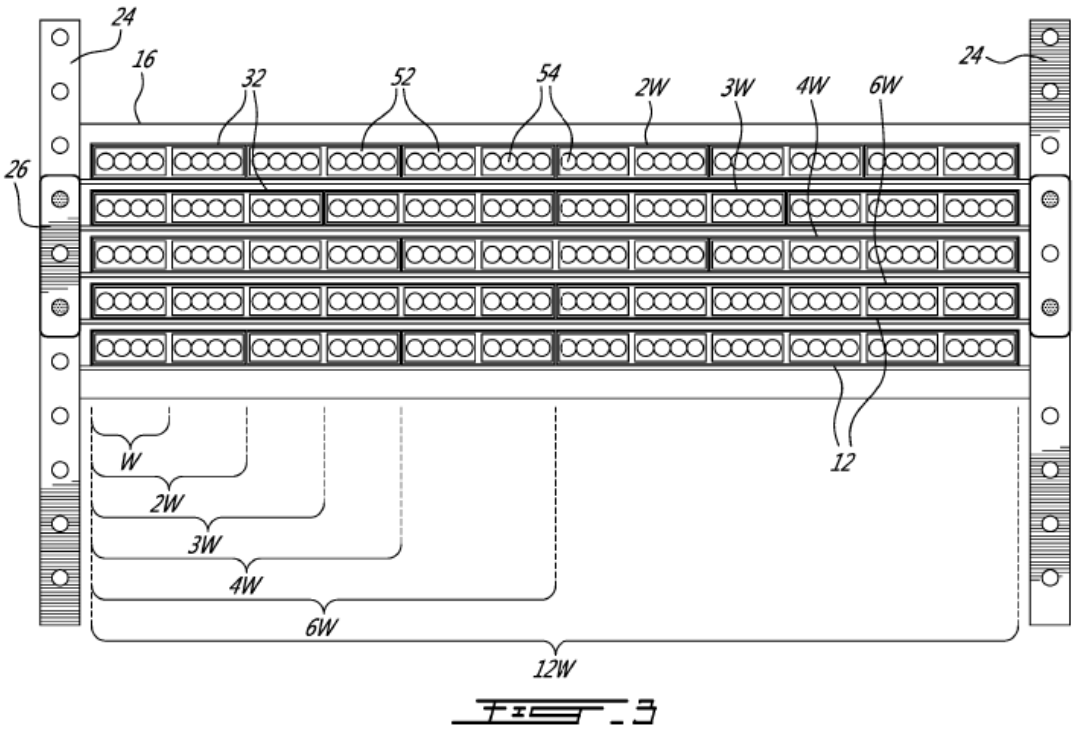


Fig. 3

EX1001, Fig. 3. In the preferred embodiment, the width W is based on an "LC Quad" technology footprint. EX1001, 3:60-63. Figure 2A-2B illustrates the LC Quad technology footprint for a 2W cassette:

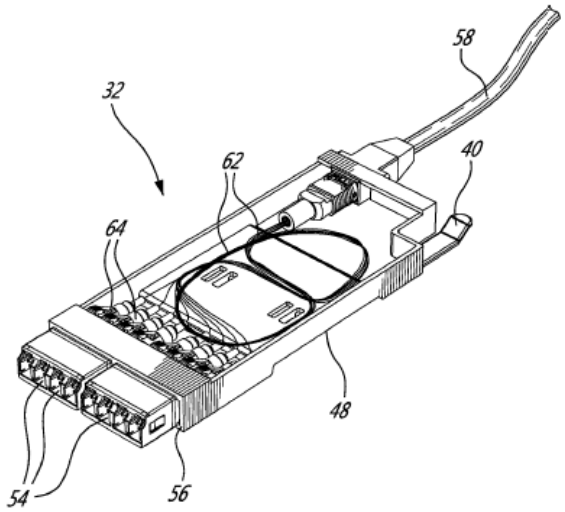


Fig. 2A

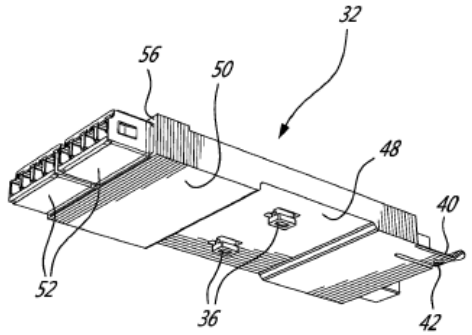
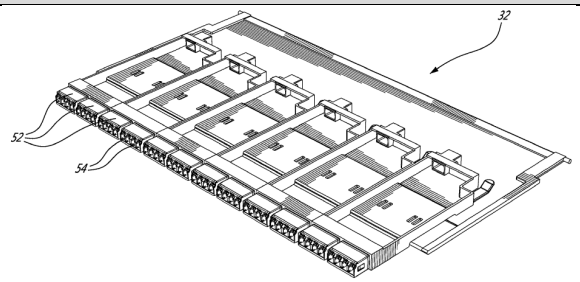
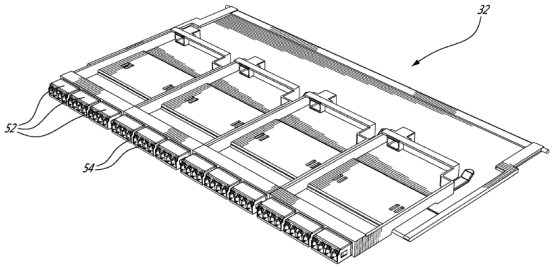
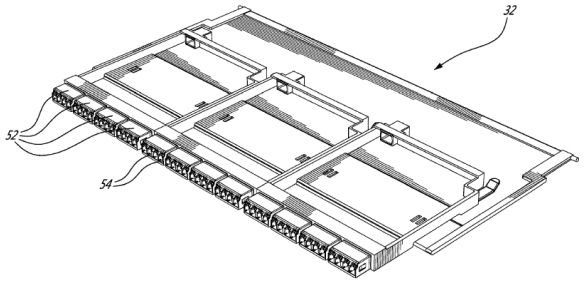
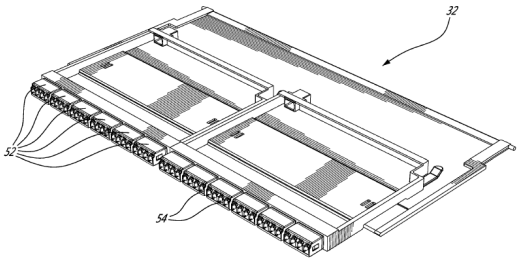


Fig. 2B

Numeral 52 is an LC quad receptable module with four individual LC ports 54. EX1001, 3:15-20. Figures 4A-4D shows the larger 2W, 3W, 4W, 6W sizes:

2W Cassettes	3W Cassettes
	
4W Cassettes	**6W Cassettes**
	

EX1001 (cropped). Because '107 patent does not have rails between the cassettes, each of the cassettes "fit snuggle side by side." EX1001, 3:57. The purpose of the different cassette sizes is to support "different numbers of optic fibers" (i.e., the input cables plugged in the rear can have larger or smaller numbers of fibers). EX1001, 3:39-41, 4:4-5.

B. Claims

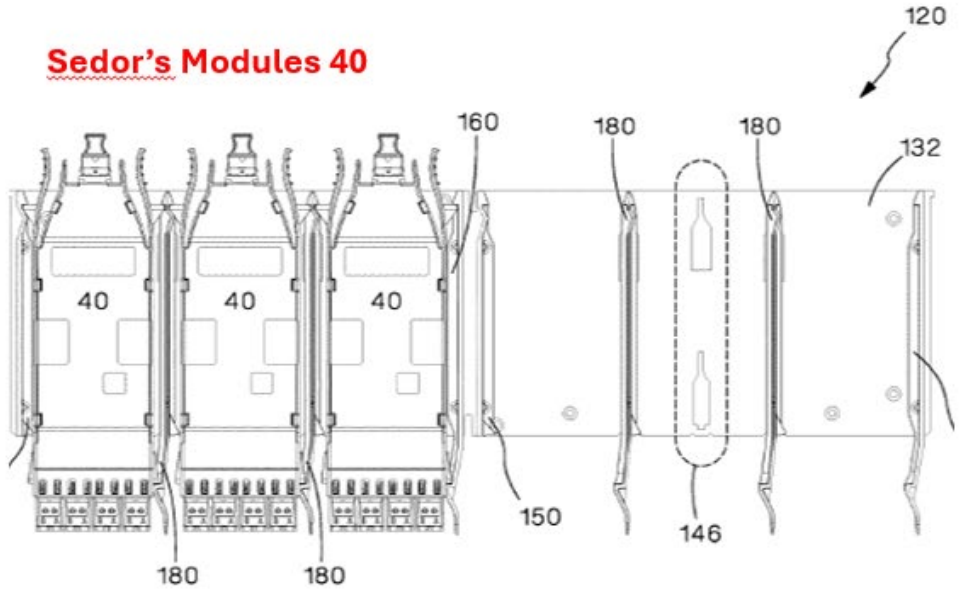
There are two independent claims: a system claim (claim 1) and method claim (claim 8). The claims recite the conventional elements of a "case" and "tray." The claims also require two cassettes with different widths. Claim 1, for example, requires first and second cassette having a width of one, two, three, four,

or six standard width units. The claims also require each cassettes "touches" another cassette when mounted on the tray.

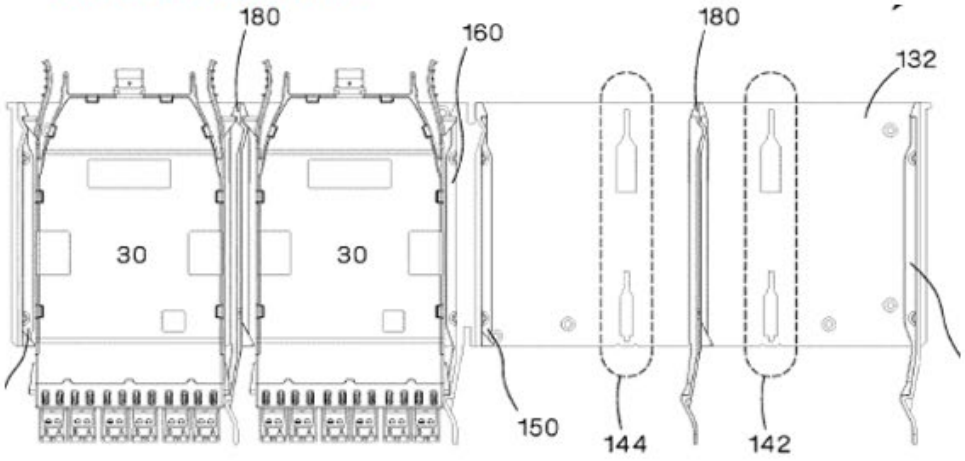
C. Prosecution History

First Office Action (April 2019). The examiner initially rejected all the challenged claims as anticipated by "Sedor" (U.S. Patent No. 10,215,944). EX1007, 64-67. Sedor's tray accommodates three cassette sizes (modules 30, 40, 20) by adjusting the location of removable rails on the tray:

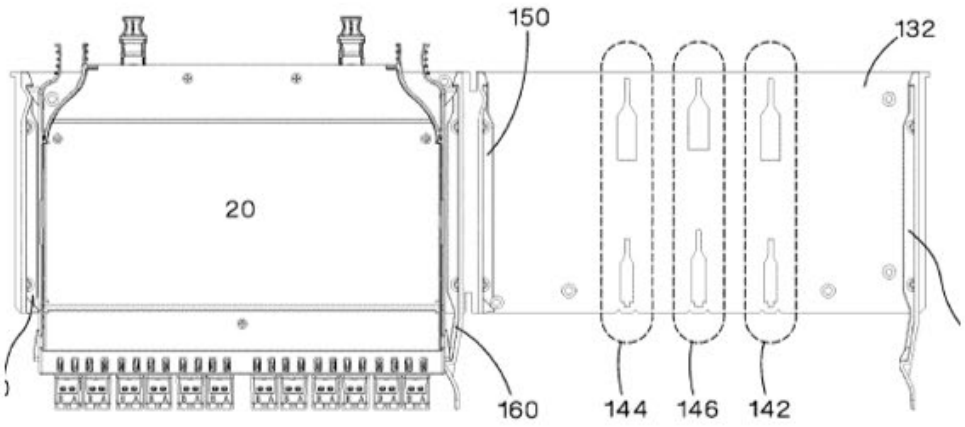
Sedor's Modules 40



Sedor's Modules 30



Sedor's Module 20



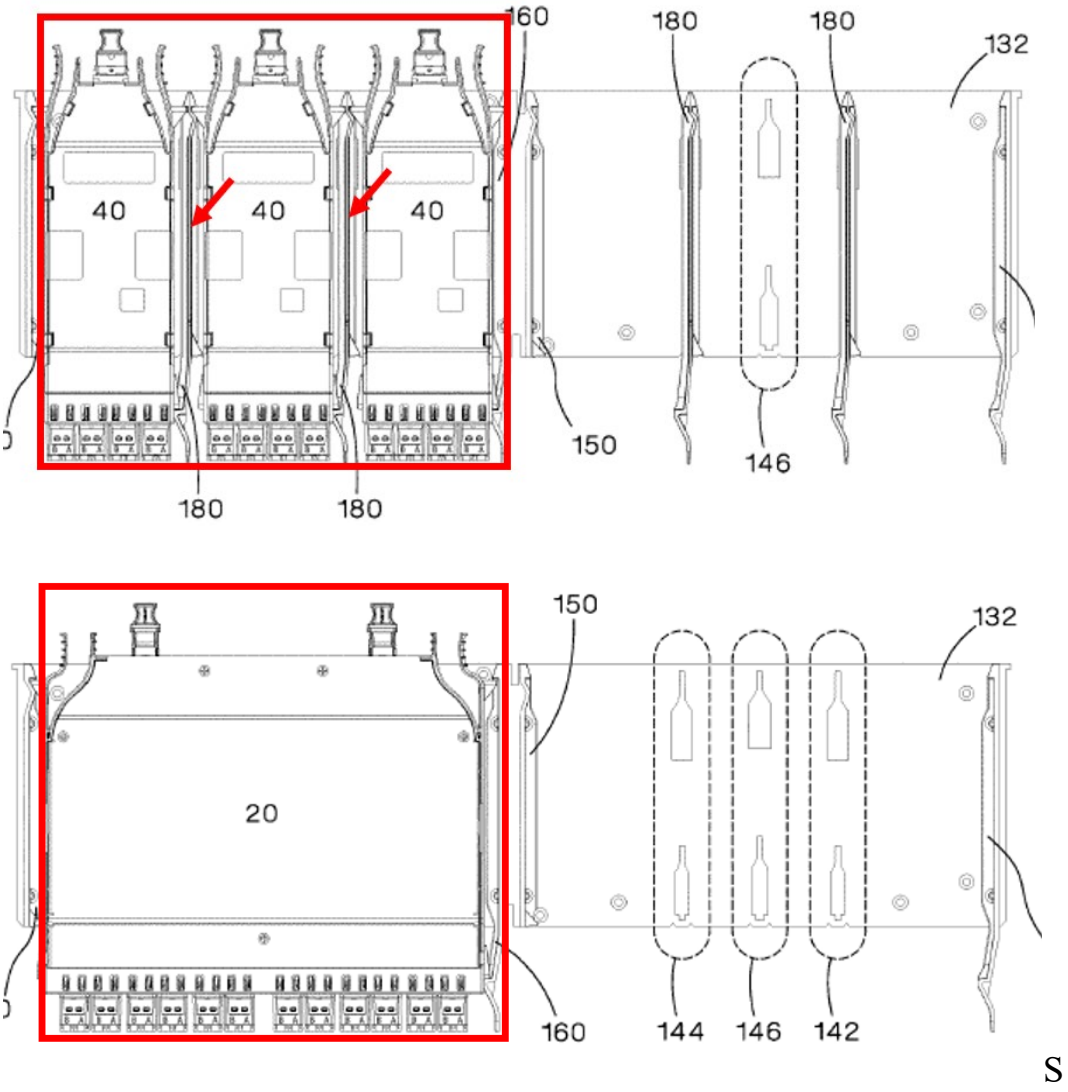
EX1005, Figs. 7, 9, 11 (cropped). The examiner identified modules 30 (top) as having a width of two standard width units and modules 40 (middle) as having a width of three standard width units. EX1007, 65.

In response, the applicant argued Sedor's modules have "no common" standard module width because of the rails. Applicant presented a mathematical equation:

> occupies the same overall width. As each rail is of a pre-determined width W_R, and given that the modules of the configuration of Figure 8 have a width W_2, the modules of Figure 9 has a width W_3 and the module of Figure 11 has a width W_1, it follows that for the configurations of Sedor et al.:
>
> $$2*W_2 + W_R = 3*W_3 + 2*W_R = W_1$$
>
> Clearly, therefore, due to the presence of a varying number of rails the module widths W_2, W_3 and W_1 have no common standard module width. In particular, neither W_2 or W_1 are divisible by W_3. The same applies if the standard width unit is taken

EX1007, 87. The applicant emphasized that "in particular" the width of the larger cassettes was not divisible by the width of the smaller cassette because of the addition of the width of the rails (W_R). *Id.*

If you draw a box around the smaller module, you can see that the width larger module includes the additional amount otherwise occupied by the rail:



S

Thus, the width of the larger module is not evenly divisible by the smaller module (it would have the remainder of two rails).

Second Office action (Aug. 2019). The examiner issued a final rejection. The examiner reasoned that the specification "defines" the standardized width as accommodating a single receptable module comprising four receptacles (ports) per standard width unit; thus, applying that definition, Sedor's module 40 is two

standard width units because it supports eight receptacle and Sedor module 30 is three standard width units because it supports twelve receptacles. EX1007, 94-95.

In response, the applicant amended the claims to require the cassette be "immediately adjacent". EX1007, 114-115.

Third Office action (Dec. 2019). The examiner again rejected all the claims and reasoned that "immediately" adjacent requires a smaller distance than adjacent "but does not preclude intervening structure between the objects, and instead only requires the objects are placed closely together." EX1007, 138-139.

In response, PO amended the claims to require that each cassettes "touches" each other. EX1007, 167, 170. The examiner then allowed the claims. The examiner found a POSA would not be motivated to "remove the rails in Sedor" to enable the modules to touch because the rails were "necessary to affix the modules to the tray." EX1007, 184.

D. Related IPR proceedings

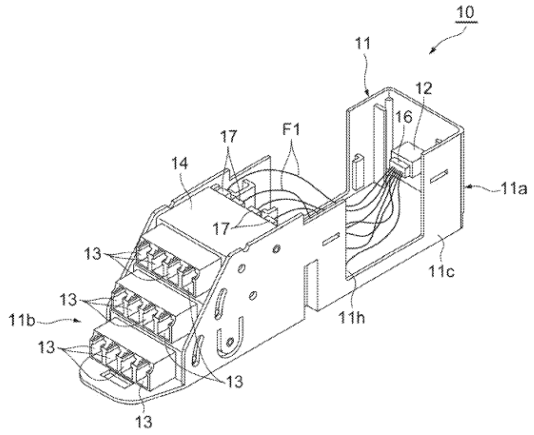
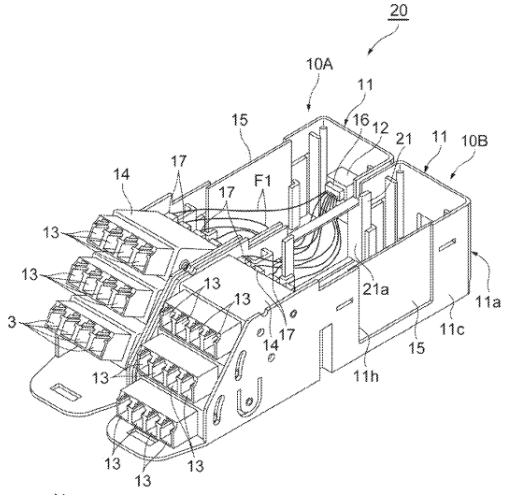
Petitioner is filing Petitions for IPR on the first continuation patent(11,435,542) and second continuation patent (11,656,422).

Summary of the Asserted Prior Art

A. Fukui (EX1004)

Fukui is a new reference. It is U.S. Patent No. 10,101,551, which is 102(a)(2) prior art.

Fukui discloses a modular fiber optic system based on module 10. EX1004, Figs. 1-4, 4:60-7:22. Module 10 can be used individually or coupled to form larger modules. Figure 1 shows one module 10, and Figure 5 shows two modules 10A and 10B coupled to form the larger module 20:

One module 10	Two coupled modules 10A and 10B
	

EX1004, Figs. 4-5. Fukui text broadly discloses a "plurality of coupled unit modules," i.e., two or more coupled modules. EX1004, 8:2-3. The coupled units function as "one body." EX1004, 8:2-3. Fukui had the further innovation to increase the height to support three rows in the height dimension, but that is irrelevant because the challenged claims recite limitations on the width.

Like PO's preferred embodiment, Fukui explains that the purpose of coupling module 10 is to support cables with "various" number of "cores" (i.e., fibers), including 12, 24, 36, 48, etc. EX1004, 3:27-28, 4:2-3, 4:42-43, 9:58-59, 10:4-6, 10:34-35. One module 10 can support a cable with 12 cores. EX1004, Fig.

1 (showing 12 adapter ports). Two coupled modules 10A and 10B can support a cable 24 cores. EX1004, Fig. 5 (showing 24 adapter ports), EX1004, 7:60-67 ("expanded to 24"). Fukui further explains the modules can support larger sizes "such as" 36 and 48 cores according to "the number of coupled unit modules," i.e., three of four coupled unit modules. EX1004, 7:67-8:6.

Fukui's modules 10 can be coupled together because every module has detachable shutters 15 to form an opening in the walls on each side. EX1004, 9:44. Figure 1 shows the right shutter (yellow), and Figure 4 shows both shutters removed:

Fig.1

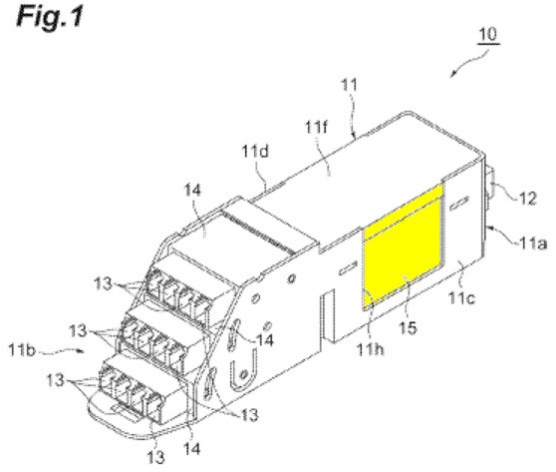
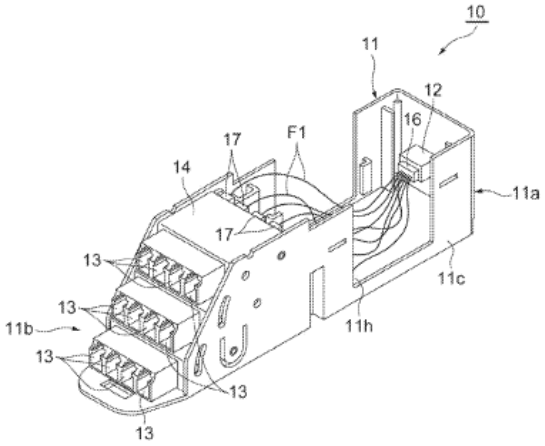
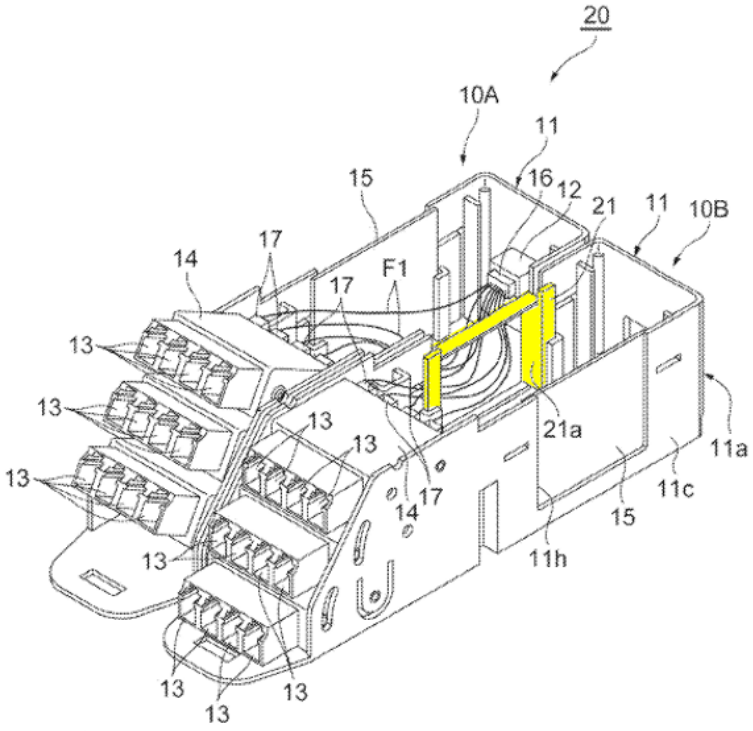


Fig.4



A coupling member (21) is inserted in place of the shutter. EX1004, 7:34-51.

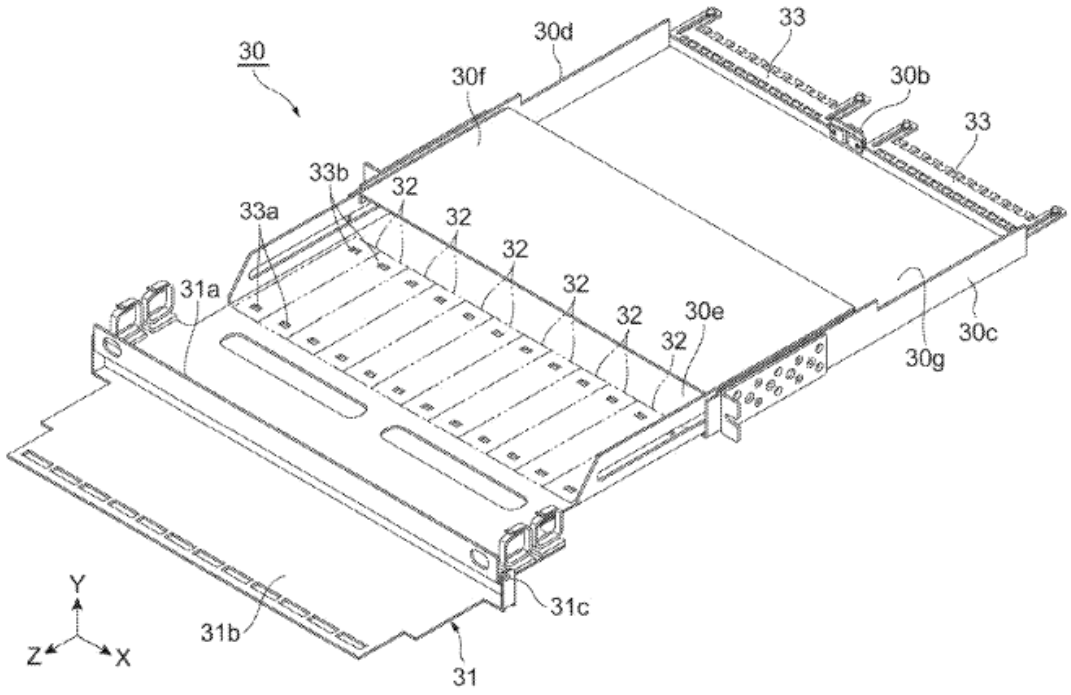
Fig.5



The two coupled units function as "one body." EX1004, 8:2-3. Fibers "pass through" the opening in the middles to second module. EX1007, 7:52-67. The other shutters can be removed to coupled additional unit modules.

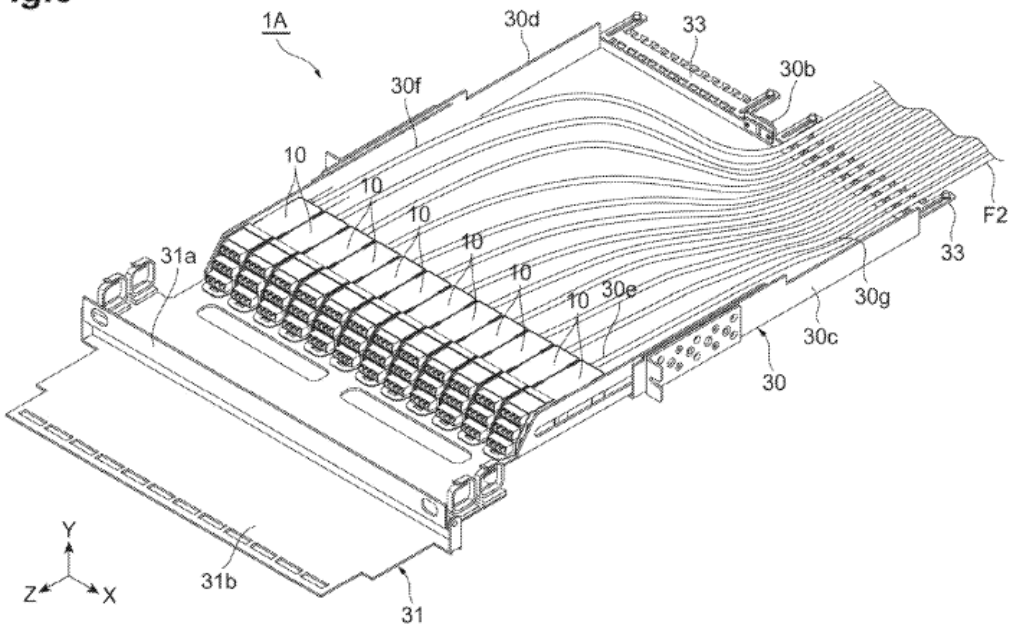
Fukui does not use rails. Fuki's modules have "hooks" on the bottom that attached to "holes" (33a, 33b) on the bottom panel (30e) of the tray that has twelve areas for attaching the modules:

Fig.9



EX1004, Fig. 9, 8:49-56. Figure 8 shows the modules attached:

Fig.8



B. Sedor (EX1005)

Sedor, as already discussed, discloses a modular fiber optic cassette system with three different sizes. *Supra* at INSERT.

C. Laarveld (EX1026)

Laarveld is a published patent from the Netherlands Patent Office. It is 102(a)(1) prior art. Exhibit EX1026 is the translated version. See also EX1027 (declaration certifying translation).

Laarveld discloses to create larger cassettes by coupling cassettes together. Figure 5 illustrates two coupled units (1a and 1b):

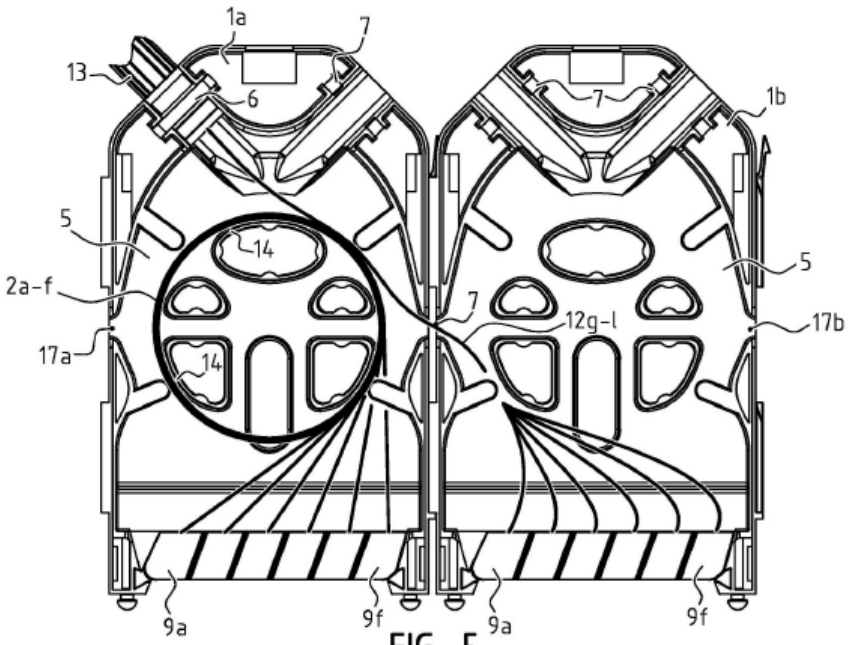
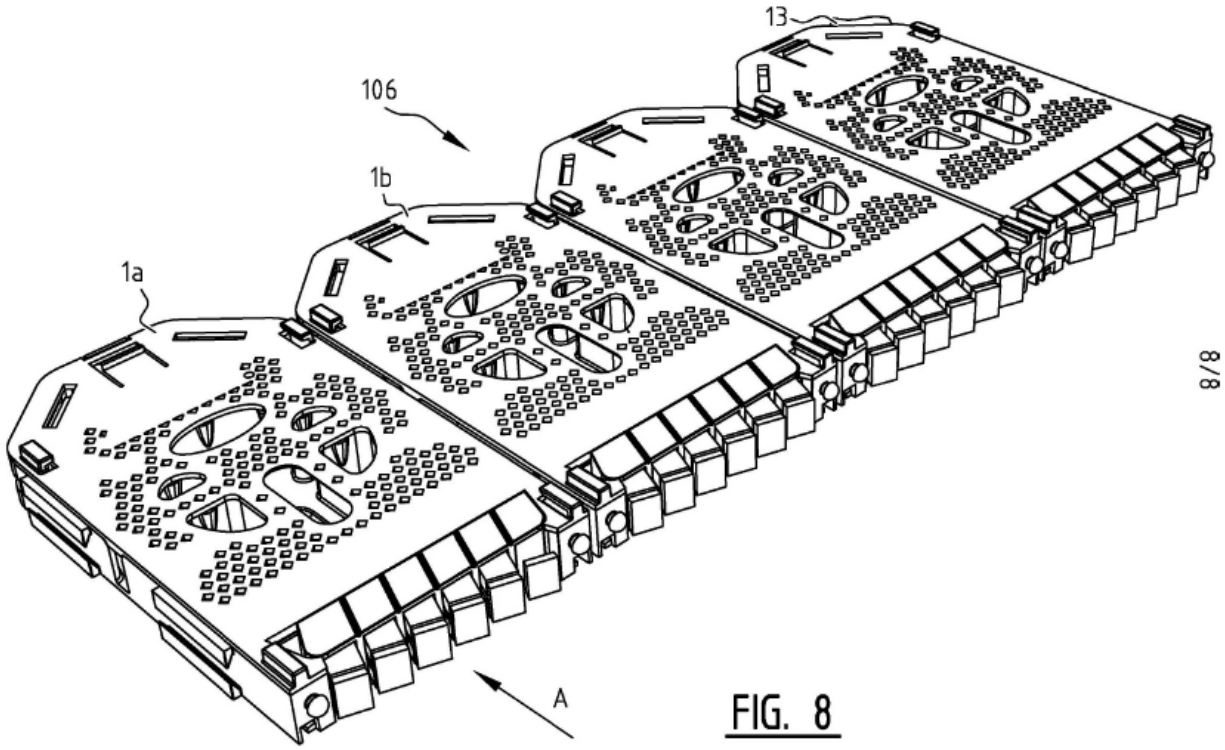


FIG. 5

EX1026, Fig. 5. Laarveld teaches that coupled cassettes can be "contiguous" (touching) with "no clearance" between them. EX1026 at 3:4-9. Laarveld explains this creates a "rigid" assembly. EX1026, 3:9.

Laarveld's design can be expanded to "more than two" coupled EX1026 at 15:3-5, 3:18-21. Figure 8, for example, illustrates four coupled units:



EX1026, Fig. 8.

D. Sauter (EX1006)

Sauter is U.S. Patent No. 9,690,064, which is 102(a)(2) prior art. It is art of record; however, it was never discussed.

Sauter explains his system allows "multiple different sizes of cassettes." EX1006 at 1:28-29, 51-58; 4:7-14; 9:60-63. Sauter uses "single-gang" for the smaller cassette size and "multi-gang" for the larger cassette sizes. The larger "multi-gang" sizes are wider than the single gang by a "factor." EX1006 4:54-61. For example, Sauter's "double-gang" cassette "is approximately twice as wide as a single-gang cassette" and a "triple-gang" cassette which is approximately "three times as wide as a single-gang cassette." EX1006 at 4:54-61; 6:47-56; 7:3-19; 7:38-47, 63-66.

Figure 5 shows an example of a tray with two single-gang cassettes:

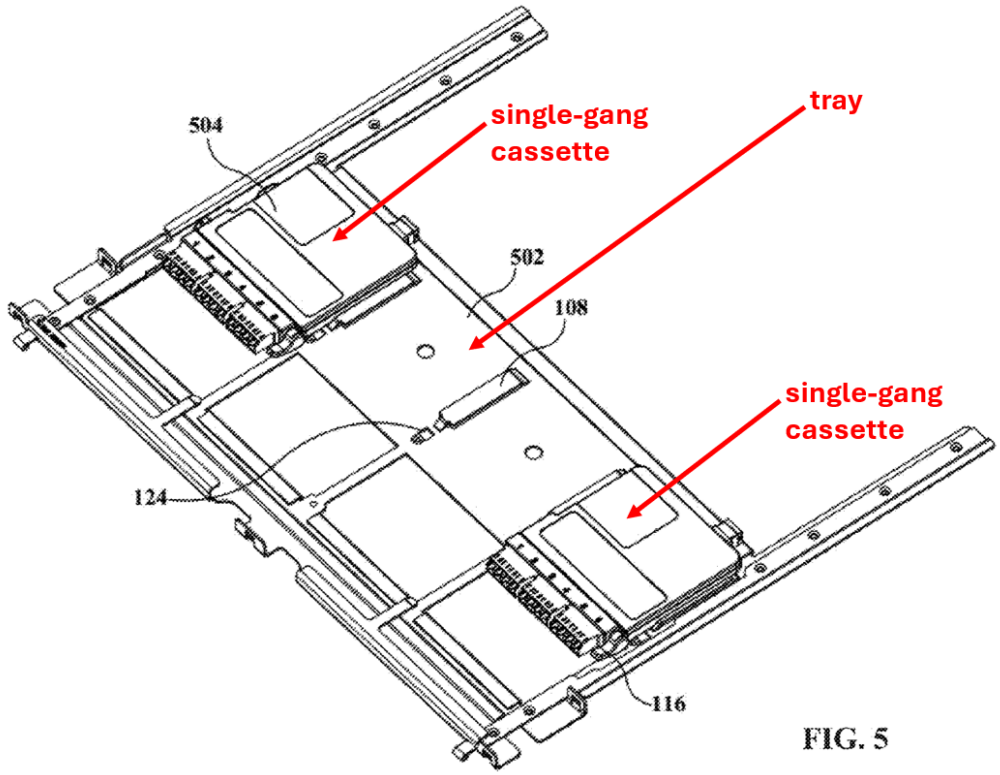


FIG. 5

EX1006, Fig. 5. Figure 6 shows a double-gang cassette.

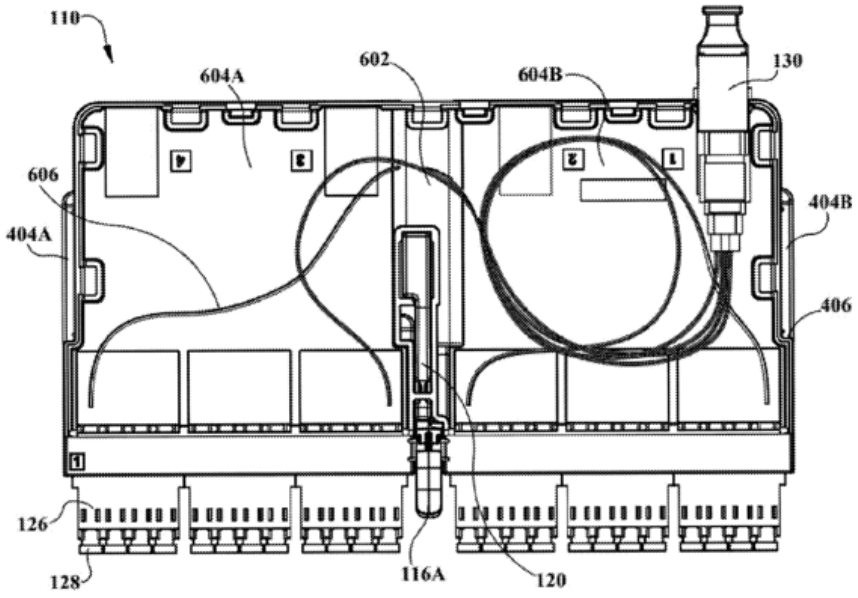


FIG. 6

EX1006, Fig. 6.

Figures 7 shows single and double gang cassettes mounted to the same tray.

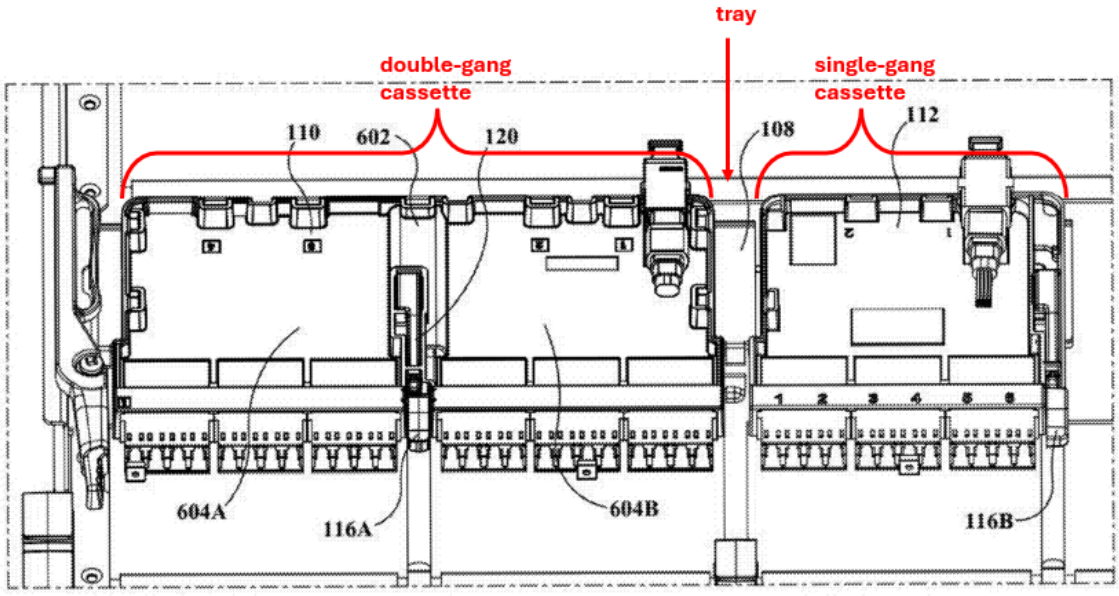


FIG. 7

EX1006 at Fig. 7.

Claim Construction

Petitioner presently believes the plain meaning is enough to resolve the lead Fukui grounds. There is one dispute relevant to the alternative Sauter grounds.

"one, two, three, four, and six" standard width units

The parties proposed the below constructions in the co-pending litigation:

Term	Patent Owner's proposed construction	CommScope's proposed construction
"cassette width of one of one, two, three, four and six standard width units"	"cassette width that accommodates one of one, two, three, four, or six receptacle modules"	"The cassette width equals one, two, three, four, or six times the standard width unit, without an additional amount. This means the cassette width must be evenly divisible by the standard width unit."

The plain language of the claim says the width is "one of one two, three, four and six standard width units." To be "one of…" these choices, the width must actually equal one of the choices; otherwise, the width is not "one of" these choices but some other value.[1] The plain language "one of…" also does not support

[1] The phrase "one of…" certainty does not mean "accommodate" as Patent Owner proposes.

adding any additional amounts. Nothing in this phrase refers to fractional amounts, e.g., 3.2 standard width units.

On the other hand, PO's construction cannot be correct based on PO's express statements explaining the claim language during the prosecution of the continuation application. The examiner initially interpreted the claim language to refer to the number of receptacle modules. EX1007, 94. PO, however, emphatically rejected this and said it "such a definition of width makes no sense":

> Applicant respectfully disagrees with the Examiner's characterization of width and her finding that paragraph [0015] defines the width in terms of the number of receptacles. Indeed, nowhere does the speciation define width in such a fashion. In particular, such a definition of width makes no sense when viewed in respect to Claim 8, and where the standard width is defined in terms of a width of a front edge of a tray on which the cassettes are secured.
>
> Clearly, therefore, a person of ordinary skill in the art would understand that the width of a cassette is simply the width of the cassette from side to side and not some other "dimension" such as the number of receptacles or the like.

EX1002, 187. Patent Owner unequivocally stated in the last sentence that "clearly" that width is "not some other 'dimension' such as the number of receptacles." Thus, Patent Owner disclaimed the very meaning it now proposed.

Patent Owner also emphasized that Sedor "clearly" failed to disclose the claim language because the width of Sedor's module was "not" "3U" but rather equaled "3U + ½ the width of a rail"

> Sedor et al. discloses a modular fiber optic tray comprising fiber optic modules which are configured to engage with rails. In particular with reference to Fig. 7, Fig. 9 and Fig. 11 Sedor et. al. discloses respectively two 12-optical fiber modules (30), three 8-optical fiber modules (40) and single 24-optical fiber module (20) all which fit in the same space of the tray. If, as characterized by the Examiner in his Official Action, each 8-optical fiber module (40) is of two unit widths 2U, the 12-optical fiber modules (30) would not have a width of 3U. Indeed, as clearly shown in the figures, the 3 8-optical fiber modules (40) and 2 rails (180) occupy the same space as 2 12-optical fiber modules (40) and a single rail (180), or 3*2U + 2*(width of rail) = 2*width of 12-optical fiber modules (40) + width of rail, or width of 12-optical fiber modules (40) = 3U + ½ the width of a rail (180).
>
> Clearly, therefore, Sedor et al. fails to disclose a system where the cassettes have the dimensions of the those as claimed at Claim 1.

EX1002, 188. Patent Owner unequivocally explained that the claim required the width equal three times the standard width unit (3U) without an additional amount (3U + ½ the width of a rail), as CommScope proposes. The parties in the co-pending litigation agree that the disputed claim language has the same meaning in the present parent patent and the continuation child patent; thus, Patent Owner's statements explaining the term in the continuation child patent are highly relevant. *Compare* EX1011, 9 *with* EX1011, 11.

Level of Ordinary Skill

A person of ordinary skill in the art (POSITA) of the '107 patent would have a B.S. degree or equivalent in mechanical or electrical engineering or similar fields, in addition to a minimum of two years of professional experience with or

graduate studies involving design, development, and/or utilization of optical communication systems.. EX1003 ¶¶19, 21.

Discretionary Issues

Petitioners' grounds are not the same or substantially the same as any combination previously presented to the Patent Office. Fukui is a new reference that discloses the elements the examiner believed all the other art failed to disclose, filling the precise gap at issue during prosecution.

There is little risk of duplication of effort. Trial in the co-pending litigation between the parties is not expected within the next 18 months. This IPR challenges a broader set of claims than are at issue in the co-pending suit. Finally, the litigation is pending before a Delaware District Court who has already recently stayed other actions between these parties after the PTAB instituted Inter Partes Reviews.

Argument

Ground 1: The challenged claims are obvious based on Fukui plus Sedor or Fukui itself

A. Independent Claim 1

1. Preamble

Fukui discloses a *modular fiber optic cassette system* as recited in the preamble. Figures 6 and 8 shows Fukui's system with twelve modules (10) connected to fiber optic cables (F2):

Fig.6

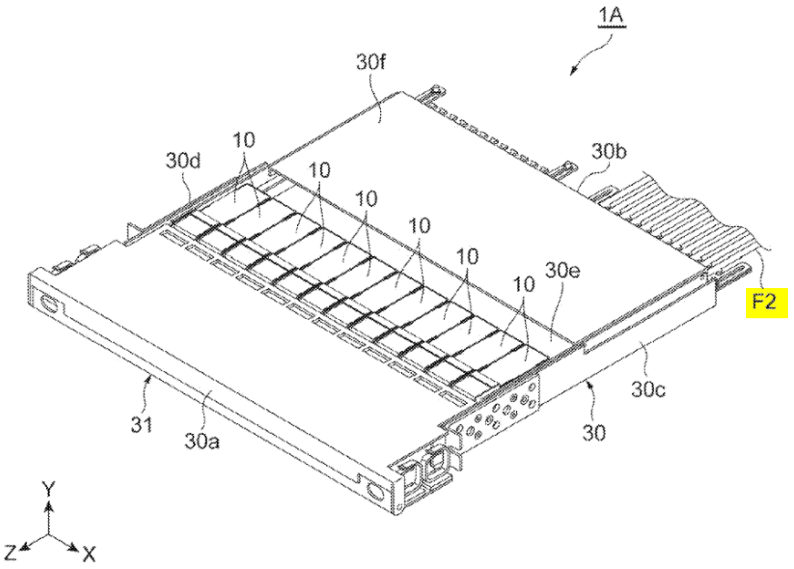
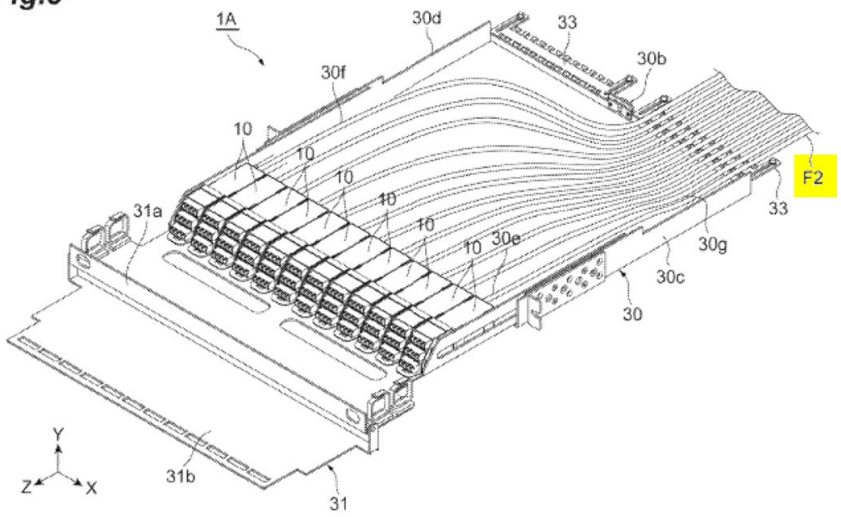


Fig.8



EX1004, Figs. 6, 9; EX1003 ¶¶53-57.

Fukui's modules are fiber optic cassettes. Like PO's preferred embodiment, Fukui's module has a multi-fiber MPO adapter (12) in the rear, LC adapters (13) in the front, and fibers (F1) interconnecting them:

Fig.1

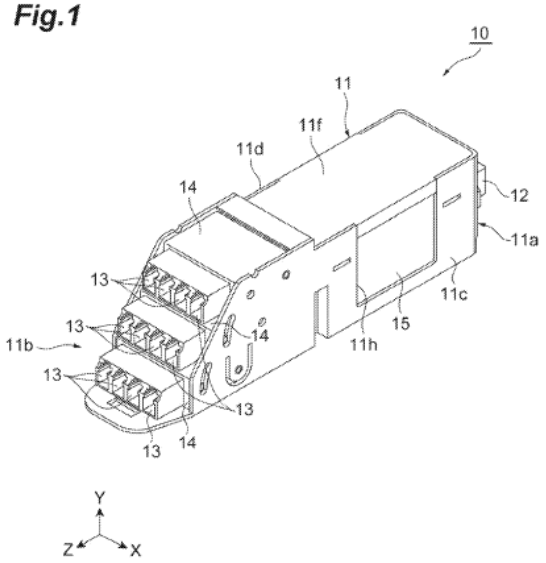
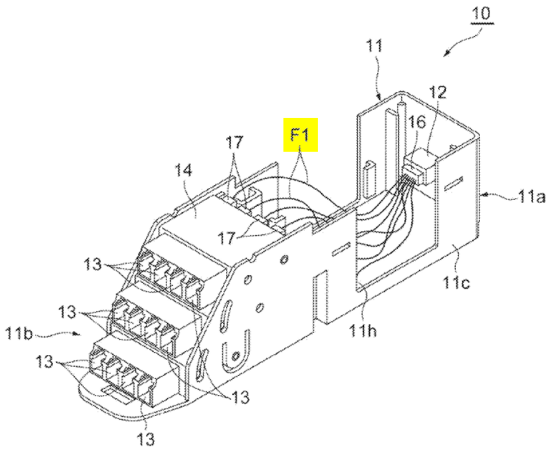


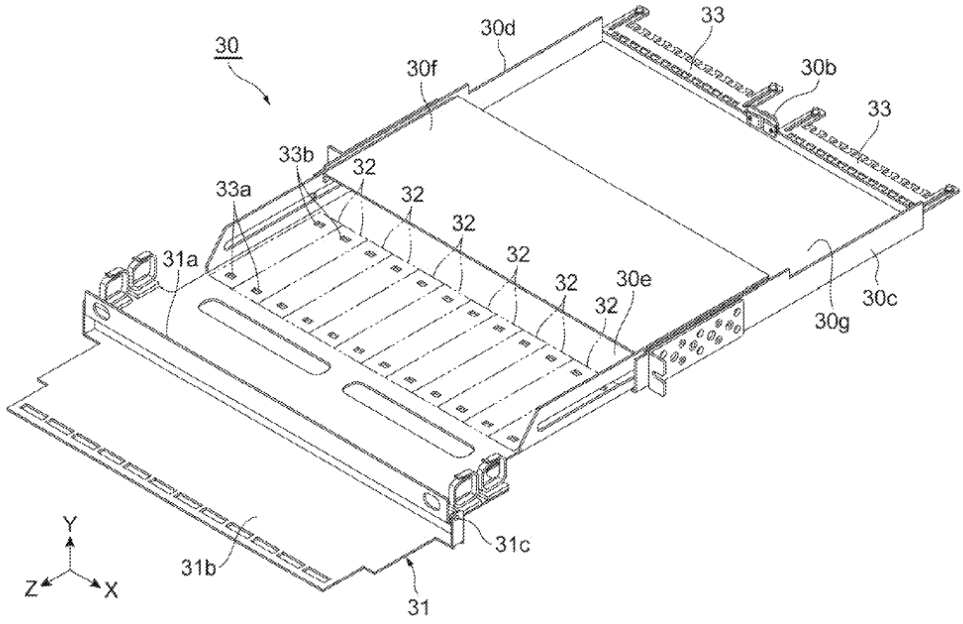
Fig.4



EX1004, Figs. 1, 4, 5:12-42; *see also* Fig. 5. Fukui's modules have a flat bottom with hooks such that the modules can be "easily fixed" to the tray. EX1004, Fig. 2, 8:52-56. Figure 4-5 show the modules with three rows of adapters, but they may also have two rows of adapters. EX1004, 10:43-44

Fukui's system is modular. Like PO's preferred embodiment, Fukui's modules are arrangeable in different areas (32) on Fukui's tray:

Fig.9



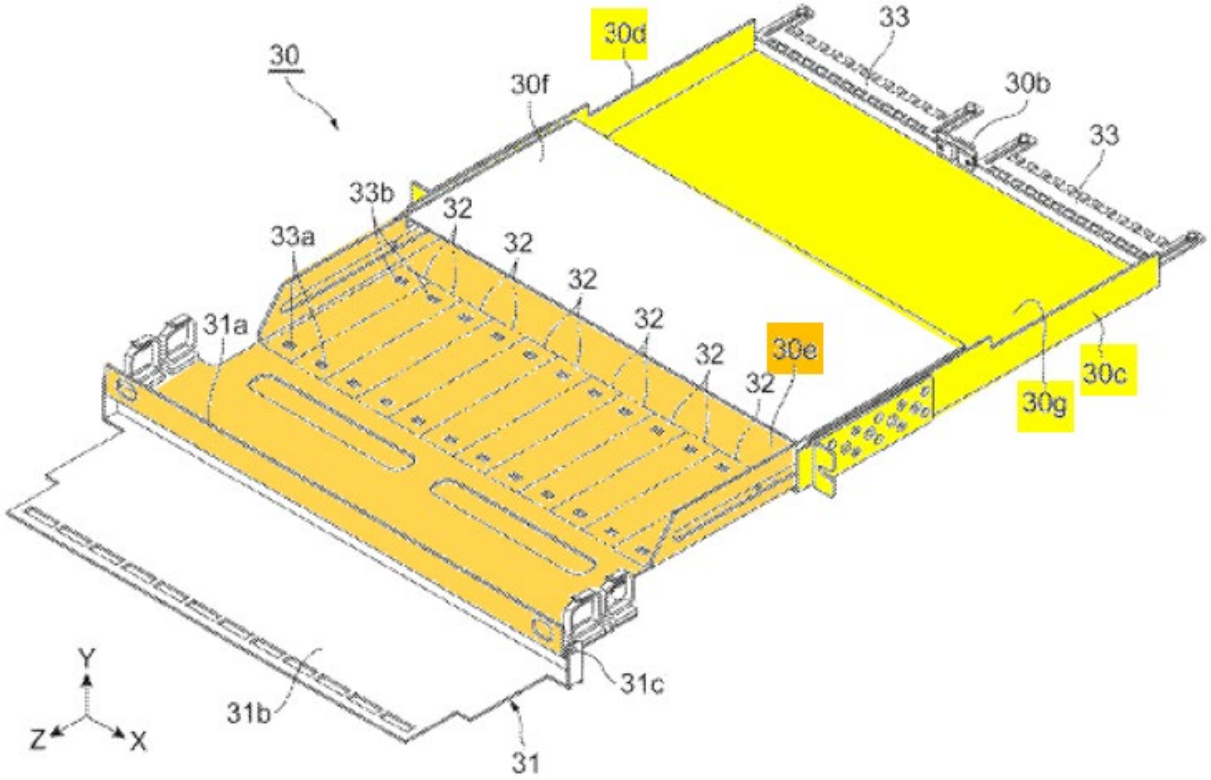
EX1004, Fig. 9, 8:45-48. Fukui expressly allows for a "combination" of different modules. EX1004, 9:42-43; EX1003 ¶¶57-58.

2. Element 1A

Element 1-A recites a conventional *"case*." EX1001, 1:23-26 (PO's '107 patent acknowledging: "The prior art discloses…tray systems within a rack mount case.").

Fukui discloses a case. Figure 9 shows Fukui's case (yellow) with the tray (orange) slide out:

Fig.9



EX1004, Fig. 9; EX1003 ¶64. Elements 30g, 30c, 30d (yellow) are formed into "one body" comprising a bottom panel and two side walls. EX1004, 8:58-60. This "one body" defines Fukui's case. EX1003 ¶64. The bottom of Fukui's case is partially obscured because Fukui's tray (orange) overlaps and covers up the bottom. EX1004, Fig. 9, 8:57-58.

Fukui's case is hollow and defines a *"tray receiving space"* and an *"opening"* as recited in the claim. EX1004, 8:24-27; EX1003 ¶65. Comparing Figures 6 and 9, below, shows that Fukui's tray 30e (orange) slides in and out of the hollow space (red lines):

Fig.9

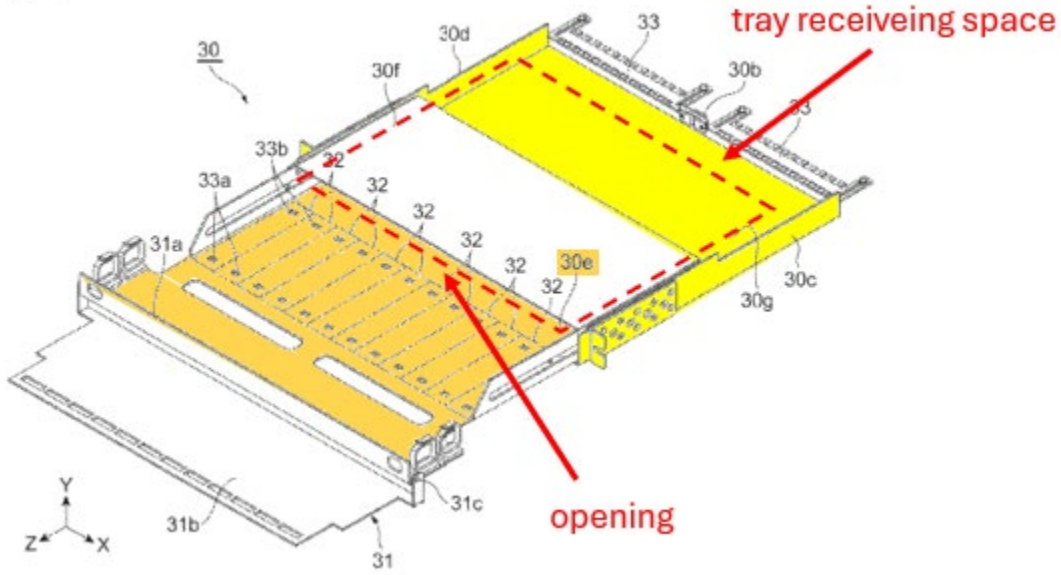
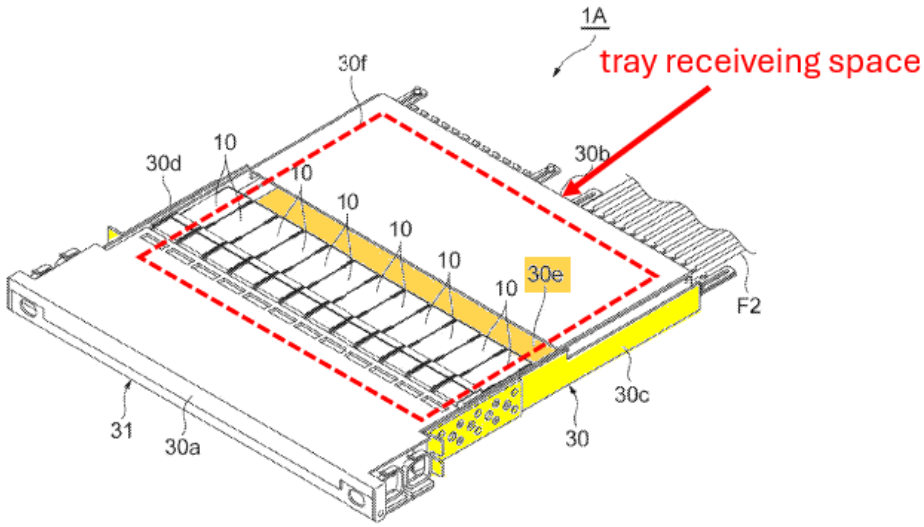


Fig.6



EX1004, Figs. 6, 9.

Fukui's case, however, does not include a top wall as recited in this element. EX1003 ¶70. Instead, Fukui tray has a sliding partial top panel (30f) and front lid (31) that flips up to partially cover the top.

Fig.9

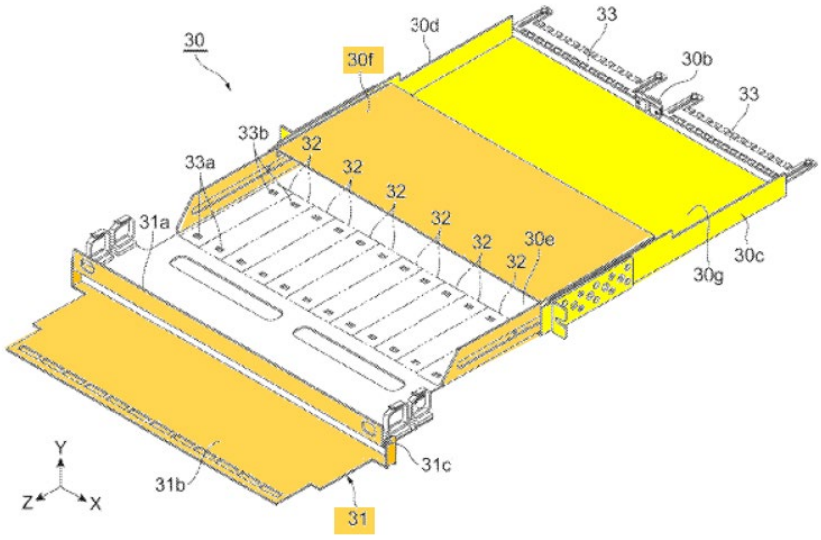
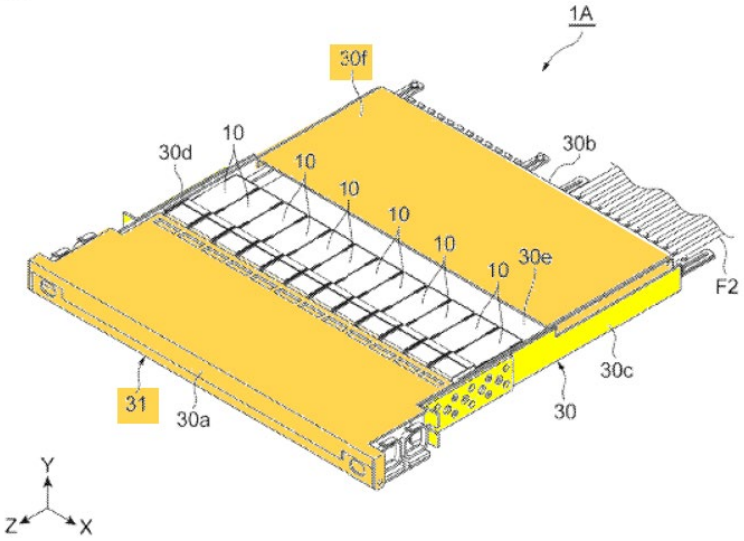


Fig.6



EX1004, Figs. 6, 9, 8:34-42, 8:29-30; EX1003 ¶70. Fukui's modules, however, are not protected from the top because there is a gap (white) where there is no top. EX1003 ¶87.

A POSITA would have found the difference between Fukui and the '107 patent—whether the case had a top wall—obvious based on the combination of Fukui and Sedor or Fukui itself.

Obviousness based on Fukui plus Sedor. Sedor discloses a conventional enclosure (200) with a top wall (202):

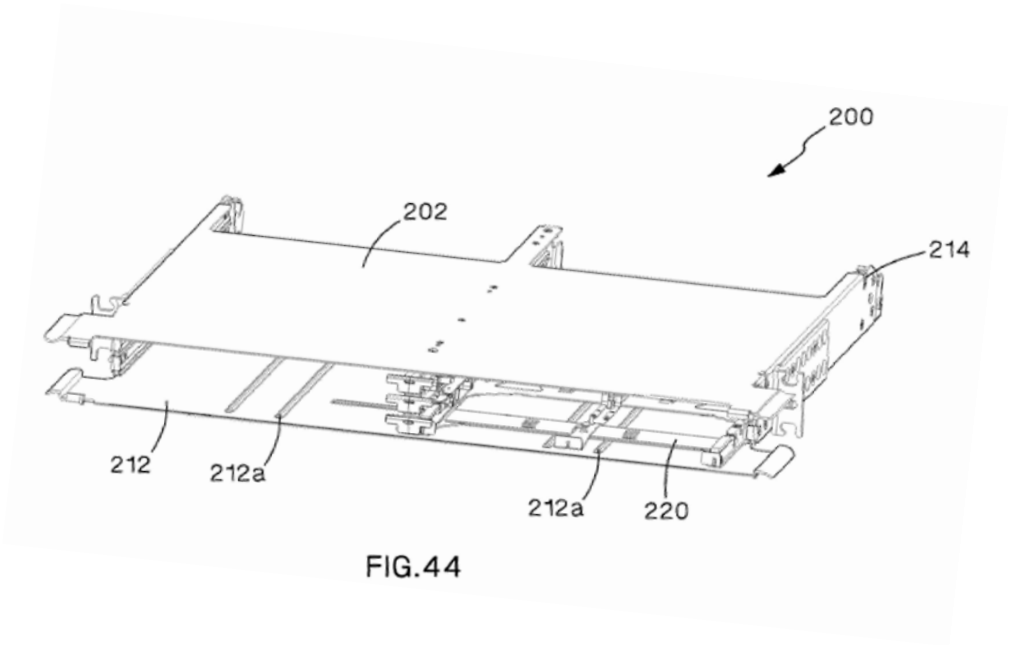


FIG.44

EX1005, Fig. 44, 7:32-35; *see also* EX1005, Figs. 1A-2C, 30-32; EX1003 ¶¶71-74.[2] The examiner found during prosecution that Sedor disclosed the recited "top" wall. EX1007, 64.

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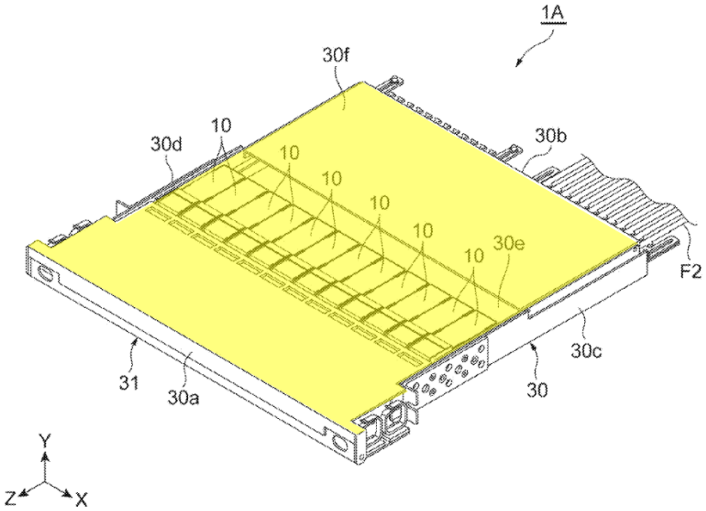
[2] The top is cut away in the back for access to rear cable management but may also be covered. EX1005, 9:15-19, Figs. 47-50.

A POSITA would have been motivated to add a top wall to better protect Fukui's system. EX1003 ¶87. Fukui's current design leaves a gap in the top as shown above. *Id.* Environmental elements (e.g., dust, water, etc.) can enter through this gap. *Id.* Components, tools, and other materials could also be accidentally dropped into this gap damaging the modules or cables in the rear. *Id.* The modules and cables also could be accidentally bumped through this gap during installation or maintenance. *Id.* Fiber optic components are highly sensitive and even minor movement, damage, or obstruction (e.g., dust) can impeded the proper propagation of light. *Id.* Adding a top wall would predicably better protect the system because that is the very purpose of a top wall. EX1003 ¶103. When modifying the case, a POSITA would recognize it is desirable for the case to fully enclose the system (top and bottom). EX1003 ¶¶88-89, ¶85. There are sensitive, fragile components at the front, middle, and rear of the system. EX1003 ¶88.

A POSITA would also recognize that modifying Fukui's case to have a top wall merely calls for a simple substitution of one known element for another, i.e., a case with a top for a case without a top. EX1003 ¶¶100-105. A top wall is an ordinary piece of metal that can be added with screws. EX1003 ¶98. Nothing in PO's disclosure describes a top wall as inventive. Likewise, Fukui does not teach there is anything critical about its existing case other than that it fits in a 19-inch rack. EX1004, 9:30-35.

A POSITA would recognize that modifying Fukui's case to have a top wall is a predictable variation of Fukui's existing disclosure. Fukui's existing top panel (30f) could simply be attached to the Fukui's side walls (30c and 30d) instead of Fukui's tray and extended to the front:

Fig.6



EX1003 ¶89, ¶85, ¶88, ¶¶98-99. A POSITA would recognize that Fukui's bottom panel (30g) would equally be extended to the front when modifying the top. EX1003 ¶¶88-89, ¶85.

A POSITA would also recognize that adding a top wall to the case simplifies Fukui's design. EX1003 ¶¶96-97. Fukui's current design requires two partial top panels (30f and 31) attached to the tray that only achieve partial protection. EX1004, Figs. 6, 9, 8:34-42, 8:29-30. Fukui's current design also requires two steps to access the modules (flip up Fukui's lid and slide the tray out):

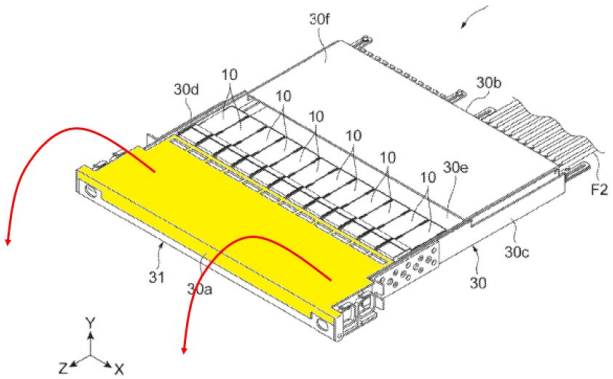
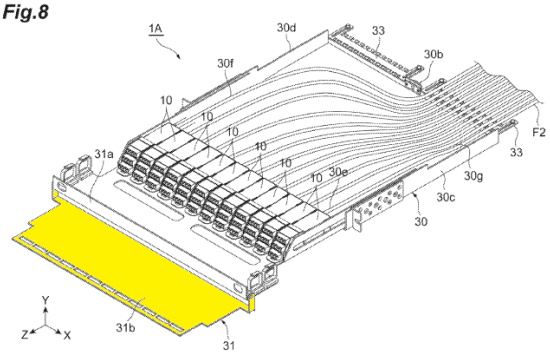


Fig.8



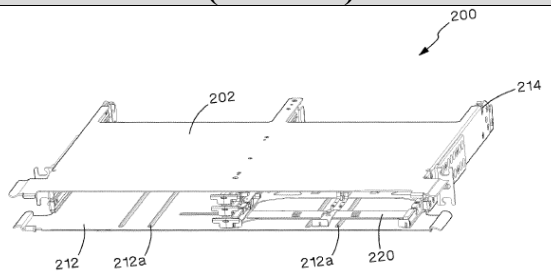
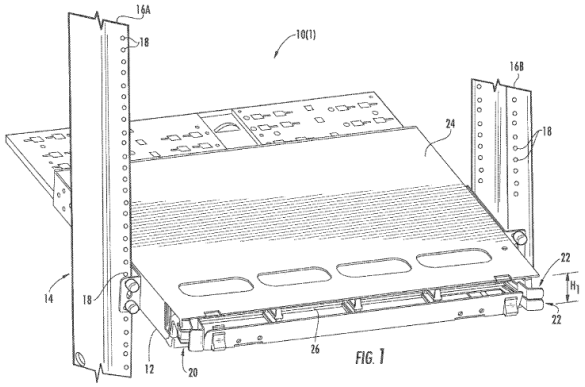
The pivoting lid hangs down in front of the tray, which makes it more difficult for a technician who is standing in front. EX1003 ¶97. A POSITA could simply Fukui's design to one complete top panel attached to the case, which would eliminate the need for the two partial top panels attached to the tray. This would simplify access to one step (slide the tray out) and eliminate the problem of the pivoting partial top handing down in front. EX1003 ¶¶96-97; EX1003 ¶¶90-95.

Finally, a POSITA would naturally consider the combination of Fukui and Sedor because they disclose the same type of system (modular fiber optic systems with different sizes modules).

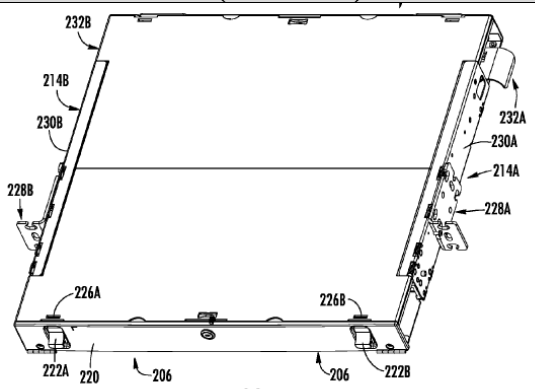
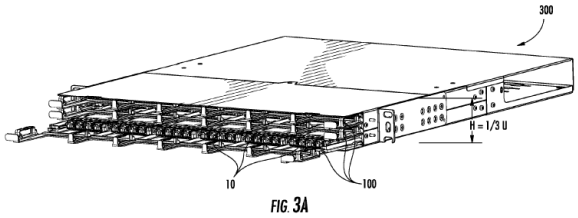
Obviousness based on Fukui itself. A POSITA would have found the difference between Fukui and the '107 patent—whether the case had a top wall—obvious based on Fukui itself because it was common knowledge that a case could have a top wall. *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1361 (Fed. Cir. 2016) ("[A] patent can be obvious in light of a single prior art reference".) It is proper to consider common knowledge when supported by reasoned analysis and evidentiary support. *B/E Aero., Inc. v. C&D Zodiac, Inc.*, 962 F.3d 1373, 1380

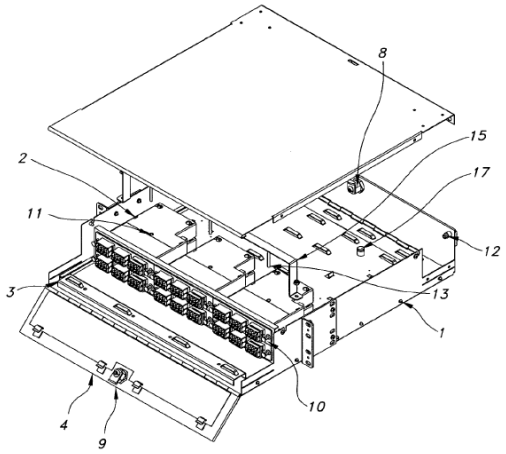
(Fed. Cir. 2020) ("Here, the Board's invocation of common sense was properly accompanied by reasoned analysis and evidentiary support.")[3]

The evidence shows it was common knowledge a case could have a top wall. EX1003 ¶¶76-84. The prior art listed on the face of PO's '547 patent includes numerous examples of cases with a top wall, including the following:

U.S. Patent No. 10,215,944 (EX1005)	U.S. Patent No. 9,008,485 (EX1018)
 FIG.44	 FIG. 1

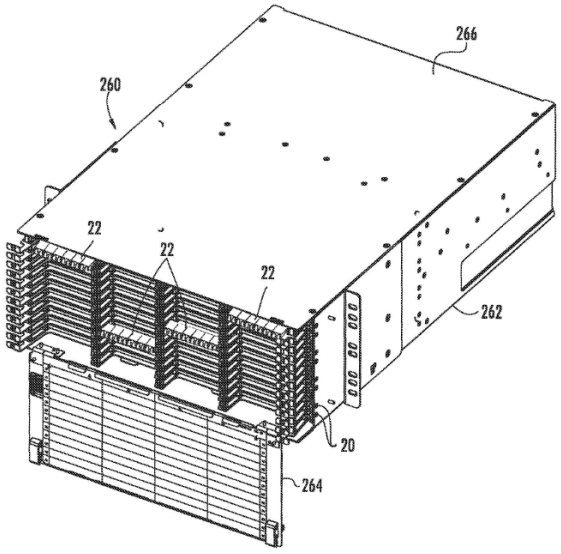
[3] *Koninklijke Philips N.V. v. Google LLC*, 948 F.3d 1330, 1338 (Fed. Cir. 2020) ("[T]he claims would have been obvious over SMIL 1.0 in light of the general knowledge of a skilled artisan"); *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1361 (Fed. Cir. 2016) ("Hence, we do consider common sense, common wisdom, and common knowledge in analyzing obviousness."); *Perfect Web Techs., Inc. v. InfoUSA, Inc.*, 587 F.3d 1324, 1328 (Fed. Cir. 2009) ("Common sense has long been recognized to inform the analysis of obviousness if explained with sufficient reasoning.").

EX1005, Fig. 44, 7:32-35.	EX1018, Fig. 1, 3:67.
U.S. Patent No. 9,075,216 (EX1019)	**U.S. Patent Pub. No. 2016/0062050 (EX1020)**
 FIG. 23 EX1019, Fig. 23, 16:15-29, Figs. 24-27, 17:13-15.	 FIG. 3A EX1020, Fig. 3A-3C, 10D-10E, ¶0052, ¶0061.

U.S. Patent No. 7,509,015 (EX1017)
 EX1017, Fig. 1-4, 4:12-15

EX1003 ¶¶77-81. The publicly available product literature in the industry also shows that the manufacturers of modular fiber optic cassettes systems at the time of PO's '107 (Leviton, Corning, Panduit) each advertised that the case had a top wall. EX1003 ¶82.

Fukui's itself in its "Background" cites W02010/148325 that illustrates a case with a top wall:



EX1004, 1:21 (citing W02010/148325); EX1025 (W02010/148325**)**, Fig. 25, ¶0087 ("A cover 266 is attached"); EX1003 ¶83.

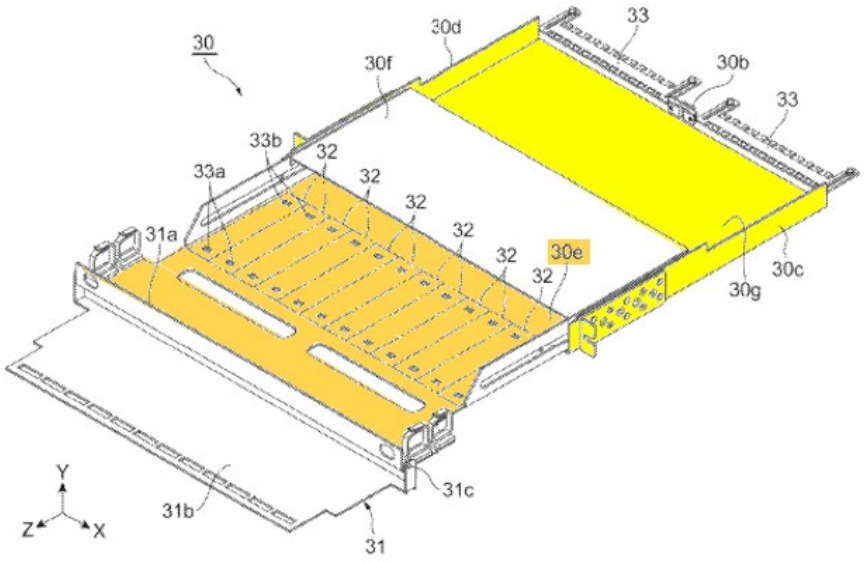
Under the case law, it is especially appropriate to consider the common knowledge because the feature at issue (a top wall) is indisputably simple. *B/E Aero*, 962 F.3d at 1380 (discussing common knowledge for "simple" technology). A top wall is merely an ordinary, flat piece of metal. EX1005, Fig. 44; EX1003 ¶98. A POSITA considering the common knowledge would have been motivated to add a top wall for the reasons already discussed (e.g., improved protection).

3. Element 1B

Element 1-B recites a conventional sliding "tray." EX1001, 1:23-26 (acknowledging: "The prior art discloses…tray systems within a rack mount case.").

Fukui discloses a tray. Fukui tray is bottom panel 30e. EX1003 ¶66. Like PO's preferred embodiment, Fukui's panel 30e is a flat panel upon which the Fukui's cassettes (e.g., modules 10) are arranged and attached. EX1004, 8:30-32 ("modules 10 are arranged on the bottom panel 30e"), 8:45-47. Fukui's tray has twelve areas (32) for arranging Fukui's modules:

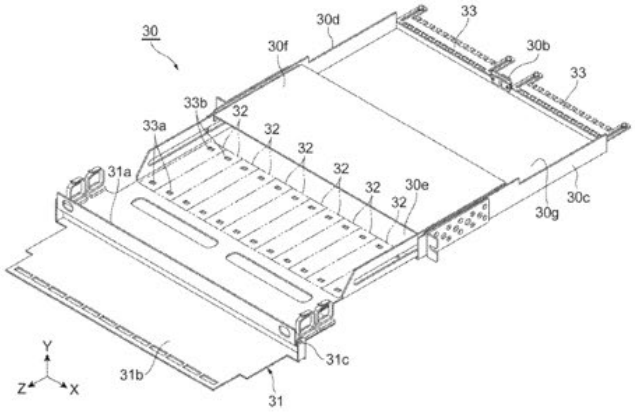
Fig.9



EX1004, Fig. 9, 8:45-47; EX1003 ¶66. Fukui expressly teaches his tray is "slidable." EX1004, 8:60-63. Figure 9, above, shows Fukui's tray has grooves on the side for sliding. Fukui sliding tray moves between a *stored* and *accessible* position as recited in the claim:

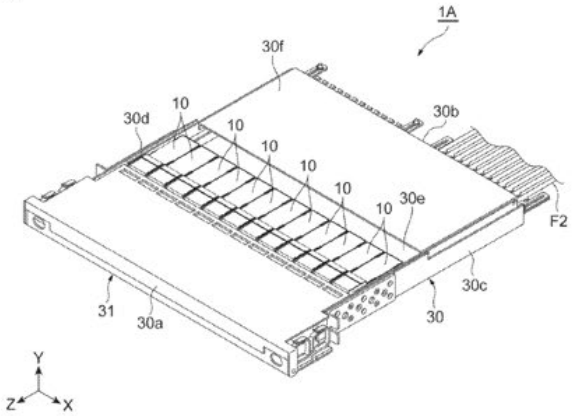
accessible position

Fig.9



stored position

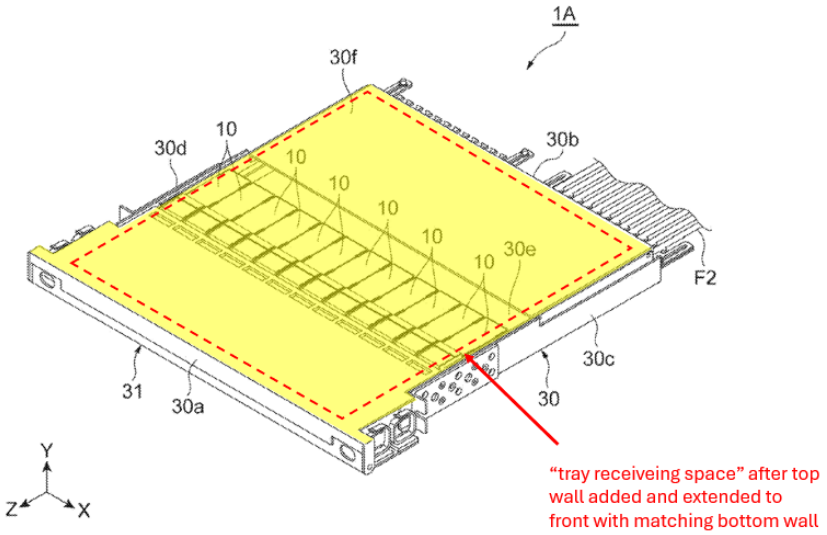
Fig.6



EX1004, Figs. 6, 9; EX1003 ¶¶67-69.

Fukui's tray, however, is not stored *"completely inside"* the tray receiving space of the case in the stored position because Fukui's case is only a partial case. As described in the prior element, it would have been obvious to place Fukui's tray inside a complete case with a top wall that completely covers the top. That same modification would result in Fukui's tray being stored "completely inside" the tray receiving space:

Fig.6



EX1003 ¶85, ¶¶88-89. Sedor, below, shows that the tray (212a) is completely inside the case in the conventional design where the case has a top wall:

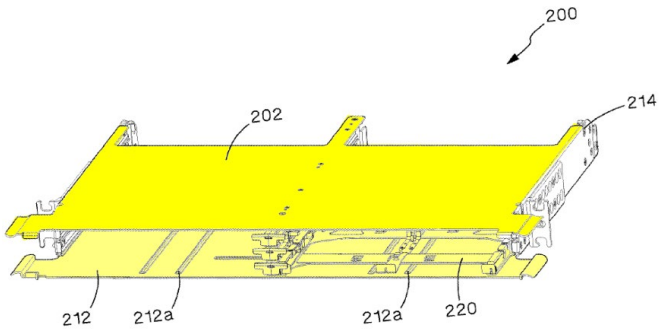
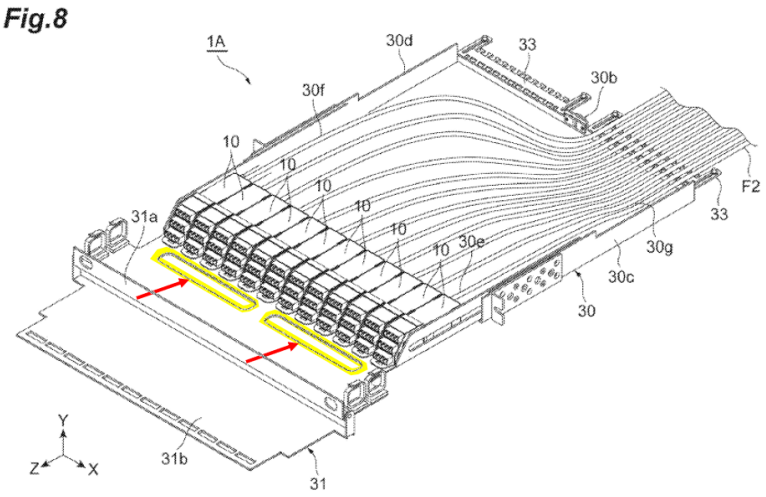


FIG.44

EX1005, Fig. 44.

If PO argues Fukui's tray is not "completely inside" the *bottom* wall, that does not distinguish Fukui. Sedor case, as shown above, teaches to have the bottom and top wall coextensive and extend all the way to the front. When adding a top wall as discussed in the prior element, a POSITA would have followed this conventional design. EX1003 ¶85, ¶¶88-89. This would have advantageously covered up two holes in the bottom of Fukui's tray:

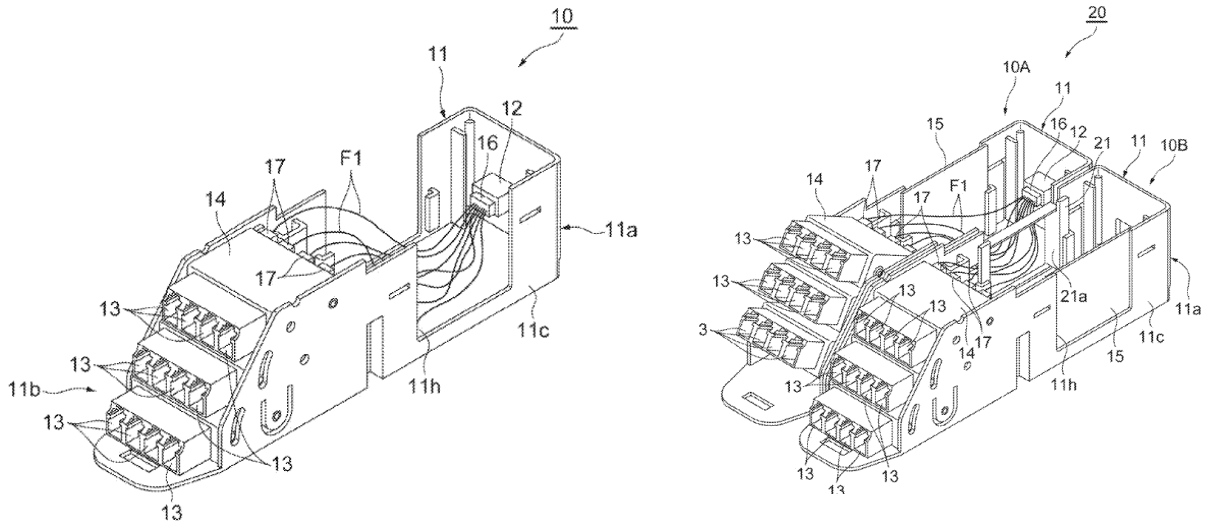


EX1004, Fig. 8; EX1003 ¶85. When the tray is slid out of the case, these openings provide access for a technician to simultaneously grasp the connectors from above and below to make it easier to pull connectors out or push them in. EX1003 ¶85. But, when the tray is slid into the case, it is desirable for the bottom of the case to cover up the opening to protect the fiber optic components from below for all the same reasons discussed above in Element 1A. EX1003 ¶85

4. Element 1C

"a set of fiber optic cassettes…"

Fukui's modules (e.g., 10, 20) are a set of fiber optic cassettes. Figures 4-5 shows modules 10 and 20:



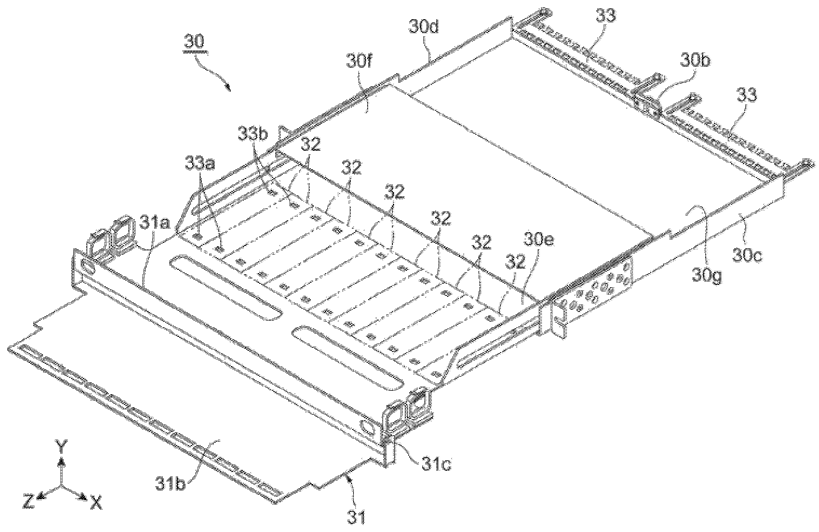
EX1004, Figs. 4-5; EX1003 ¶¶108-109. The analysis for the preamble explains these modules have the same features as the PO's preferred embodiment of fiber optic cassettes. [4]

"…a selected plurality of the cassettes…"

Fukui discloses selecting a "plurality of conversion modules," including a "combination" of modules 10 and 20. EX1004, 8:18-32, 9:42-43. Figures 9 shows twelve areas (32) for the modules.

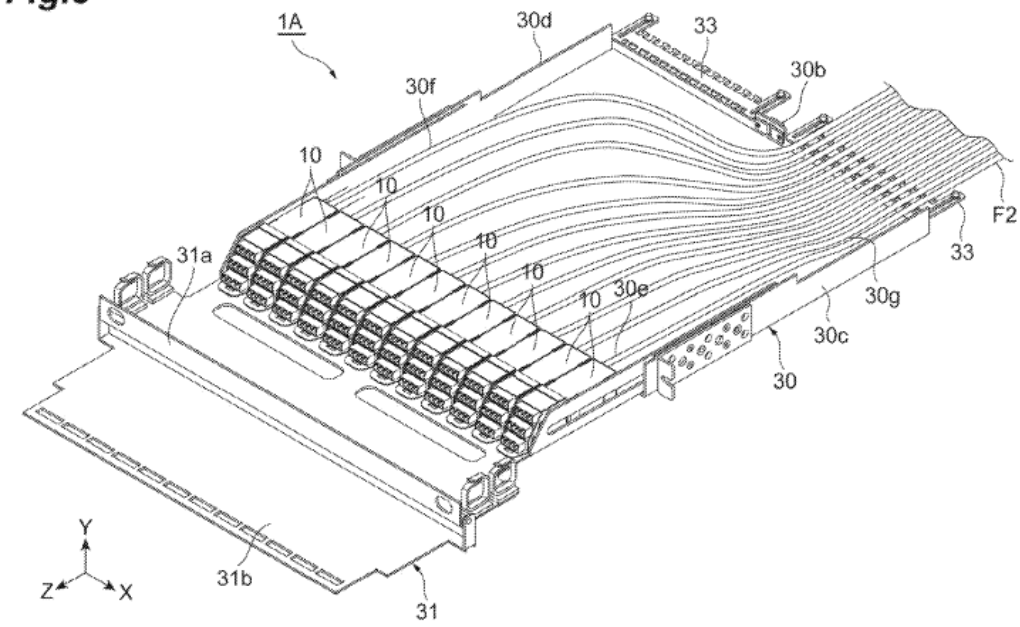
[4] Like Fukui, Sedor also called his cassettes "modules." EX1005, 4:22-23, EX1007, 65.

Fig.9



EX1004. Figure 8 shows twelve modules 10 arranged in theses area:

Fig.8



EX1004. Fukui explains any of the module 10 can be coupled to form modules 20.

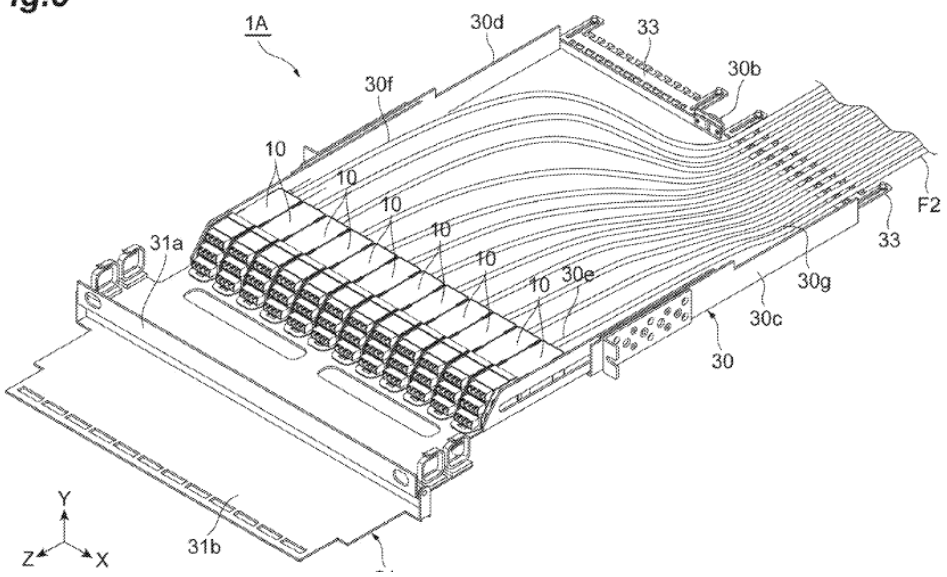
EX1004, 8:19-24. Fukui expressly teaches: “at least one of the conversion

modules 10 and the conversion module 20 is included in the plurality of conversion modules." EX1004, 8:21-24, EX1003 ¶110.

"…arrangeable side by side along said tray front end…"

Fukui's figures show the modules are arrangeable side by side along Fukui's tray (element 30e):

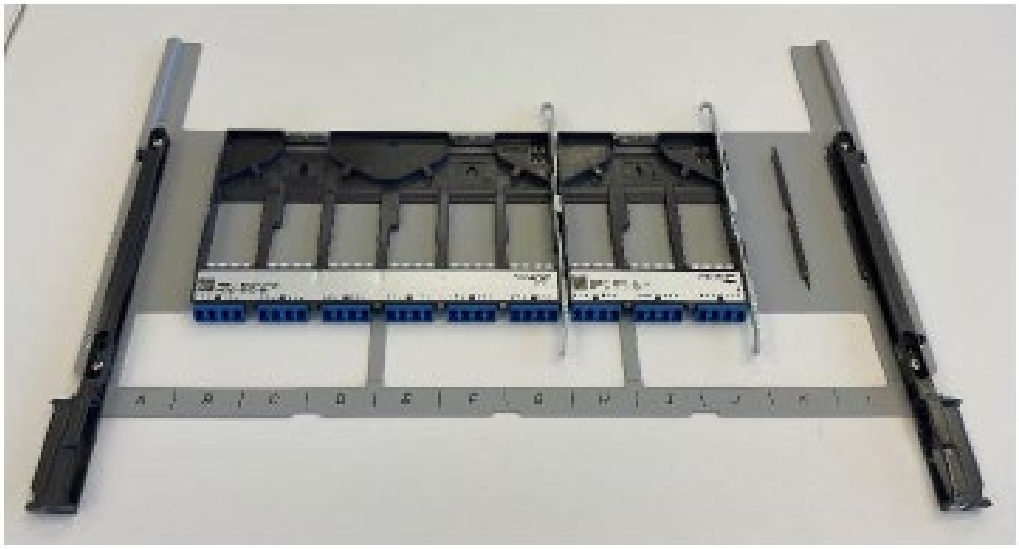
Fig.8



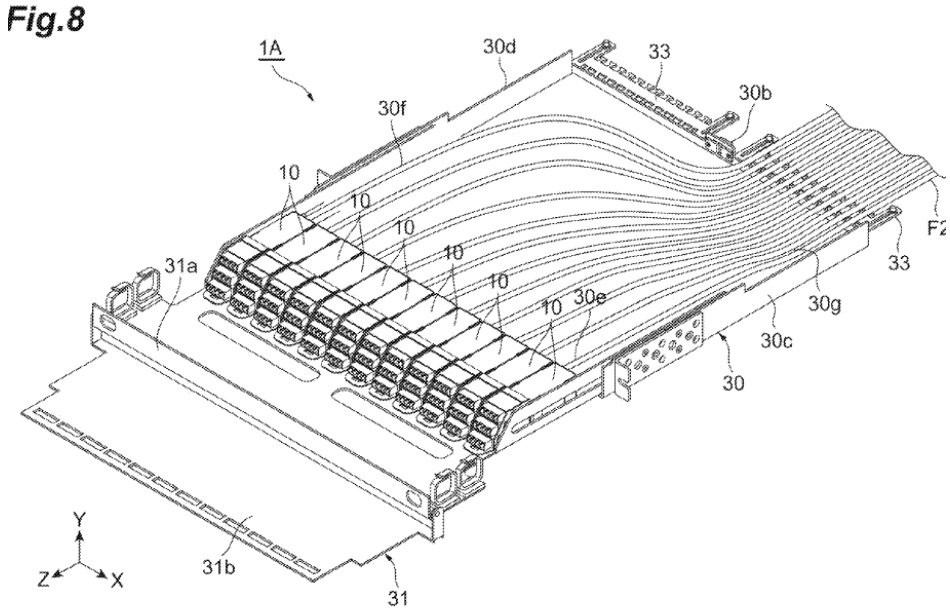
EX1004, Fig. 8, 8:51 ("lateral walls 11c and 11d are arranged with each other along the X direction"), 9:16-17 ("modules can be laterally aligned as shown in FIG. 8"); EX1003 ¶111.

The parties agreed in the co-pending litigation that "along" the tray front end means "on or beside" the tray front end. EX1011 at 2. Although Fukui's modules are not "on" the tray front end, they are "beside" the tray front end under PO's

interpretation. PO alleges the following arrangement meets the claim where the cassettes are set back from the tray front end:



EX1012, 3. Fukui's modules are arranged in the same way:



EX1004, Fig. 8; EX1003 ¶112..

If PO denies Fukui's modules are sufficiently close to the tray front end, a POSITA would find it obvious to move Fukui's modules forward to be on or beside the front end of the tray based on Fukui plus Sedor or Fukui itself. EX1003 ¶¶113-116. Sedor discloses to place modules (e.g., 30) on the front end of tray (120):

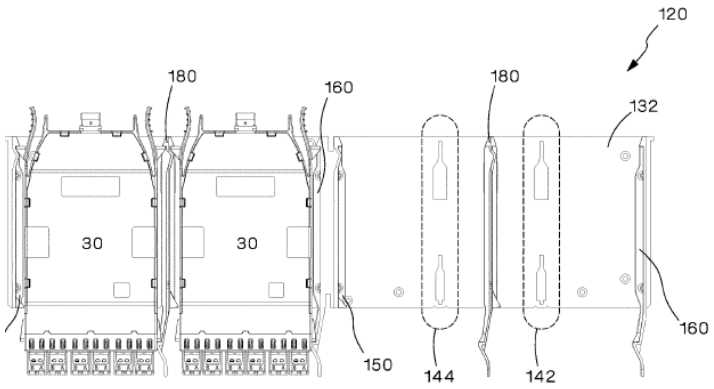


FIG.7

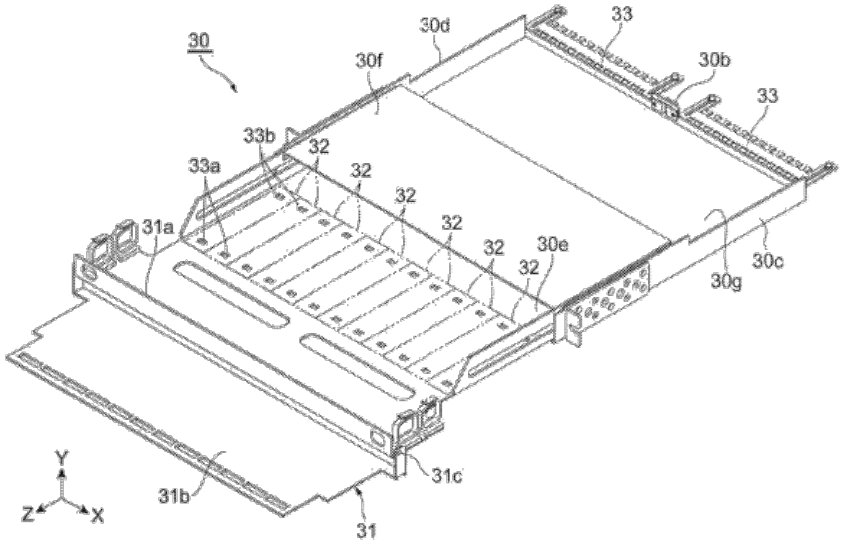
EX1005, Fig. 7, Figs. 8-12. The examiner found during prosecution that Sedor disclosed positioning the modules *"along said tray front end"* (EX1007, 65), and nothing in PO's disclosure describes this conventional position as inventive.

A POSITA would have been motivated to move Fukui's modules forward on the tray to make it easier for field personnel to access Fukui's modules and minimize the need to slide Fukui's tray out. EX1003 ¶114. Fukui is specifically concerned with facilitating "access" to its modules and facilitating the work of inserting the connectors or drawing them out (unplugging them). EX1004, 8:57-64 ("facilitates an access to each single-core optical connector adapter 13"); 10:19-30

("facilitate the inserting and drawing out work"), 9:20-29 ("reducing the work"). Field personnel must access the modules to plug/unplug LC connectors into the front. EX1003 ¶114. By moving the modules moved forward, field personnel do not need to reach as far into the tray and do not need to slide the tray as far out. *Id.* This is beneficial because space in telecommunication rooms can be confined and cramped making it difficult to slide the tray out larger distances to access the module. *Id.*

A POSITA would recognize that Fukui's modules could be moved forward to be closer to the front end of the tray simply by moving the already disclosed areas (32) and holes (33a, 33b) forward.

Fig.9



EX1004, Fig. 9, 8:52-56. This requires no new structures—just an adjustment of the existing structure. Fukui does not teach there is anything special or critical

about the location of his holes; thus, there is a reasonable expectation of success to adjust the position of the modules forward.[5]

"wherein each of said cassettes comprises a plurality of optic plug receiving receptacles arranged side by side in a row along a front thereof"

Figure 4-5 show Fukui's modules have three rows of optical plug receiving receptables:

Fig.4

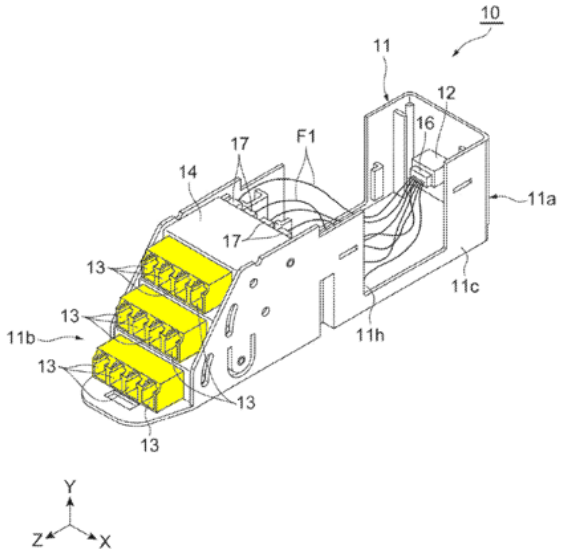
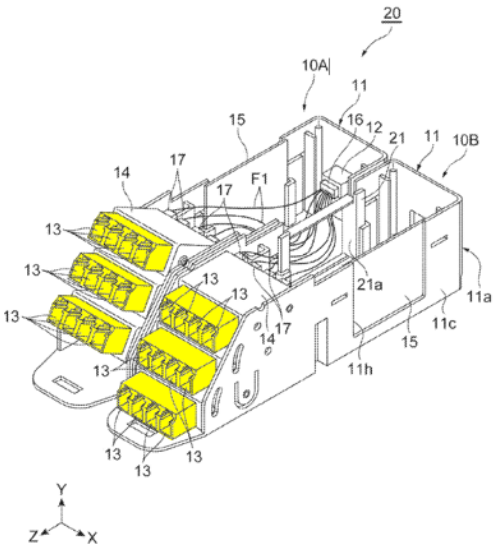


Fig.5



EX1004, Figs. 4-5, 5:24-42; EX1003 ¶117. Numerals 13 in the rows are "single-core optical connectors adapters" for an "LC connector." EX1004, 5:24-27. Any of the three rows is sufficient to disclose this element because each row has a plurality (four) of receptacles (13). The four receptacles (13) in each row are

[5] A POSITA could equally move the two access cutouts forward as desired.

"made into one body," i.e., a quad LC adapter like PO's preferred embodiment. EX1004, 5:34-36.

> **"…a first of said set of cassettes comprising a first cassette width of one of one, two, three, four and six standard width units and a second of said cassettes comprising a second cassette width different from said first cassette width and one of one, two, three, four and six standard width units"**

The relevant unit of width in Fukui's system is the width of module 10. EX1003 ¶120. Module 10 is the "unit" for all of Fukui's modules. For example, Fukui's expressly teaches the double module 20 comprises a first "unit" 10A and second "unit" 10B coupled together. EX1004, 7:26-27. Units 10A and 10B are the "same" as module 10. EX1004, 7:28-29, 8:3-6. Fukui explains that the modules can expand to larger sizes based on "the number" of coupled "unit modules." EX1004, 7:67-8:1. The width of module 10 is also the unit of width for tray, which has twelve evenly spaced areas for the modules 10:

Fig.9

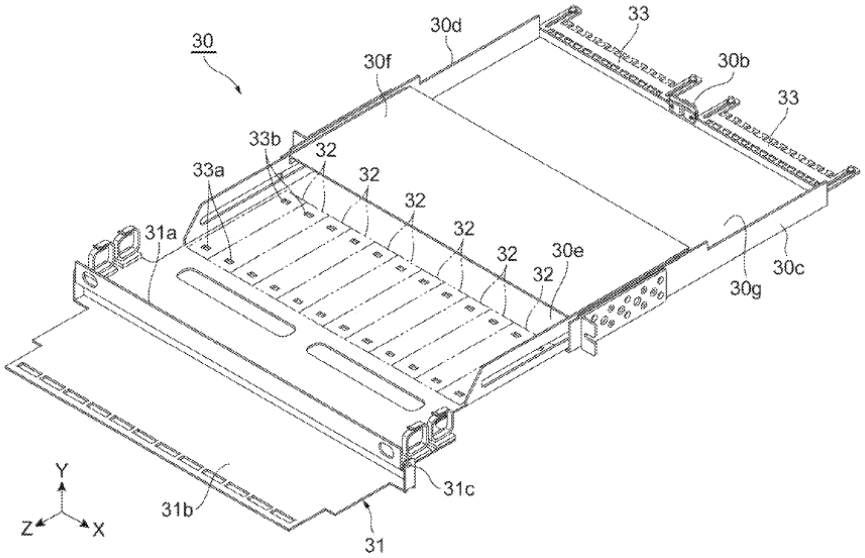
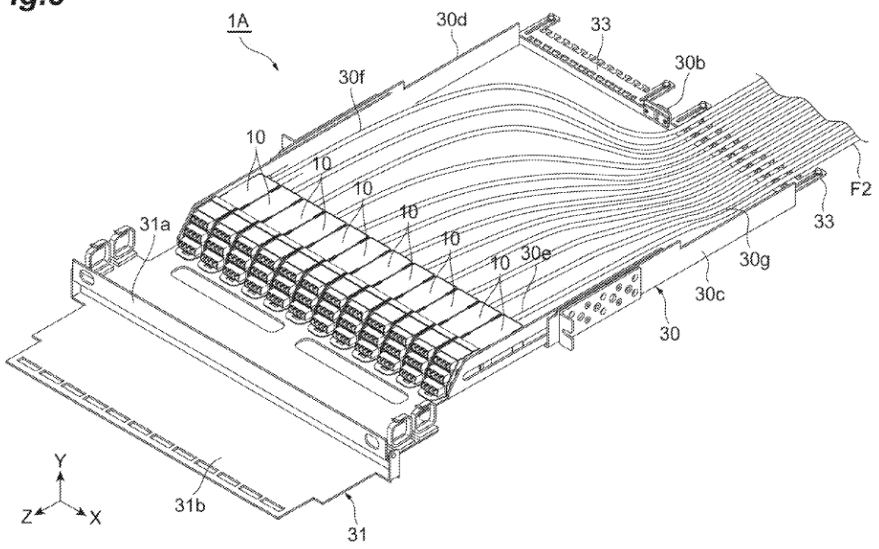


Fig.8



The width of Fukui's module 10 is a "standard" width unit because it is common for all of Fukui's modules and the tray and based on an actual width standardized in the industry. EX1003 ¶126, EX1009, 27. Figure 1, above, shows the width of Fukui's correspond to one LC quad adapter. The width of the LC quad adapter is standardized in the industry. *Id.*

Fukui's module 10 is an example of the recited *"first cassette"* with a width of *"one"* standard width unit, and Fukui's module 20 is an example of the recited *"second cassette*" with a width of *"two"* standard width units.

Fig.4

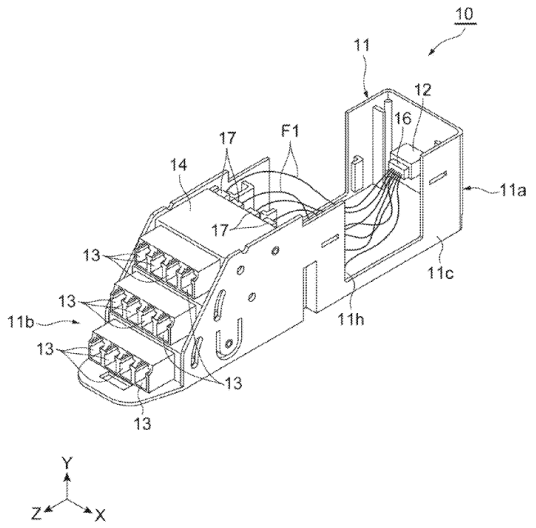
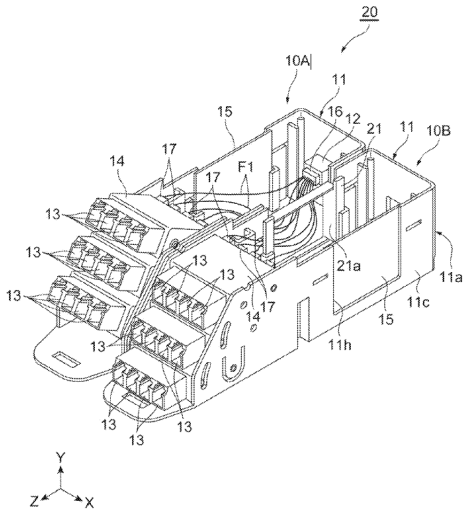


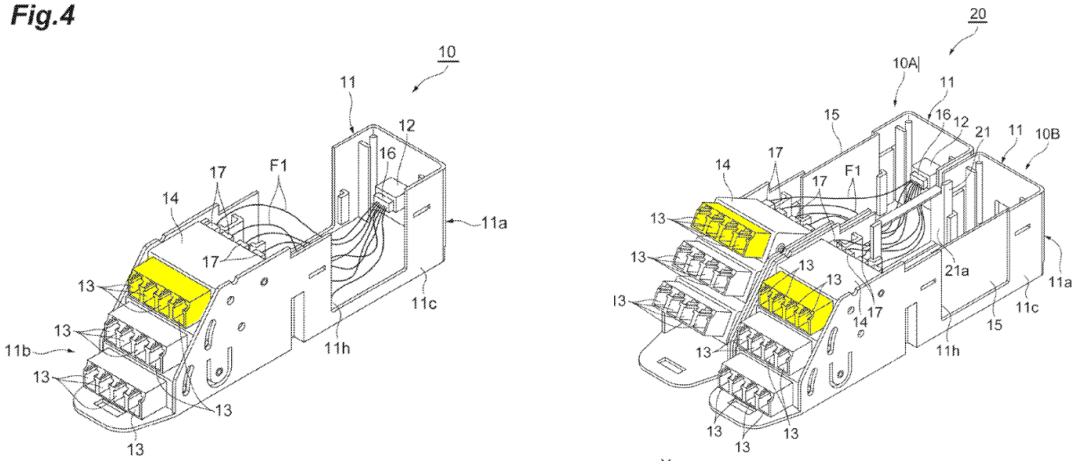
Fig.5



EX1004, Figs. 4-5; EX1003 ¶¶118-19. Module 10 comprises one unit. Module 20 comprises two coupled units 10A and 10B. EX1004, 7:25-27. Fukui explains that the coupled units can be treated as "one body." EX1004, 8:2-3.

Fukui's disclosure meets both proposed constructions in the litigation. EX1003 ¶¶121-26.

PO's construction. The width Fukui's modules 10 and 20 accommodate one and two quad LC receptacles modules (yellow), respectively, as recited in PO's construction.



EX1004, 5:34-36 (explaining the four receptacles are "made into one body", i.e., one receptacle module."); EX1003 ¶¶122-23. If PO argues the height of Fukui's modules accommodates additional receptacles, that does not distinguish Fukui because the claim and PO's own construction states a limitation about the width, not the height. EX1003 ¶127.

CommScope's construction. The width of module 10 is, by definition, one times the width of module 10. *See* EX1004, Fig. 4; EX1003 ¶124. The width of module 20 is two times the width of module 10 because module 20 comprises two modules 10A and 10B. EX1004, 7:25-29, 8:3-6, Fig. 5; EX1003 ¶¶124-25. Module 20 does not include an additional amount such as a rail. Fukui's system has no rails. *See* EX1004, Figs. 4-9. Fukui's modules are all "evenly divisible" by the width of module 10. For example, because module 20 is two modules 10, the width of module 20 / the width of module 10 = 2, and there is no remainder left

over from rails as there was in Sedor because neither module has rails.[6] EX1003 ¶¶124-25.

5. Element 1D

Element 1-D recites a *"fastener"* for securing the cassettes. Fukui's modules have hooks 11i, 11j for securing Fukui's modules to holes 33a, 33b in Fukui's tray. 8:52-56. Figures 2 and 9 shows this:

---

[6] If PO argues Fukui's two unit module does not meet CommScope's construction because there is a tiny space between the coupled modules 10A and 10B, PO is wrong. EX1003 ¶¶128-29, ¶¶138-151. Fukui's text accompanying Figure 5 clarifies that 10A and 10B are "fixed to each other," not spaced apart. EX1004, 10:13-14. Fukui's other figures also clarify that there is no room to space apart the coupled modules 10A and 10B when installed in the tray, which is discussed below in Element 1-E. Furthermore, such an argument would also not distinuish Fukui under PO's own construction. And the analysis for Element 1E explains, in the alternative, it would be obvious to remove any alleged tiny space which equally applies here.

Fig.2

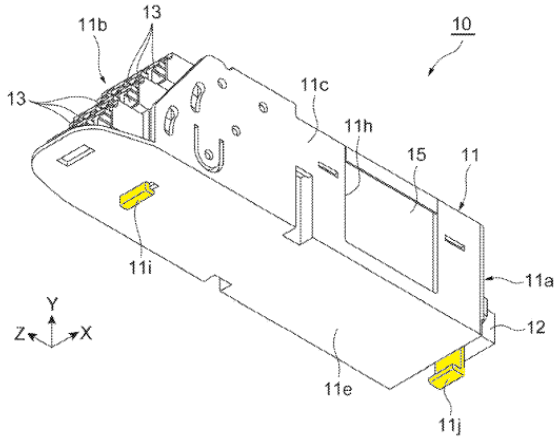
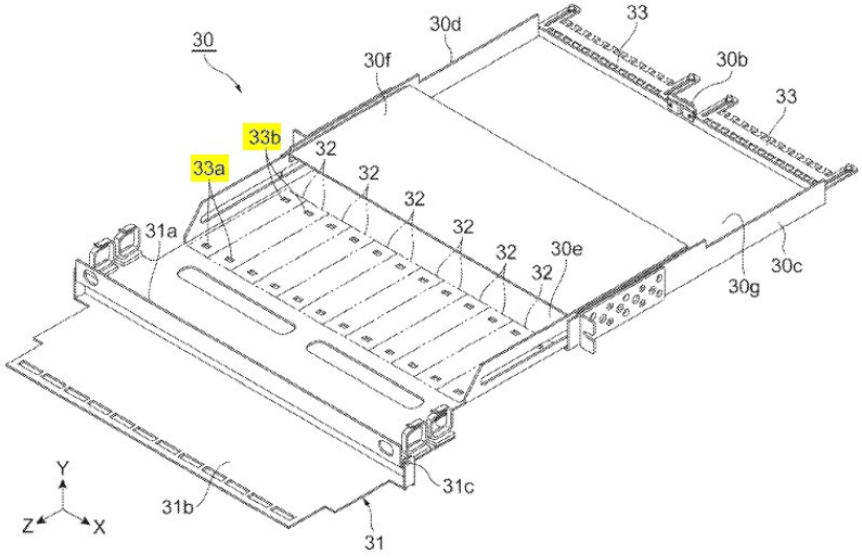
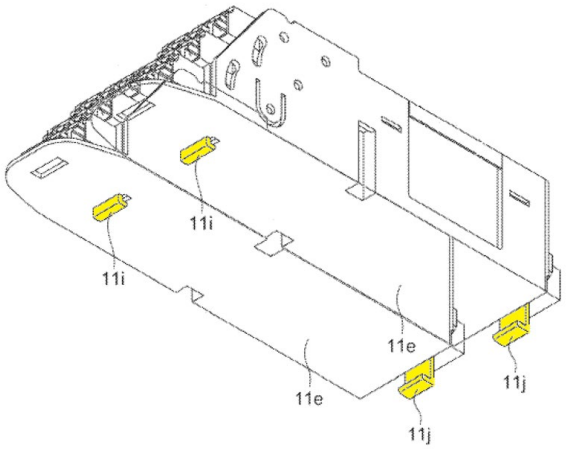


Fig.9



EX1004, Figs. 2, 9; EX1003 ¶¶131-32. Fukui's modules are removable and can be exchanged. EX1004, 3:65 ("easily removed"), 9:18-21 ("exchanging the module"); *see also* EX1004, 10:31-35, 4:38-43.

Because Fukui's module 20 is constructed from two modules 10, module 20 has the same hooks. EX1004, 7:27-29, 8:3-6, Figs. 4-5.

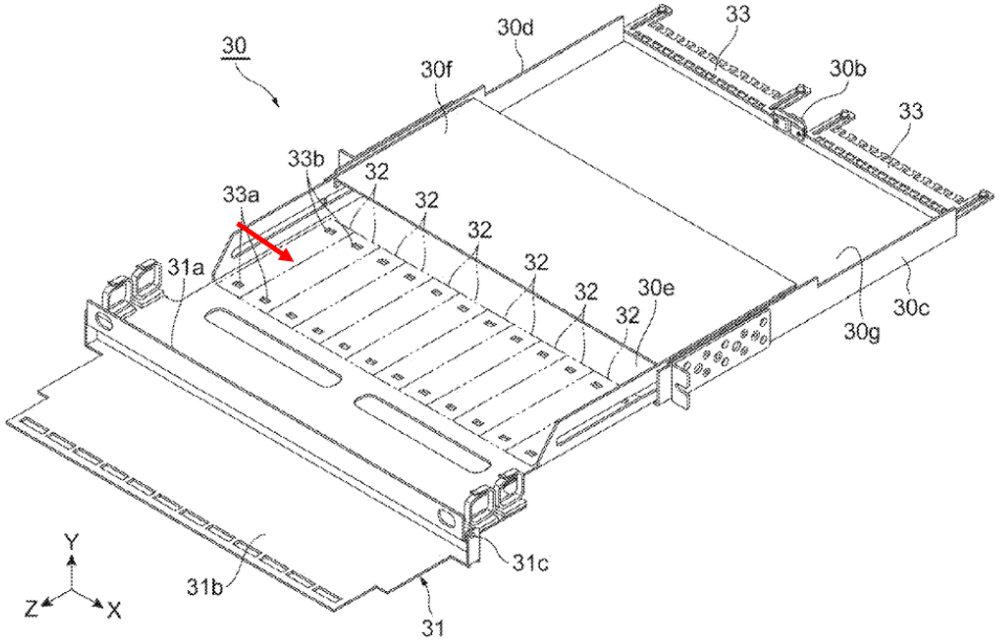


EX1003 ¶132.

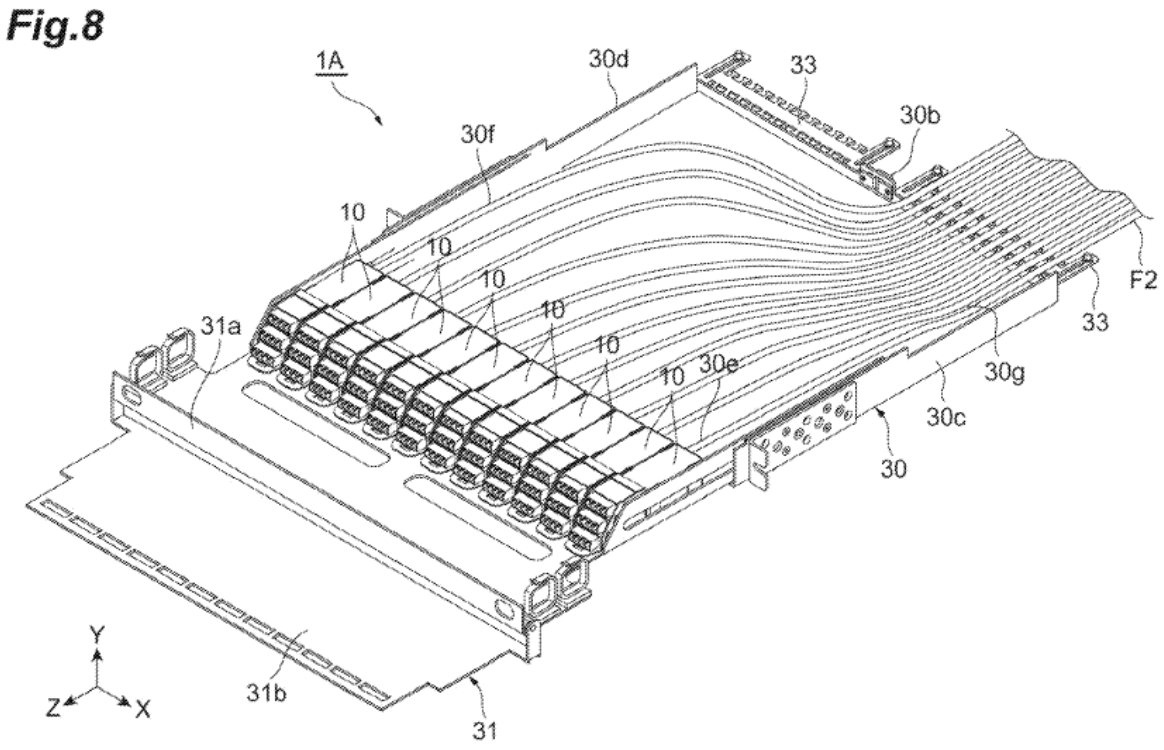
6. Element 1E

Each of Fukui's modules "*touches*" as recited in this element. Figure 9 shows the areas (32) for placing the modules touch each other. The sides of adjacent areas come together to a single black line:

Fig.9



EX1004, Fig. 9; EX1003 ¶135. There are no rails between the areas to prevent touching. Like PO's preferred embodiment, Fukui's attached directly to holes in the areas. EX1004, 8:49-56. Figures 8 shows that the sides of adjacent modules come together to a single black line with no gaps when installed in those area, showing the modules touch:



EX1004, Fig. 8; EX1003 ¶¶134. Figures 6 and 7 show the same thing:

Fig.6

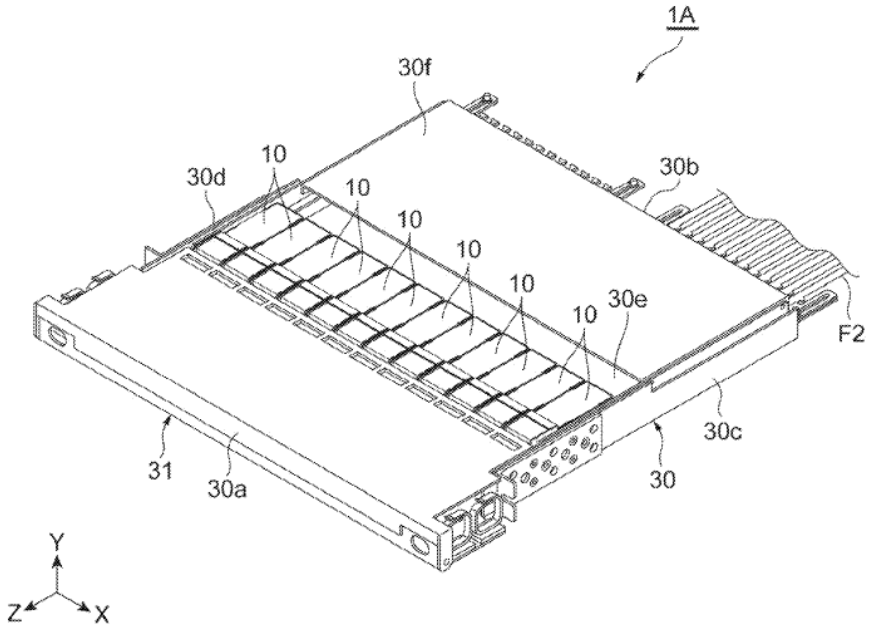
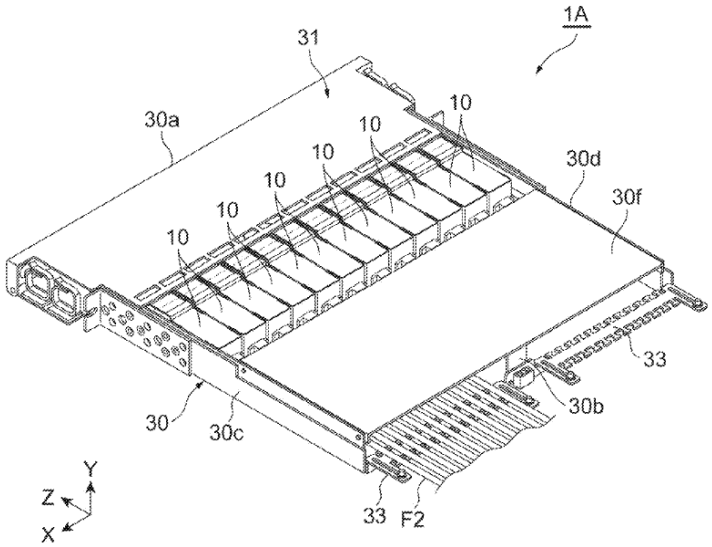


Fig.7



EX1004, Figs. 6-8; EX1003 ¶¶134.

Here is an annotation showing the proximity of two modules 10 (i.e., a module 20) to another module 10:

Fig.8

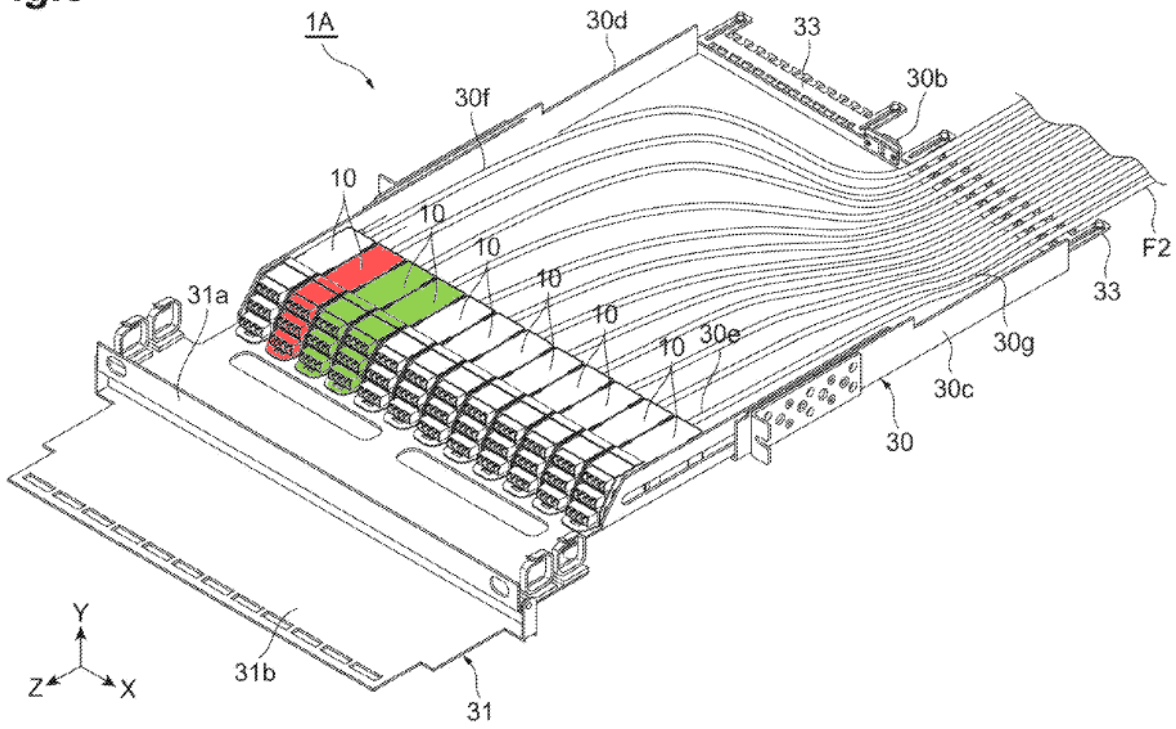
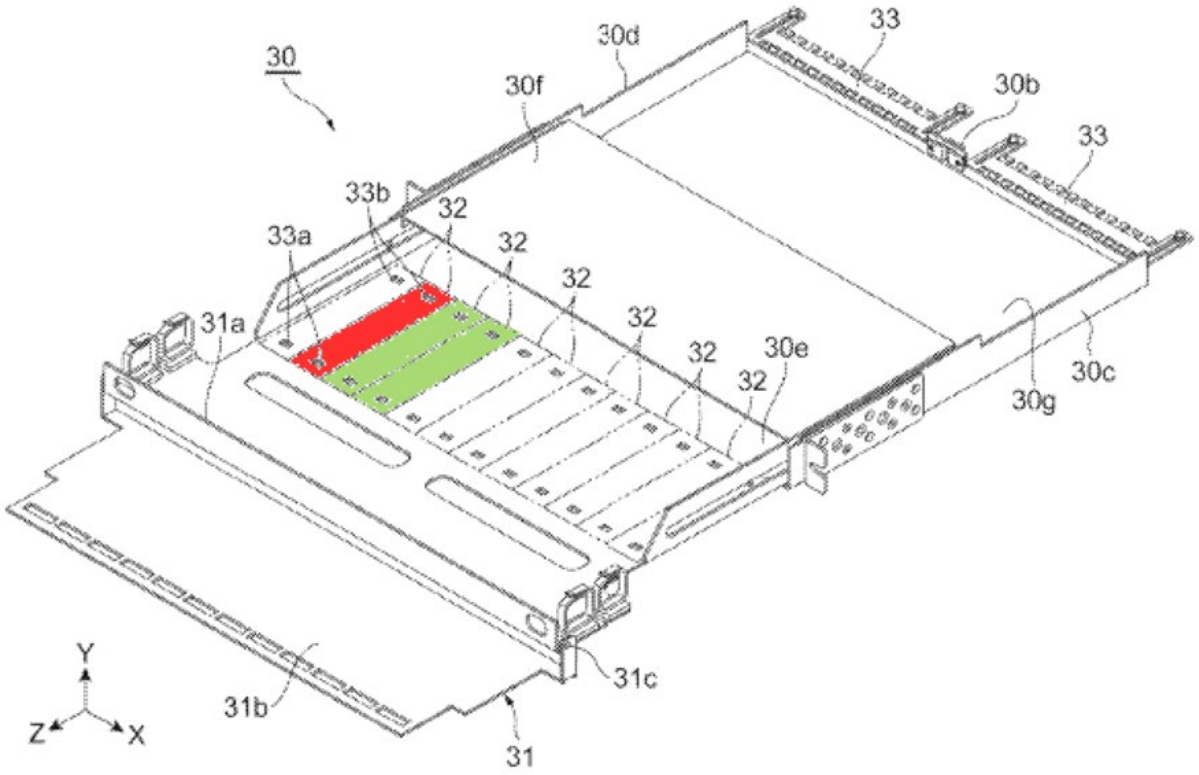

1A
30d
33
30b
30f
10
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10
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F2
31a
33
30e
30g
30c
30
Y
Z
X
31b
31

Fig.9

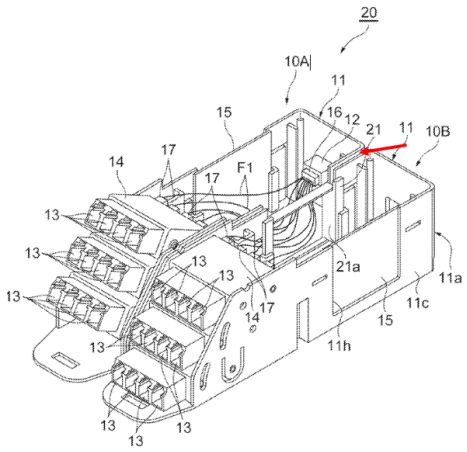


EX1004, Figs. 8-9; EX1003 ¶¶136-37. The double module (green) touches the single module (red).

Fukui's disclosure is very similar to the disclosure in PO's specification. PO's specification does not expressly use the term "touches." Instead, like Fukui, PO's figures illustrate its cassettes side by side on the tray with no gaps in between. *See, e.g.*, EX1001, Figs. 4A-4D. PO's specification also says its cassettes fit "snuggly side by side," which is exactly what is shown in Fukui's figures above. *Compare* ("snuggly side by side") *with* EX1004, Figs. 6-9.

PO may argue that Figure 5 shows a tiny space (the thickness of a wall) between the two adjacent modules:

Fig.5



EX1004, Fig. 5. The text accompanying Figure 5, however, clarifies that the modules are "fixed to each other" (i.e., touching to each other), not spaced apart. EX1004, 10:14, 4:9. Fukui also explains that the modules in Figure 5 have the "same" shape as modules 10 and Fukui never describes modules 10 as spaced apart. EX1004, 7:28, 8:5-6, 8:19-20. Furthermore, Fukui's other figures show there is no room to space apart the modules. EX1003 ¶139. Figure 9, above, shows the areas for placing the modules touch with room to space apart the modules, and Figures 6-8 show the sides of adjacent modules come together to a single black line with no space between. Thus, considering Figure 5 with the description of Figure 5 and the other figures, a POSITA would not conclude Fukui teaches adding a space between modules. EX1003 ¶139. Fukui never mentions such a space or assigns its any relevance. A POSITA also understands it would not

make sense to add a space between modules because it would interfere with the modules being coupled together. *Id.* The coupling member performs the function of a clip. *Id.* For a clip to be functional the two items held together must be in contact (touch) so as to resist the force of the clip and maintain a tight coupling. *Id.*

Furthermore, Figures 6-9 are the most relevant figures because Element 1-E requires the modules touch *"when arranged on said at least one tray"* and Figures 6-9 (not Figure 5) shows how modules are arranged on the tray. Figures 6-9 all consistently shows there is no room to space apart the modules when arranged on the tray and show that the modules do touch.

Even if there was a tiny space between the modules, a POSITA would certainly find it obvious to omit such a tiny space and have the modules touch. EX1003 ¶¶140-151. Fukui never describes any need to space apart the modules and any space between the modules is so insignificant it does not appear in Figures 6-9. A POSITA would consider this obvious and predictable implementation of Fukui's existing teachings showing that the areas (32) for placing the modules touch. EX1003 ¶140, ¶151.

A POSITA would have been motivated to have Fukui's modules touch for multiple reasons. EX1003 ¶¶143-48. First, a POSITA would have been motivated to remove any tiny space between the modules because it would make it easier to

align the modules during installation. EX1003 ¶144. Fukui itself is specifically concerned with reducing the work for field personnel and facilitating the work of inserting the connectors or drawing them out (unplugging them). EX1004, 9:20-29 ("reducing the work"), 10:19-30 ("when inserting and drawing out the single-core optical connector…facilitate the inserting and drawing out work"), 4:38-43. By having the modules touch, the user would not have to account for maintaining a tiny gap during installation. The user could simply slide the module along the side of the adjacent module which would guide the module to the proper placement. EX1003 ¶144. This is especially advantageous because the user cannot otherwise see the attachment structure on the modules during installation because the hooks are on the bottom of the modules. EX1003 ¶144. Second, a POSITA would have been motivated to remove any tiny space between the modules to make Fukui's larger modules made of coupled modules more rigid. EX1003 ¶¶145-46. Fukui teaches that it desirable to treat the larger coupled units as "one body," i.e., a rigid assembly. The prior art recognizes that having "no clearance" (i.e., no space) between coupled modules creates a more rigid assembly. EX1026 at 3:4-9 ("Thus, a rigid assembly is achieved."). By contrast, it is more difficult for modules to function as "one body" when coupled together if there is a space between the modules because the individual modules could flex and bend into the space (which also put strain on the coupling member in the middle). EX1003 ¶145.

Eliminating any tiny gap would prevent this flexing and bending. *Id.* Third, a POSITA would have been motivated to remove any tiny gap between the modules to prevent material (e.g., dust) from getting into the gap or entering the modules through the gap and interfering with coupling the modules or the fiber inside the modules. EX1003 ¶147.

A POSITA would have a reasonable expectation of success in removing a tiny gap between the coupled modules. EX1003 ¶¶149-50. At most, a POSITA would only need to slightly increase the size of modules 10 such that there is no space between adjacent modules 10. EX1003 ¶149. There are no rails or other intervening structures that would prevent having the modules touch.

B. Claim 2

Figures 8-9 shows Fukui's tray is "*dimensioned to receive at least twelve standard width units side by side"* as recited in Claim 2:

Fig.9

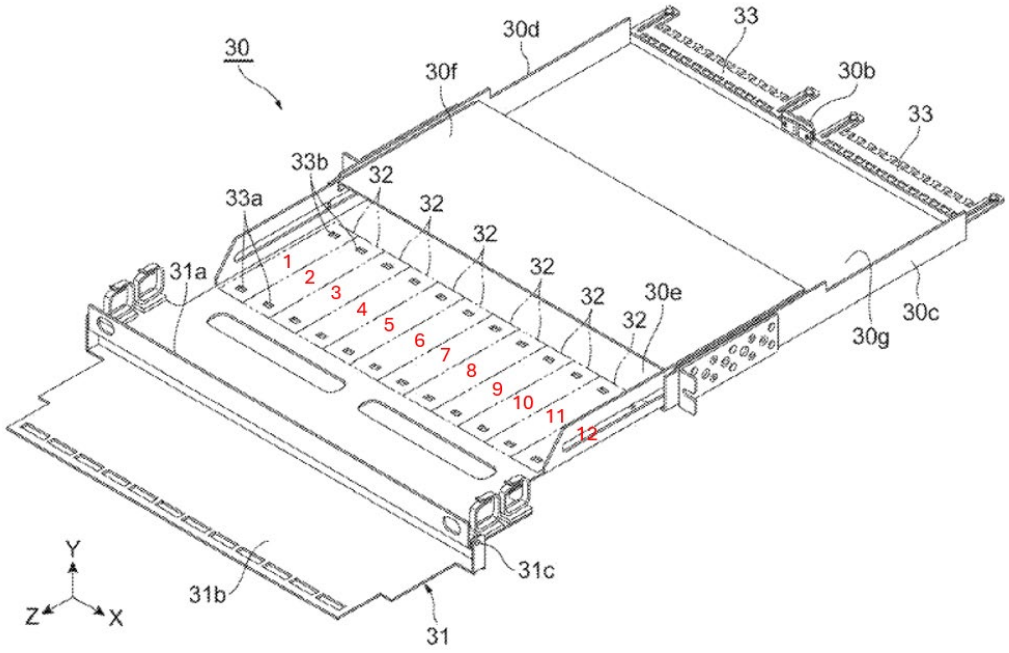
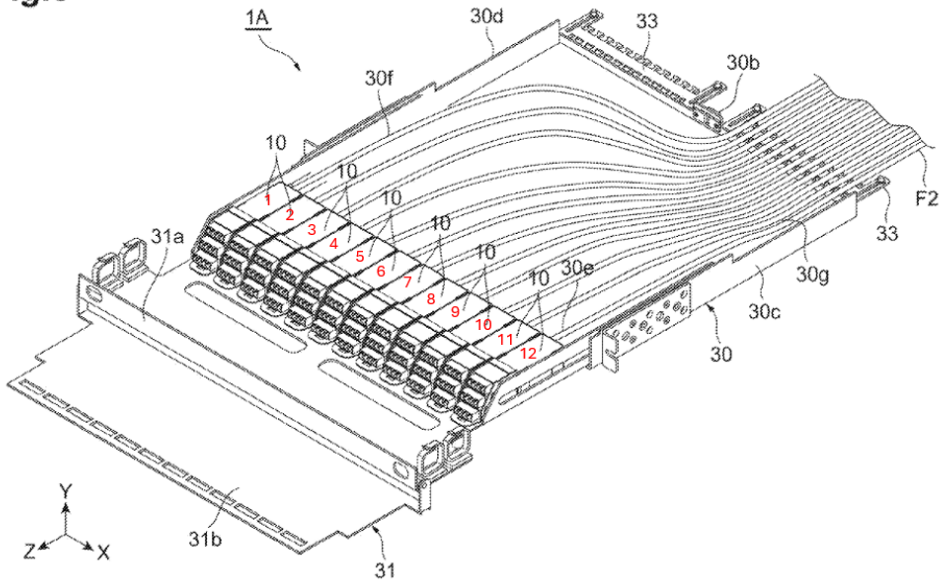

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30g
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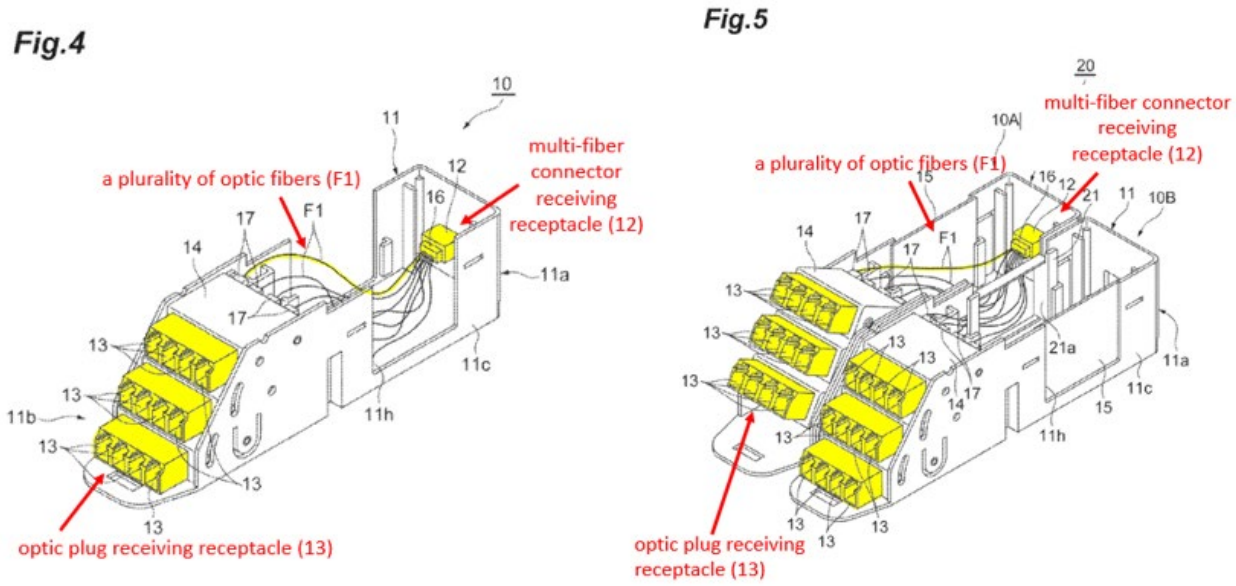
Fig.8


1A
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31a
30e
F2
33
30g
30c
30
Y
Z
X
31b
31

EX1004, Figs. 8-9; EX1004, 9:35-43 ("For example, in the case of the conversion module 10, up to 1 tierx12 rows of the modules 10, that is, 144 single-core optical connector adapters 13 in total are housed in 1 U size."); EX1003 ¶153.

C. Claim 3

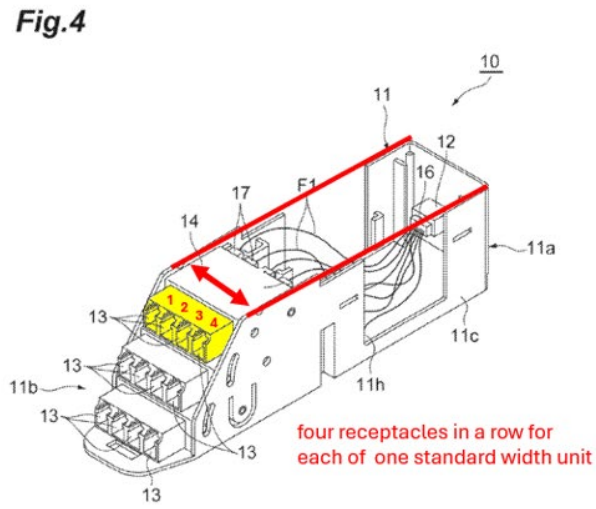
Figures 4-5 show that Fukui's modules have the *"receptacles"* and *"plurality of optic fibers"* recited in Claim 3:

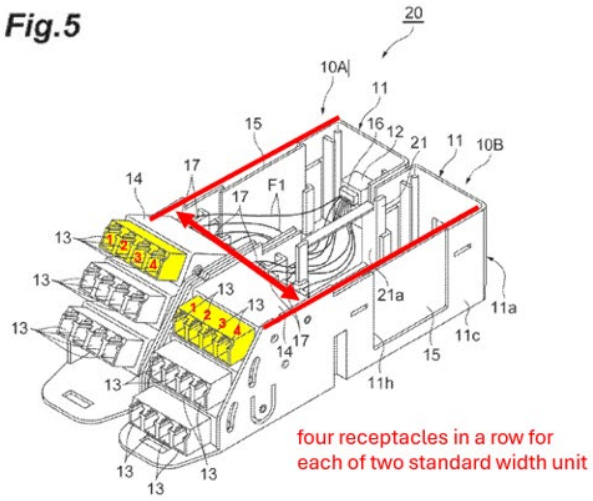


EX1004, Figs. 4-5; 4:66-5:4, 5:12-27, 6:33-48; EX1003 ¶¶155-56.

D. Claim 4

Figures 4-5 also show that Fukui's modules have the claimed *"four"* receptacles side by side in a rows for *"each standard width unit"* as recited in claim 4:



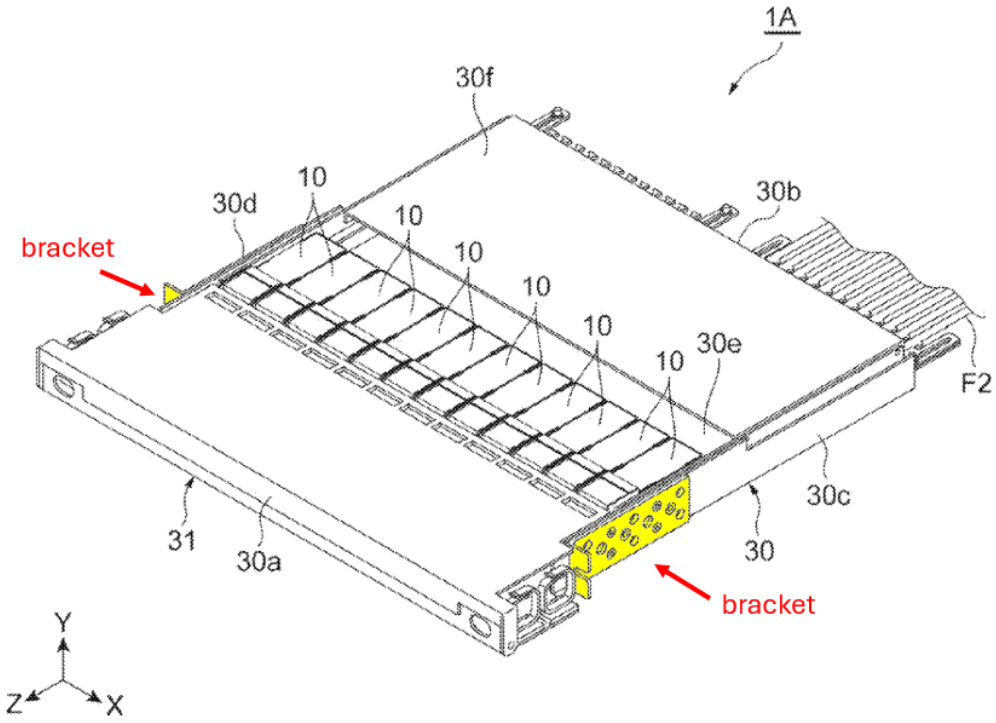


EX1004, Fig. 4-5, 5:24-36; EX1003 ¶158. Each module 10 (single or coupled) has "four single-core optical connector adapters" (13) side-by-side in three tiers. EX1004, 5:31-33, 7:27-29. Any of the three tiers meets the claim.

E. Claim 5

Fukui system is for a "19-inch *rack*" as recited in Claim 5. EX1004, 9:30-32. Figure 6 shows the mounting brackets:

Fig.6

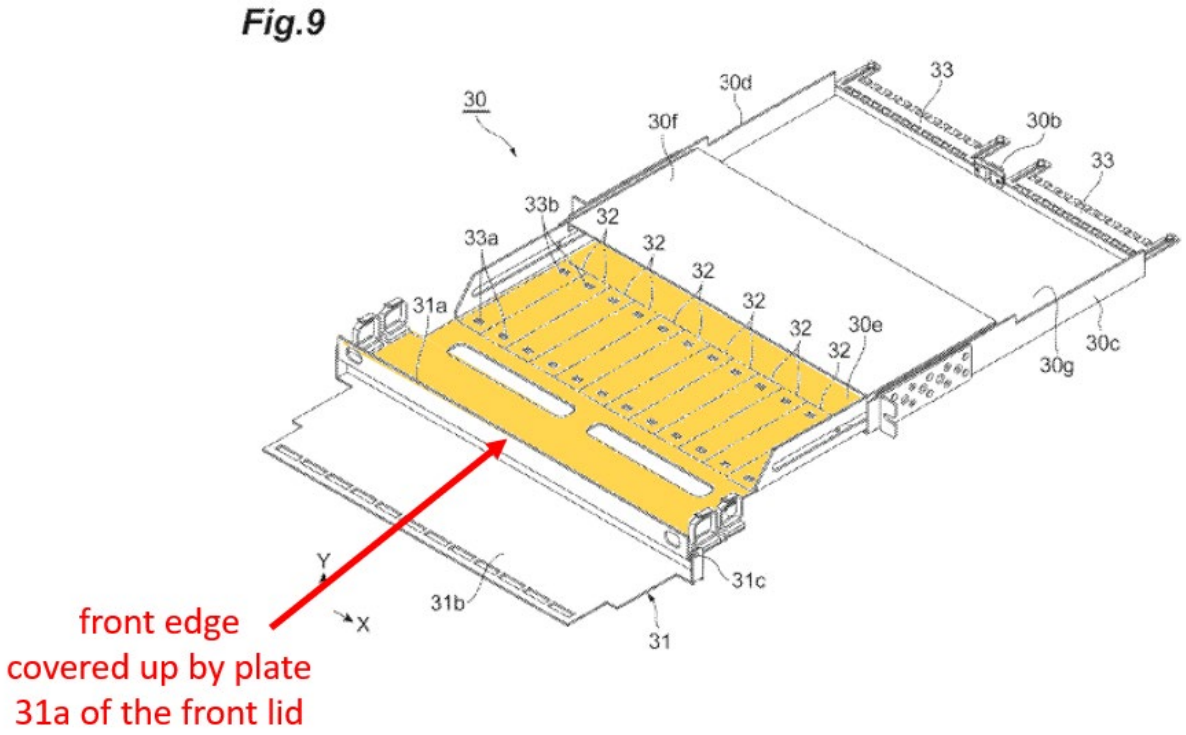


The bracket on the left side is partially covered up, but a POSITA understands it matches the right bracket. EX1003 ¶160.

F. Independent Claim 8

1. Preamble

Fukui discloses a method of organizing a tray. Fukui's tray is bottom panel 30e as explained for Element 1-B. Fukui's tray has a plurality of areas (32), below, for organizing the modules, including different numbers and combinations of the modules such as "up to" twelve modules 10 or a "combination" of modules 10 and 20. EX1004, 8:45-56, 9:35-44; EX1003 ¶¶163-65. Fukui's tray (panel 30e) has a front edge as recited in the preamble:



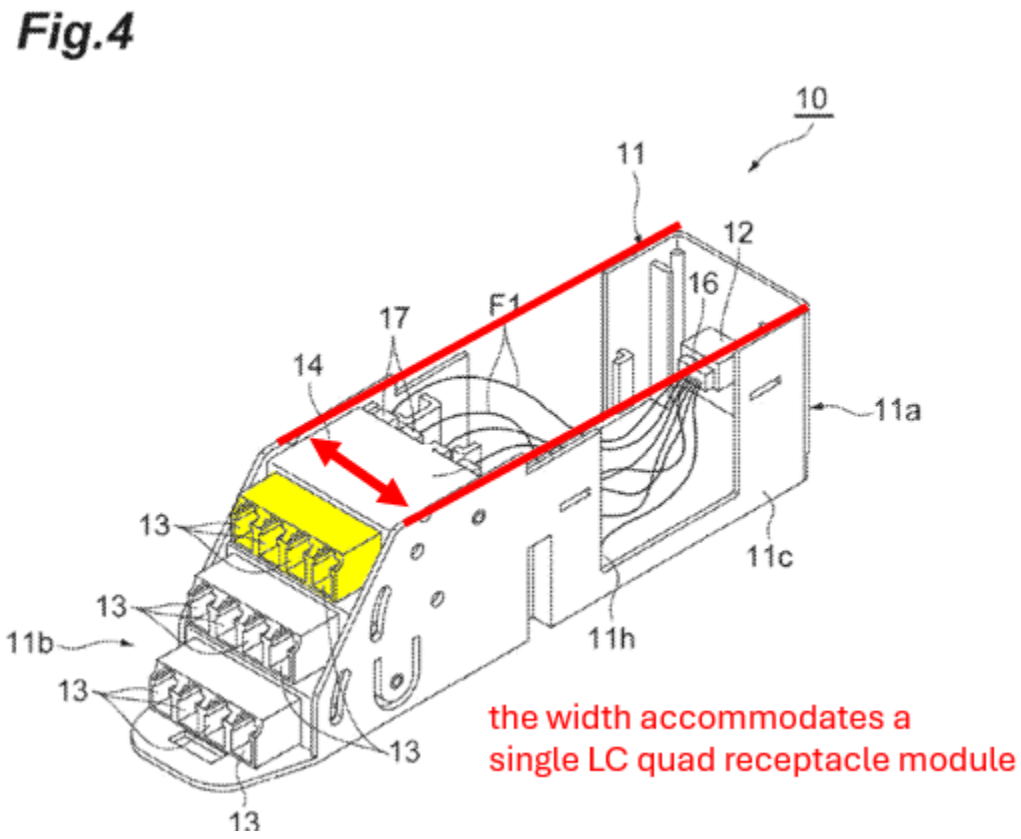
EX1004, Fig. 9; EX1003 ¶164. Fukui's tray (panel 30e) is part of a *fiber interconnect system* as recited in the preamble. Fukui's modules on the tray have fiber optic receptables on the front and rear with fibers (F1) interconnecting them. *See supra* at Claim 3; EX1003 ¶165.

2. Element 8A

"defining a standard with unit…."

Element 1-C explains that the Fukui's standard width unit is the width of module 10. Fukui defined the width of module 10 in Figures 1-4. Fukui further performed the step of defining module 10 as the relevant width unit by making it the "unit" for Fukui's larger modules and making it the unit for the twelve areas on Fukui's tray. EX1004, 7:26-27-29, 7:67-8:6, Figs. 5, 9; EX1003 ¶167.

The width of Fukui's modules 10 also meets PO's proposed construction in the litigation. PO proposes that "standard width unit" means "a unit of width that accommodates a single receptacle module, such as a LC Quad (SC Duplex) technology footprint comprising four connectors." EX1011 at 5. The width of Fukui's module 10 accommodates a single LC quad receptable module comprising four receptacles:



EX1004, Fig. 1, 5:34-36 (explaining the four adapters in each row are "made into one body," i.e., a quad LC adapter like PO's preferred embodiment).

"…wherein a width of the front edge is substantially evenly divisible by said standard width unit."

The width of Fukui's tray has twelve evenly space areas (32) where each area accommodates one of Fukui's modules 10 (Fukui's standard width unit).

Fig.9

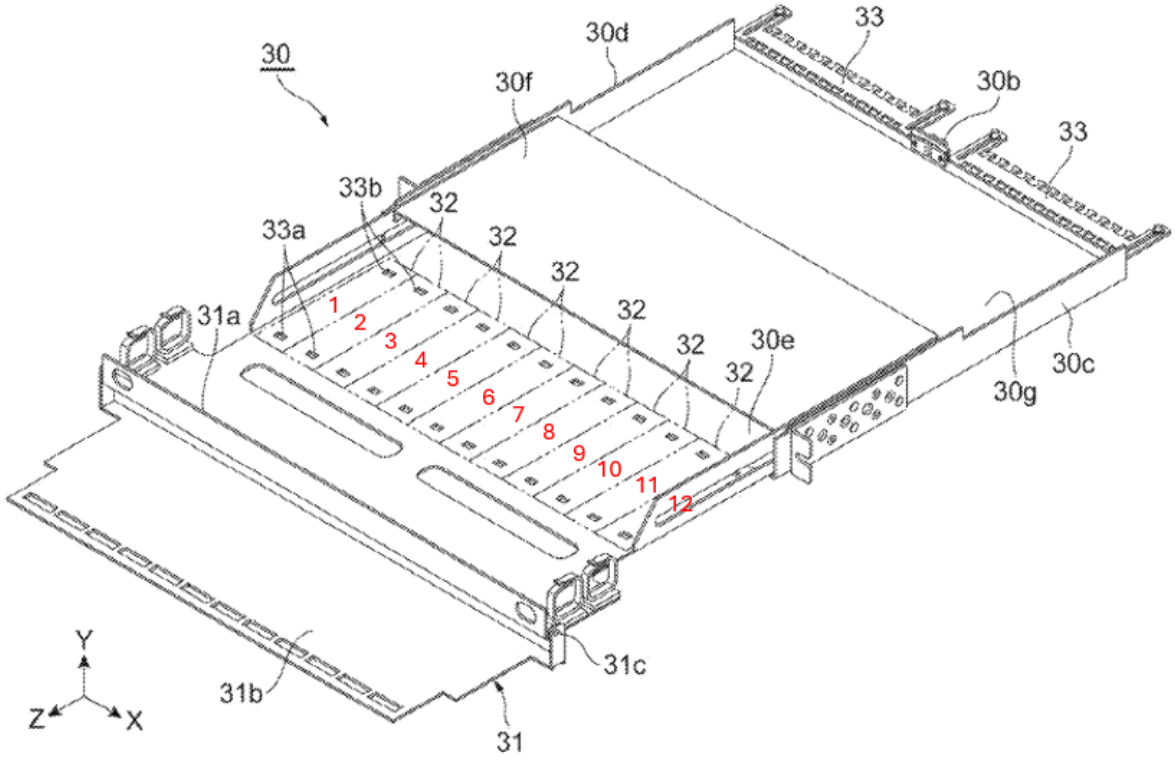
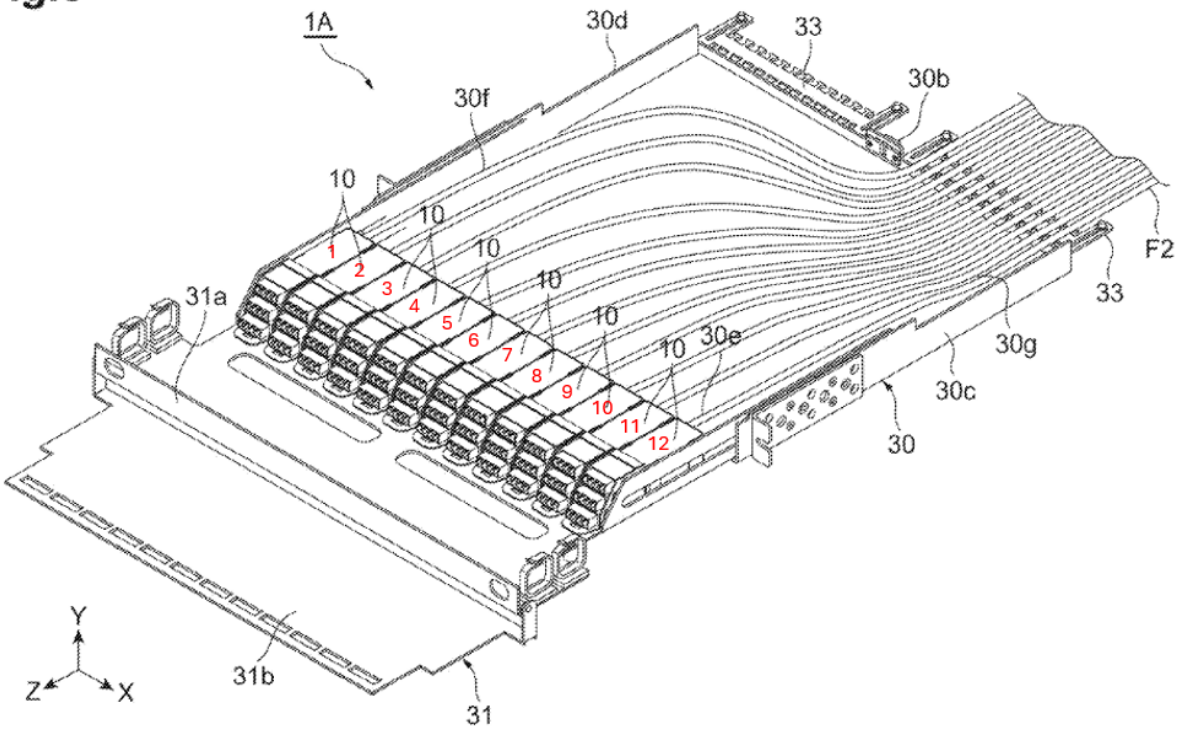
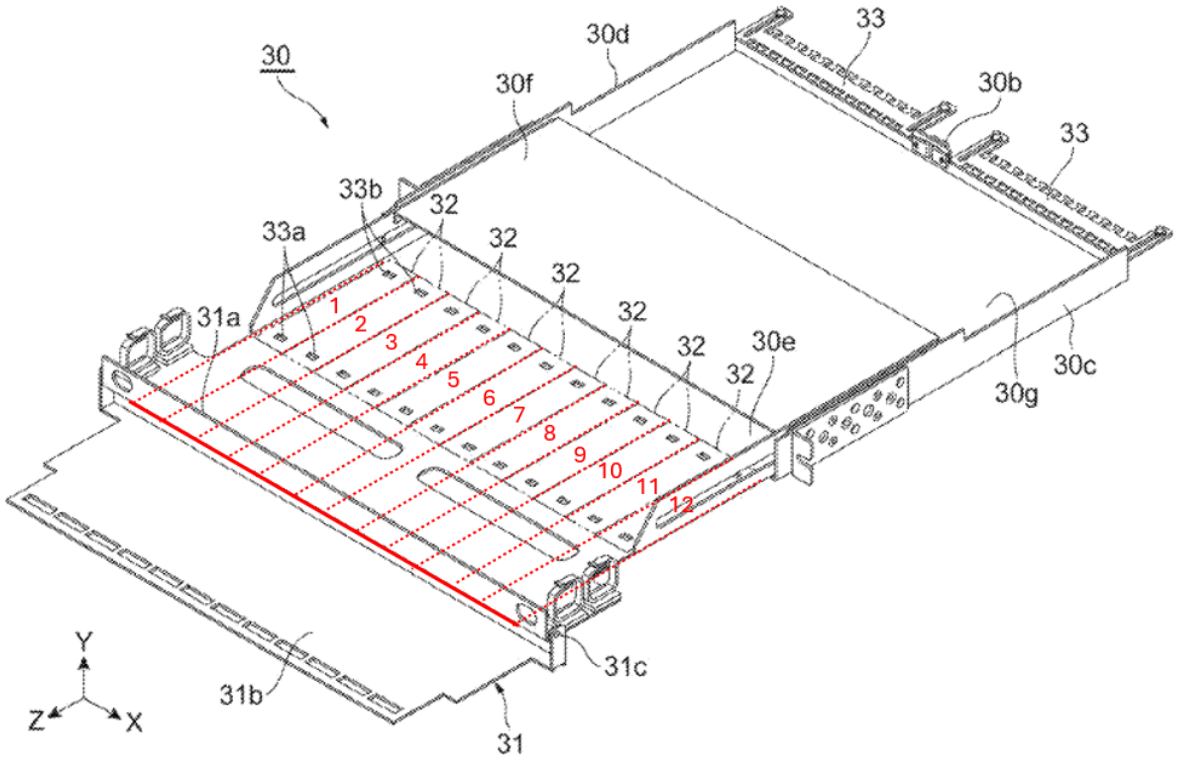


Fig.8



EX1004, Figs. 8-9; EX1003 ¶168. Likewise, a width of the front edge of Fukui's is evenly divisible by the Fukui's standard width unit:

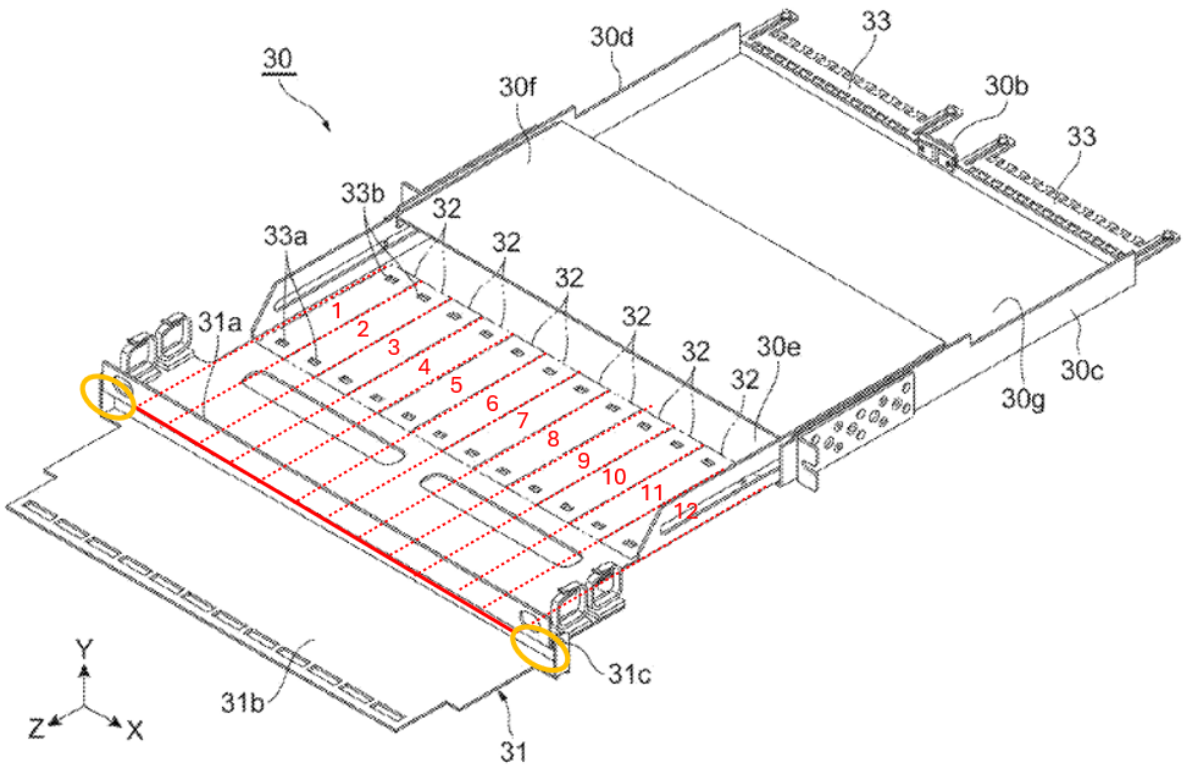
Fig.9



EX1004, Fig. 9; EX1003 ¶168. There are no gaps (remainders) between each of the twelve standard width units. EX1003 ¶168.

If PO argues there is some excess space on the right and left side of annotated width of the front edge of the tray (orange circled below), that does not distinguish Fukui under PO's own proposed construction.

Fig.9



EX1003 ¶170. Patent Owner's own proposed construction in the litigation for "substantially" evenly divisible expressly allows that "there may be some excess space between a cassette and an end of the front edge of the tray." EX1011 at 13.[7] PO's own preferred embodiment has excess space on the side. Figure 4A shows the excess space on one side:

[7] Because the PTAB cannot resolve indefinite issuses as applied to infringement, CommScope adopted Patent Owner's construction of "substantially" evenly divisible for this IPR.

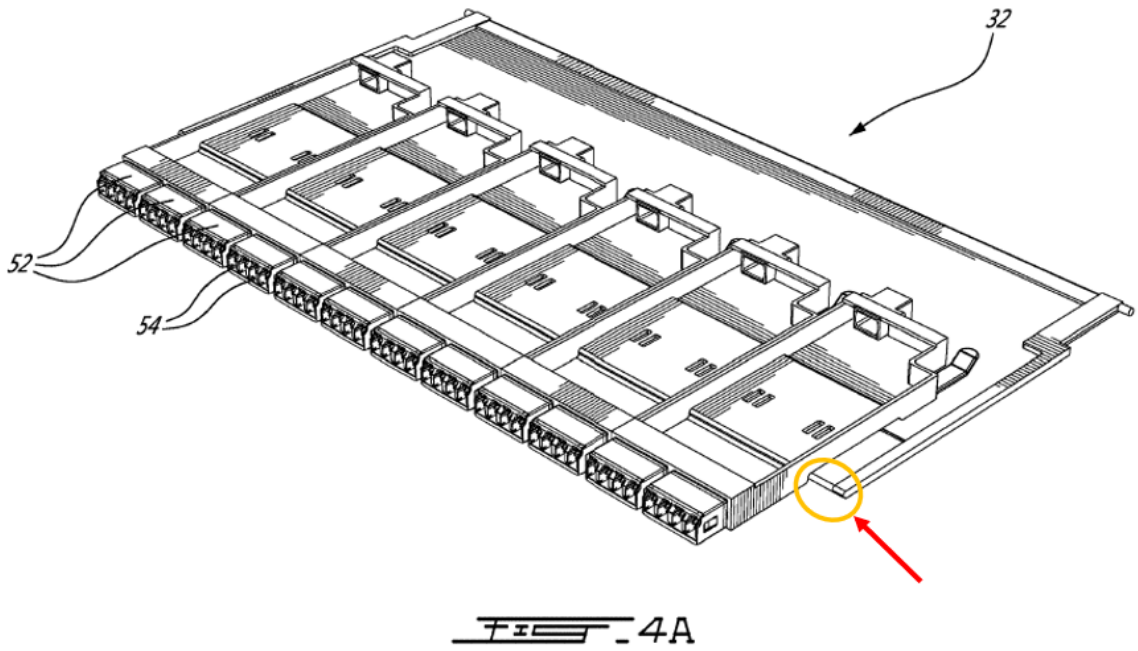
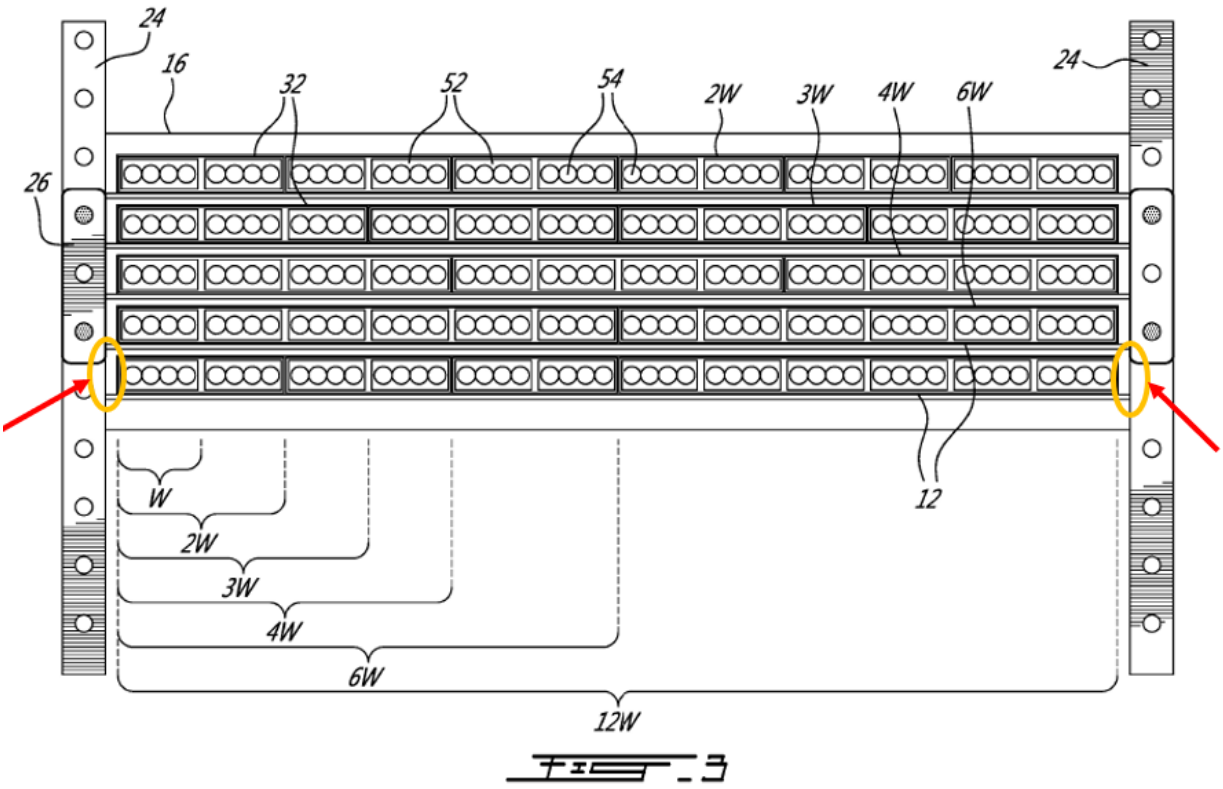


Fig. 4A

EX1001, Fig. 4A; EX1003 ¶171. Figure 3 shows the excess space also occurs on the other side:



EX1001, Fig. 3; EX1003 ¶171.

3. Element 8B

"selecting a plurality of cassettes for installation on the tray…"

Fukui expressly discloses selecting a "plurality of conversion modules." EX1004, 8:18. Fukui gives the examples of "up to" twelve modules 10, "up to" six modules 20, or a "combination." EX1004, 9:35-43, *see also* EX1004, 8:17-24; EX1003 ¶173.

"…from a set of cassettes having a plurality of different widths…"

Fukui's modules 10 and 20 have different widths as shown in Figures 4-5:

Fig.4

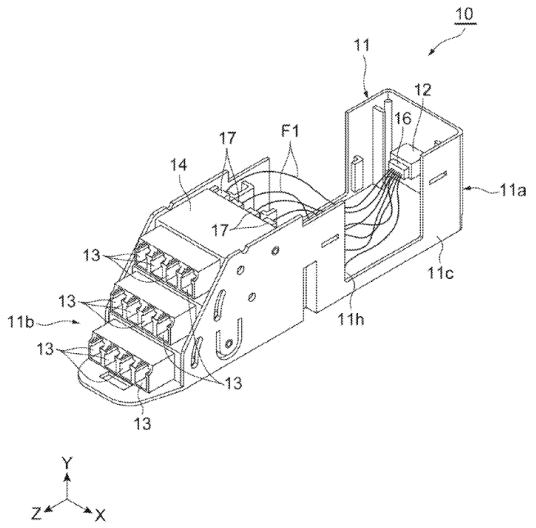
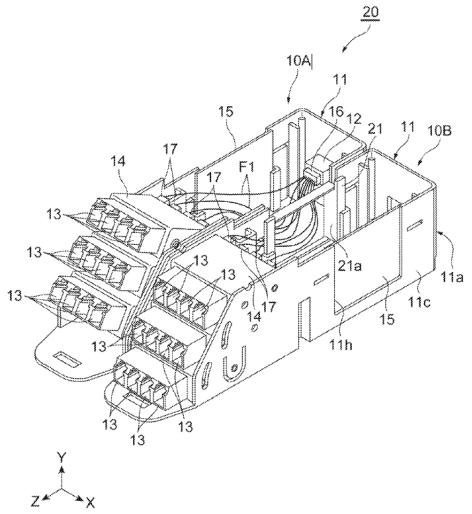


Fig.5



EX1004, Figs. 4-5, 7:25-29; EX1003 ¶174. The width of module 20 is two times the width of module 10. *Id.*

"…wherein each of said different widths is evenly divisible by said standard width unit"

Fukui's standard width unit, as explained above, is the width of module 10. The width of each of Fukui's modules is evenly divisible by the width of module 10 because each of Fukui's modules is either one module 10 or a number of modules 10 coupled together. EX1003 ¶¶175-76. For example, Fukui's module 10 is "one" standard width unit and Fukui's double module 20 is "two" standard width units. *Id.*

Fukui's disclosure is similar to PO's preferred embodiment. In PO's preferred embodiment, the width of each cassette is evenly divisible by the standard width unit embodiment because each cassette is an "integer multiple" of standard width unit. EX1001, 3:43. Fukui modules are also integer multiples of

Fukui's standard width unit because each module is a "number" of unit modules 10 coupled together (e.g., 2, 3, 4). EX1004, 8:1-6 ("the number of the coupled unit modules… plurality of coupled unit modules…the required number of the same shape unit modules").

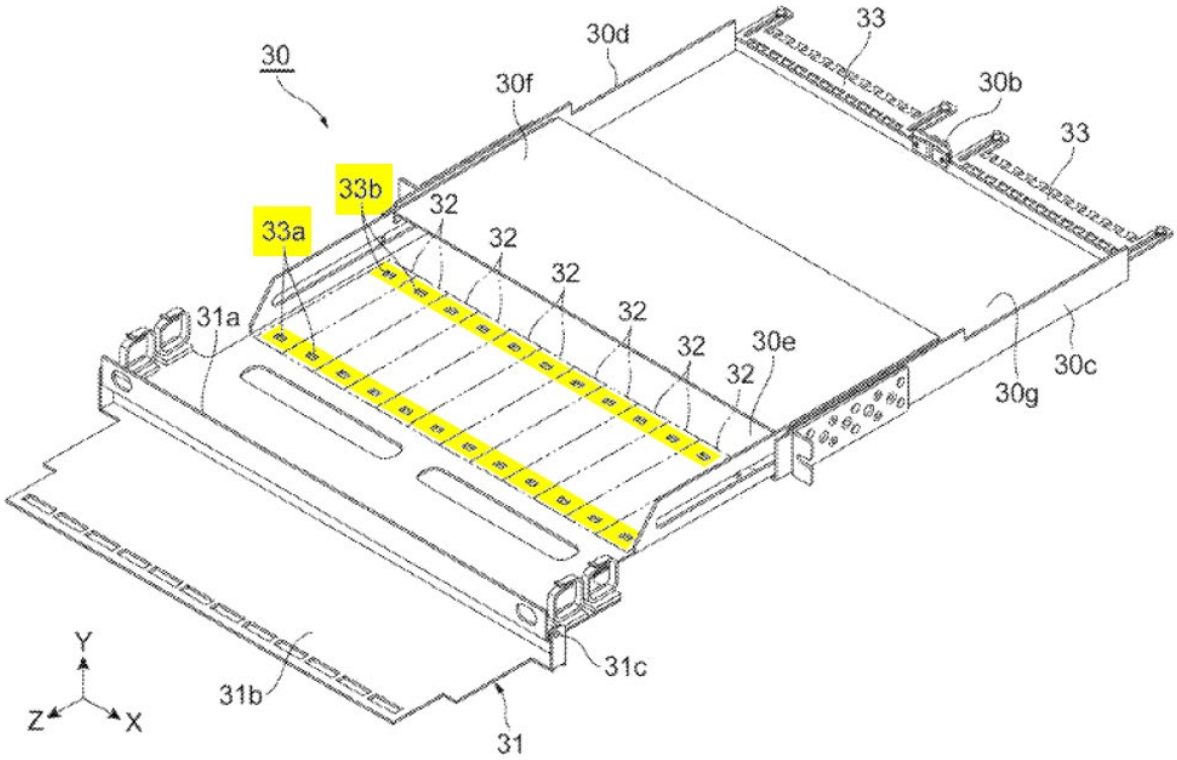
Even if Patent Owner argues the width of Fukui's larger modules (e.g., 20) includes some additional width or is not exactly evenly divisible, a POSITA would still find the claims invalid as obvious for the same reasons stated for Element 1-C. *See supra* Element 1C; EX1003 ¶177. Even if there is a tiny space when the modules 10 are coupled, a POSITA would have found it obvious to make the coupled modules without any such tiny space such that, for example, module 20 is exactly two modules 10. *Id.*

4. Element 8C

"releasably securing said selected cassettes…"

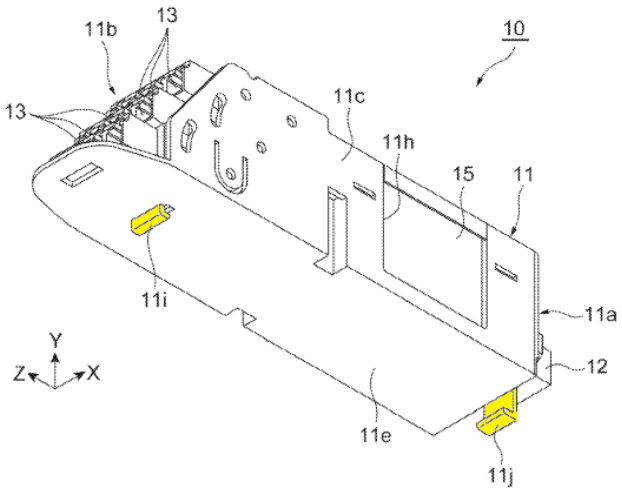
Fukui's tray has a plurality of areas (32) with holes (33a, 33b) for releasably securing Fukui's modules:

Fig.9



EX1003 ¶179. Fukui's module 10 has hooks (11i, 11j) on the bottom to "engage" the holes:

Fig.2



EX1004, Fig. 2, 8:52-56; EX1003 ¶179. Because Fukui's module 20 is constructed from two of Fukui's module 10, module 20 has the same hooks. EX1004, 7:27-29, 8:3-6, Figs. 4-5. Fukui explains that the modules can be "exchanged" (i.e., one module released and another secured) and "easily removed." EX1004, 9:18-29, 9:66-10:1, 10:33-35, 3:8-11.

"…along the front edge of the tray"

Fukui discloses or renders obvious this claim element for the same reasons discussed above in Element 1-C. *See supra* Element 1C; EX1003 ¶180.

5. Element 8D

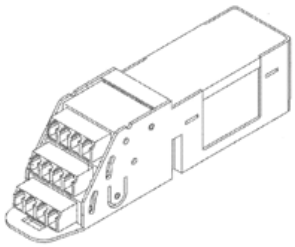
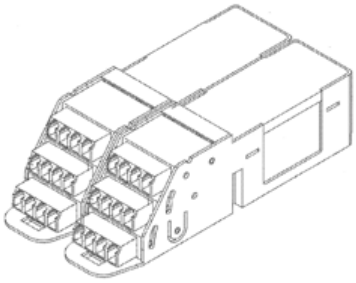
Fukui discloses this claim language for the same reason discussed for Element 1-E.

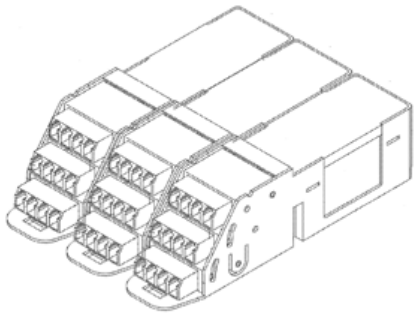
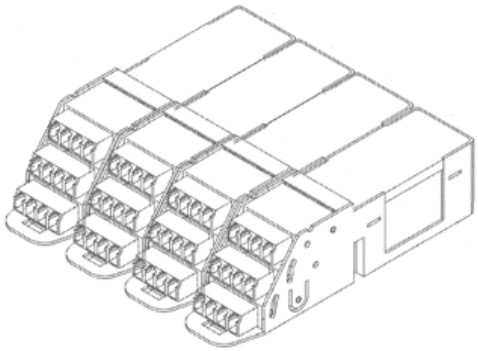
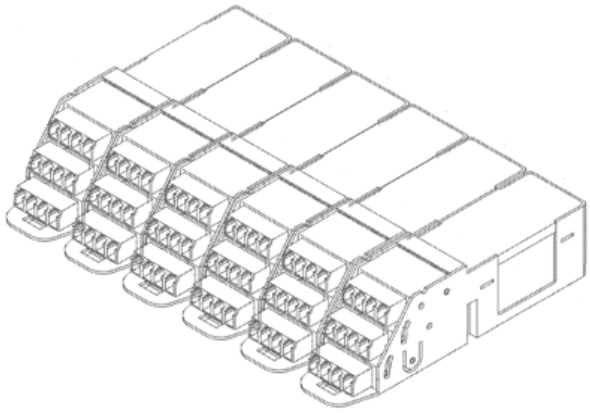
G. Claim 9

Fukui teaches to couple a "number" of unit modules 10 to form larger size modules to support cables with larger numbers of cores. EX1004, 8:1 ("number of the coupled unit modules"), 8:5-6 ("the required number of the same shape unit modules are prepared"). Module 10 comprises one unit module to support a cable with 12 cores. EX1004, Fig. 1. Module 20 comprises two unit modules to support a cable with 24 cores. EX1004, Fig. 5, 7:25-27. Fukui also teaches to expand further to support larger sizes "such as" 36 cores and 48 cores according to "the number of coupled unit modules." EX1004, 7:67-8:3. The

"number" of coupled unit module is three to support 36 cores, and the number of coupled unit modules is four to support 48 cores. Fukui lists 36 and 48 cores as "such as" examples, which allows for further expansion. Fukui broadly teaches that any "plurality of coupled unit modules" can be treated together so long as "the required number of the same shape unit modules are prepared," which includes preparing six coupled unit module. EX1004, 8:1-6; EX1003 ¶182. Thus, Fukui teaches one, two, three, four, and any plurality (e.g., six) of coupled unit modules to support cables with 12, 24, 36, 48, and any "various" number of cores. EX1004, 3:27-28, 4:2-3, 4:42-43, 9:58-59, 10:4-6, 10:34-35; EX1003 ¶182.

Here is demonstrative showing the different numbers of modules coupled together:

Single (12 core) module 10	**Double (24 core) module 20**
	

Triple (36 core) module	Quadruple (48 core) module
	
Six (72 cores) module	
	

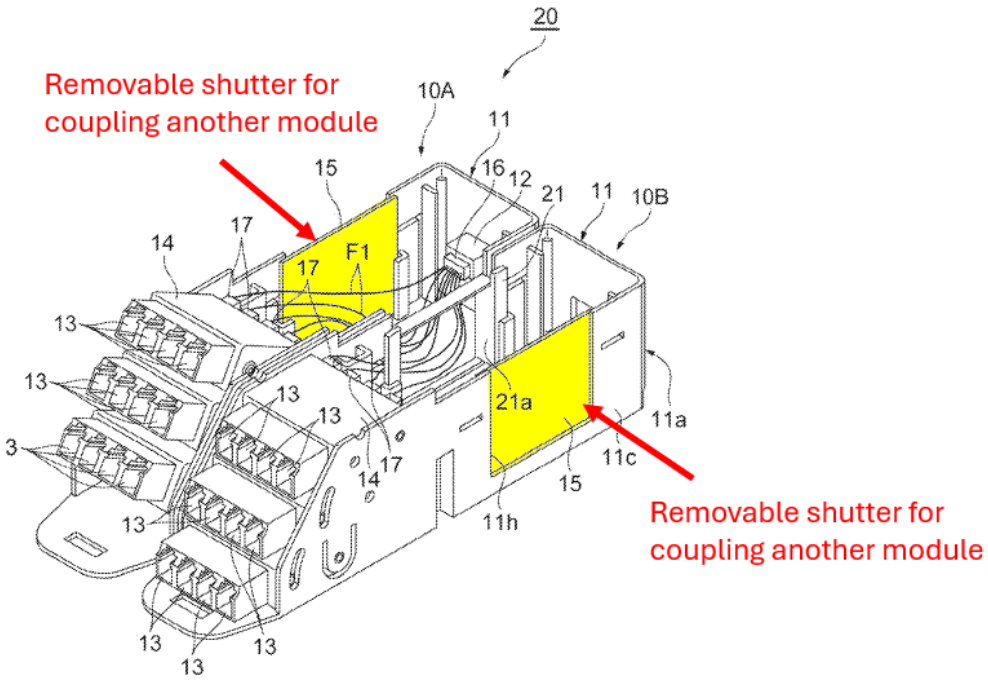
EX1003 ¶186.

If Fukui disclosure to couple six unit modules is not sufficiently express, a POSITA would it obvious based on Fukui itself. EX1003 ¶¶183-85. Fukui itself discloses a "plurality" of coupled unit modules, which includes six coupled unit modules. EX1004, 8:2-3. Fukui itself teaches to support a "number" of coupled of unit modules, which also includes six coupled unit modules. EX1004, 7:67-8:6.

A POSITA would be motivated to coupled six unit modules to support cables with 72 cores (which requires 6 x 12 core unit modules 10).[8] EX1003 ¶184; EX1032, 4:35-38. Fukui broadly teaches to support the "various" number of cores, which includes 72 cores. EX1004, 3:27-28, 4:2-3, 4:42-43, 9:58-59, 10:4-6, 10:34-35. A POSITA would have a reasonable expectation of success because Fukui already discloses the functionality to couple six unit modules. EX1003 ¶¶185. The coupled units each have detachable shutter on the other side for further expansion:

[8] A POSITA would also be motivated to coupled six unit modules to more easily support two cables with 36 cores. Because each coupled unit module 10 has a space for rear connector, multiple cables can be plugged into the coupled unit modules. Fukui is concerned with "reducing the work" by combing functionality. EX1004, 9:18-29. By coupling six unit modules, the worker would only needs to install one six unit module for both cables instead of two three unit modules for each cable.

Fig.5



Id. Fukui's already teaches expanding to 48 cores (four coupled unit modules). EX1004, 8:2. When four unit modules are coupled, the outer coupled units each would also an additional detachable shutter on the outer side to add two more coupled unit for a total of six coupled units. EX1003 ¶185.

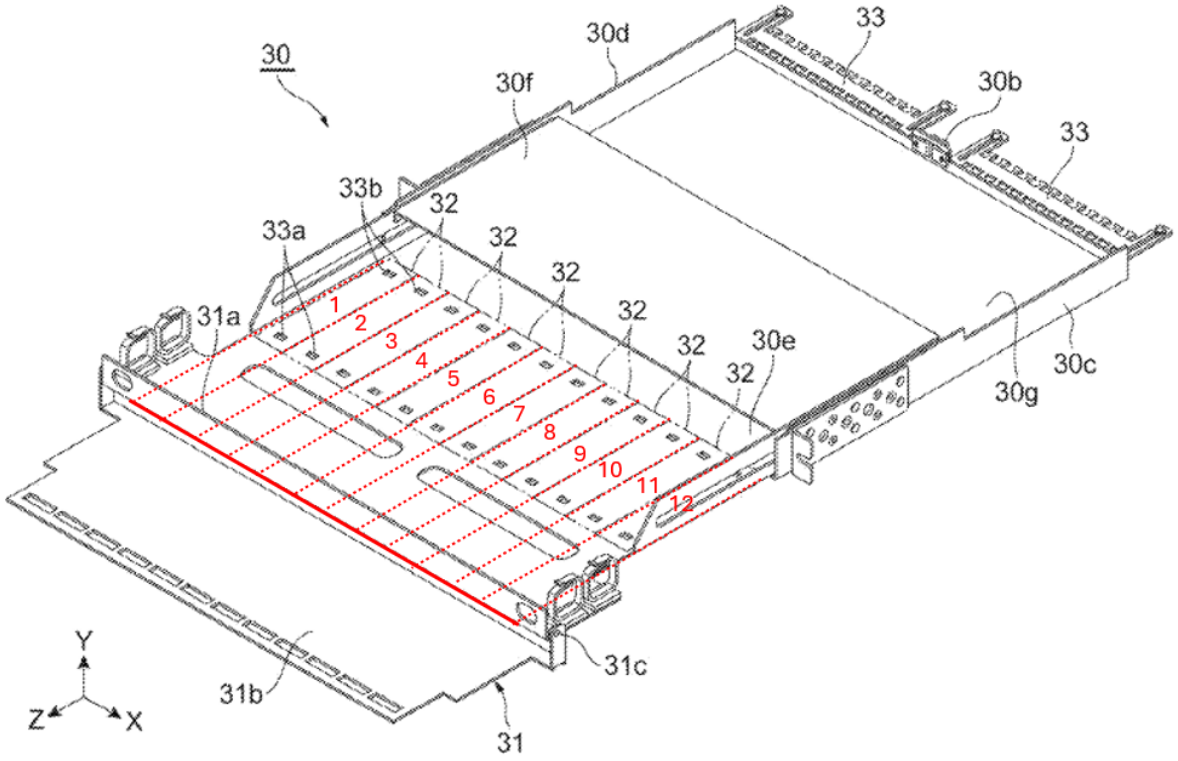
H. Claims 10-11

Fukui discloses selecting "up to" twelve individual modules 10 (same width) or a "combination" of module 10 and the larger module 20 (different widths). EX1004, 9:35-44; EX1003 ¶¶188-191. Figures 6-8 illustrate selecting twelve modules 10 (same width). EX1004, Figs. 6-8. Fukui's alternatively explains that "a part or all" of the modules in the figures may be larger module 20, including at least one of each module 10 and 20. EX1004, 8:17-24.

I. Claim 12

Fukui discloses this claim for the same reasons discussed for Element 8A. Figure 8 shows the width of the front edge of Fukui's tray is evenly divisible by a maximum of twelve standard width units and does not include a thirteenth standard width unit:

Fig.9



EX1004, Fig. 9; EX1003 ¶193.

J. Claim 13

The analysis for claim 9 shows that Fukui discloses coupling different numbers of unit modules 10 (e.g., one, two, three, four, etc.), which discloses the claimed three cassette sizes. *See also* EX1003 ¶¶195-96.

A POSITA would also find this claim obvious in view of Fukui itself. EX1003 ¶197. A POSITA would have been motivated to select three different sizes of modules to simultaneously support cables with three different numbers of "cores," e.g., 12, 24, and 36 cores. *Id.* Fukui itself discloses the need to support "various" number of cores, including 12, 24, and 36. EX1004, 3:27-28, 4:2-3, 4:42-43, 9:58-59, 10:4-6, 10:34-35. A POSITA would have a reasonable expectation of success because no new functionality is needed. EX1003 ¶197. Fukui's existing tray and areas 32 already can support three different number of coupled unit modules, e.g., one (white), two (orange), and three (green):

Fig.8

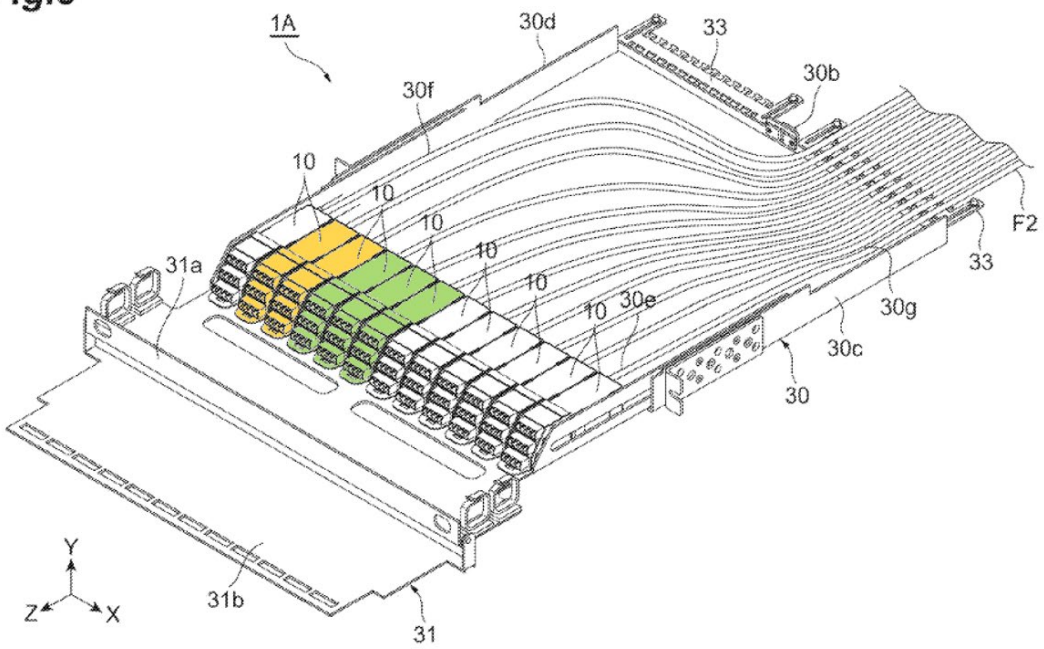
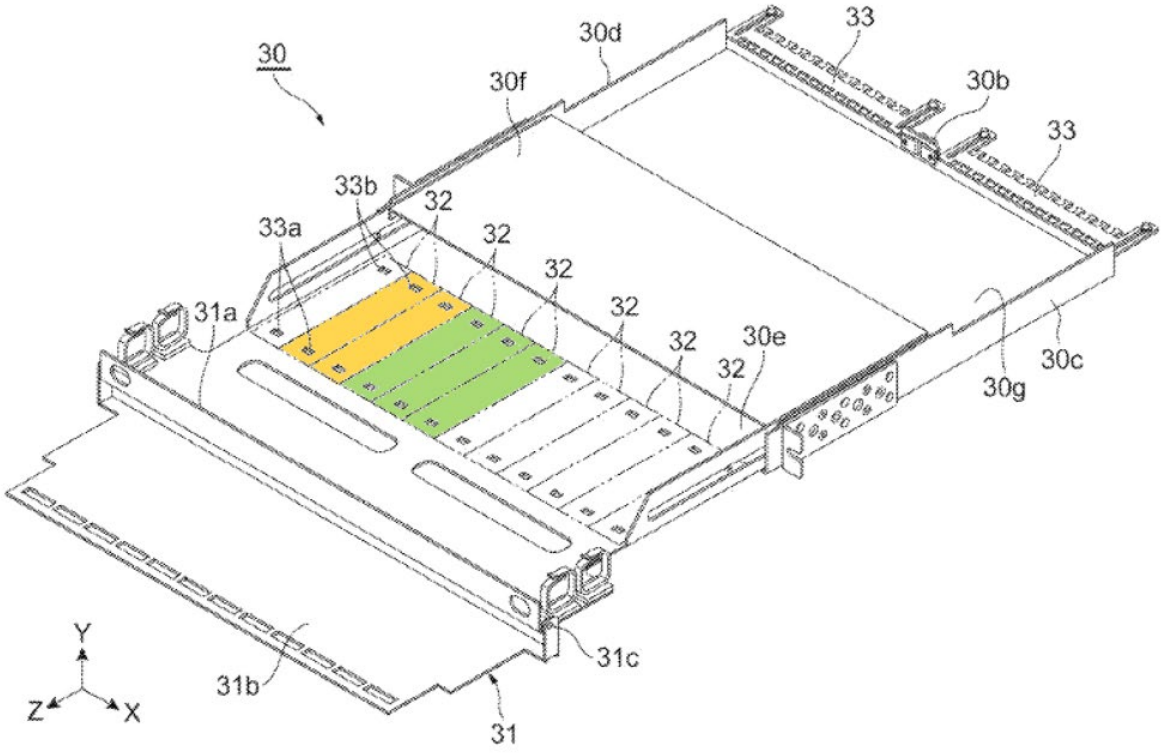


Fig.9



EX1003 ¶197

Ground 2: Fukui anticipates Claim 8-13

Ground 1 addressed the second set of claims (8-13) together with the first set of claims (1-5) because it is unclear whether PO will reinterpret its position on the scope of the "along" the front edge of the tray limitation that implicates CommScope's obviousness arguments for both sets. If PO does not reinterpret its position, Fukui also anticipates 8-13. Claims 8-13 do not require the other elements discussed for obviousness (e.g., a top wall). Ground 1 shows Fukui discloses each and every element of claims 8-13 if PO does not reinterpret its position on "along" the front edge of the tray.

Ground 3: Ground 1 further in view of Laarveld

If Fukui does not itself disclose or render obvious that each module "touches," a POSITA would find the combination of Fukui and Laarveld (EX1026) renders it obvious for Fukui's modules to touch. EX1003 ¶¶199-205.

Like Fukui, Laarveld discloses to create larger cassettes by coupling cassettes together. Figure 5 illustrates two coupled units (1a and 1b):

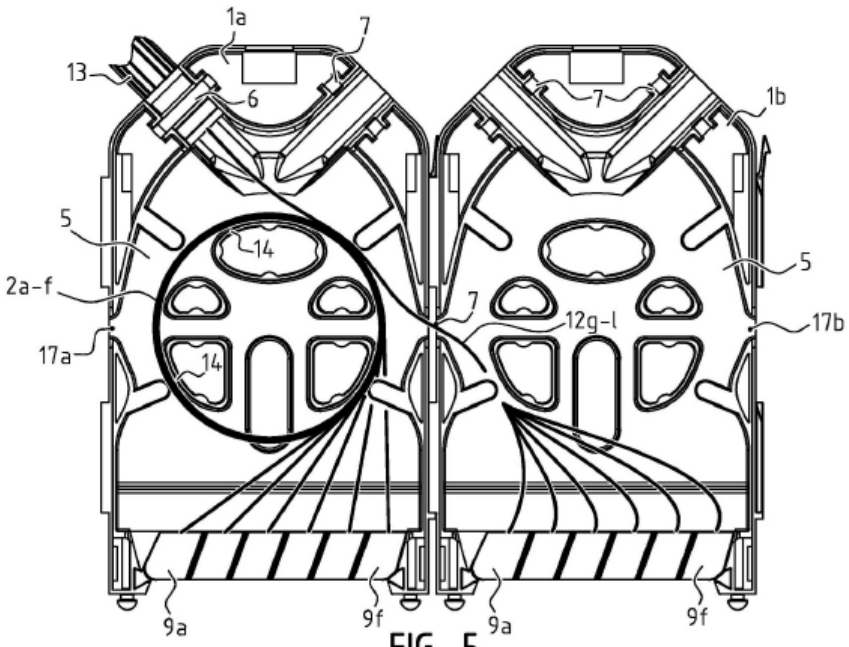


FIG. 5

EX1026, Fig. 5. Like Fukui, Laarveld cassettes have an MPO adapter (6) in the rear and LC adapters (9a-9f) in the front. EX1026, 13:21-27. Like Fukui, Laarveld teaches the fibers from the cable in the rear (13) can be distributed to both coupled cassettes by routing the fibers through a passage in the middle. EX1026, 14:27-15:1.

Laarveld expressly teaches that coupled cassettes are "contiguous" (touching) with "no clearance" (no gap) between them. EX1026, 3:4-9. Laarveld explains this creates a "rigid" assembly. EX1026, 3:9.

A POSITA would have found it obvious to implement Fukui's existing technique with Laarveld's teaching to have "no clearance" (no space) between the coupled units. EX1003 ¶¶203-205. Ground 1 explains that a POSITA would have

been motivated to any tiny space between the modules to make Fukui's larger modules made of coupled modules more rigid. *See* Ground 1, Element 1E. This is consistent with Fukui and Laarveld express teaching. Fukui expressly teaches it is desirable to treat the larger coupled units as "one body," i.e., a rigid assembly. Laarveld expressly teaches that no clearance between modules create a "rigid" assembly. EX1026, 3:9. Ground 1 also identifies two more motivations that equally apply to Ground 3 because the proposed modification is the same. *See* Ground 1, Element 1E. A POSITA would have a reasonable expectation of implementing Laarveld's teaching of "no clearance" because, at most, a POSITA would only need to slightly increase the size of modules 10 such that there is no space between adjacent modules 10. EX1003 ¶203.

A POSITA would have also recognizes this is merely an example of using a known technique (no clearance between coupled modules) to improve similar devices in the same way. EX1003 ¶204. The fiber optic cassettes in Fukui and Laarveld are similar. The cassettes in both references can be coupled together and rely on openings on the side to route fibers from one cassette to the coupled cassette. *Id.* The cassettes in both references have LC adapters on the front and an MPO adapter on the rear. *Id.* And the proposed modification would improve Fukui's modules in the same way as for Laarveld's modules (making them more rigid). *Id.*

To be clear, the effect of having no clearance between the coupled units is that all of Fukui's modules would touch because all of Fukui's modules (coupled or uncoupled) are the "same" and must fit in the same areas 32 on the tray. EX1003 ¶205. Fukui modules 10 can be coupled on either side; thus, there would need to be no space on either side of the all the modules. And, to be clear, Ground 3 does not require adding Laarveld's particular coupling mechanism. *Id.* Fukui already teaches a coupling mechanism.

Ground 4: Sauter either alone or in combination with Laarveld renders Claims 1-5, 8, 10-13 obvious

A. Independent Claim 1

Sauter (EX1006) either alone or in combination with Laarveld (EX1026) discloses or renders obvious each element of claim 1.

1. Preamble

"A modular fiber optic cassette system, the system comprising:"

Sauter discloses a modular fiber optic system. Figures 1-16 of Sauter illustrate embodiments of fiber optic cassette systems. EX1006 at Figs. 1-16, 1:5-6; 4:1-14. Sauter shows modular fiber optic cassettes (110, 112, 504) in each of Figures 2-16. EX1006, Figs. 2, 6, 9; 1:23-25; 8:4-20; 4:7-13; 5:4-17; 9:60-62; Fig. 17; EX1003 ¶¶212-213. Different cassettes can be added and removed at various locations on the same tray and at various times.

2. Element 1A

Sauter discloses Element 1A because Sauter discloses the cassettes and sliding trays can be disposed "within an enclosure." Sauter explains cassette-based systems include "an enclosure within which are installed one or more fiber optic trays" EX1006 1:25-28; 3:62-64 ("used within a given enclosure"); 4:1-28; 4:32-34; 6:39-40; 9:40-44; 10:4-5 ("…trays 1510 can be stacked within the enclosure 1508."); EX1003 ¶¶214-215.

A POSITA understands that "an enclosure" includes a top wall, bottom wall, and side walls that define a case or box to enclose the trays. See, for example, EX1005 which illustrates "enclosures" for receiving stacks of trays. EX1005 at Figs. 30-32, 44-50; 1:13-15; 3:1-41; 13:5-7; EX1003 ¶216.

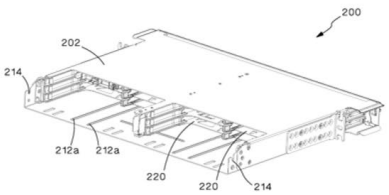


FIG.30

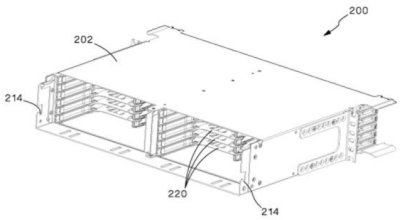


FIG.31

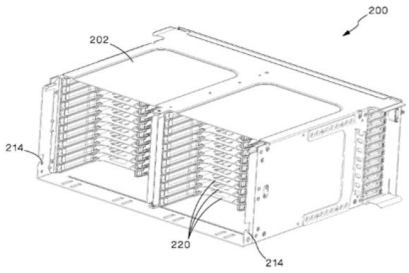


FIG.32

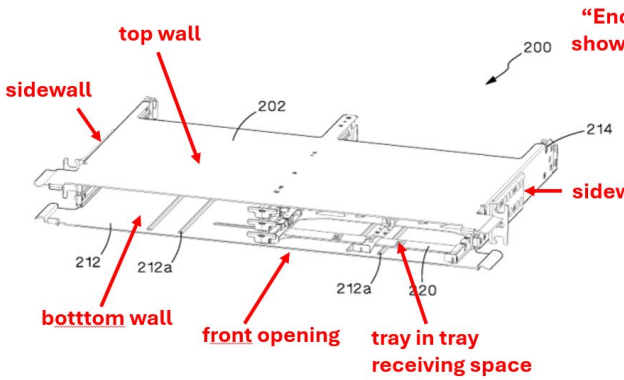


FIG.44

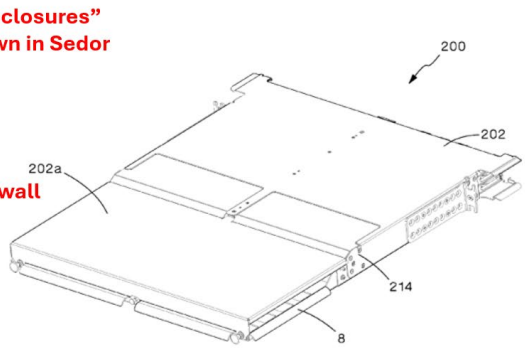
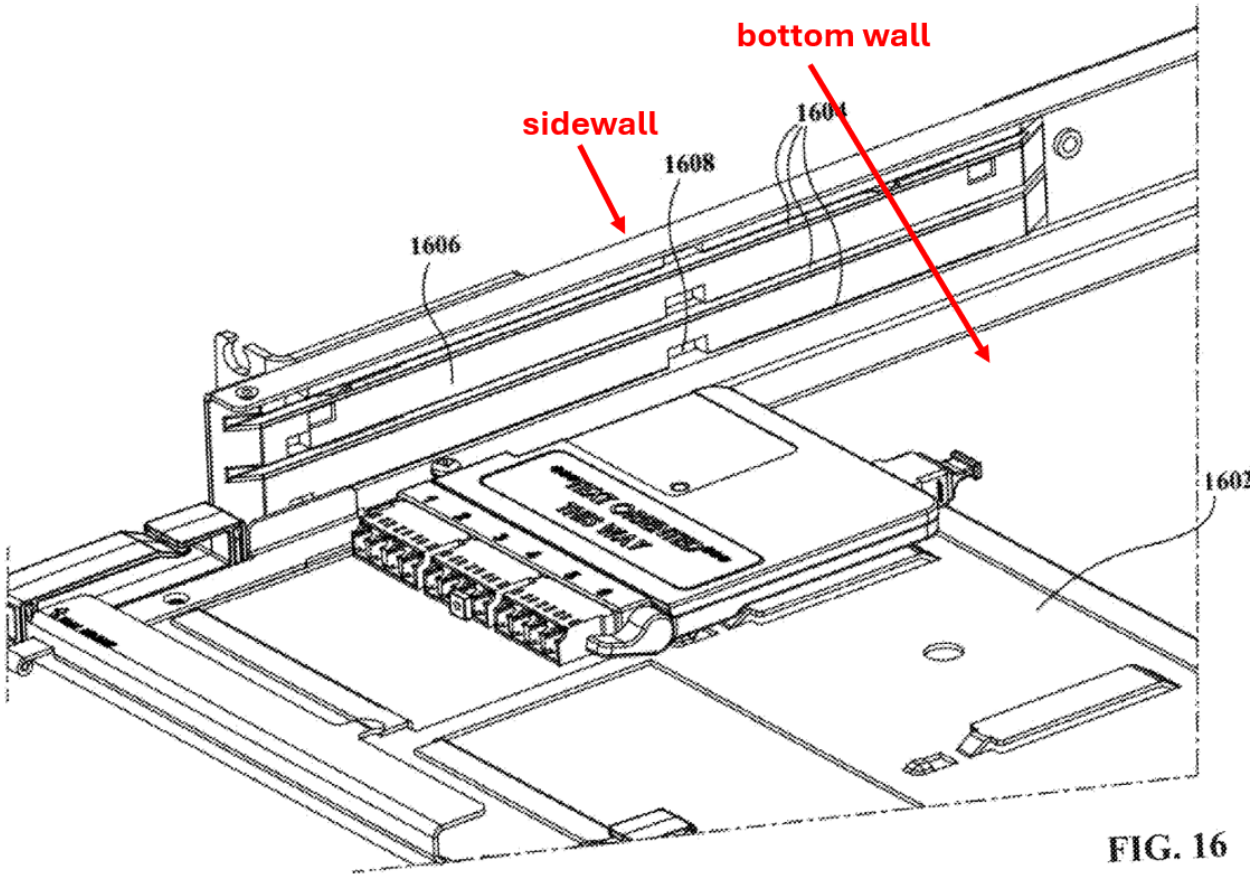


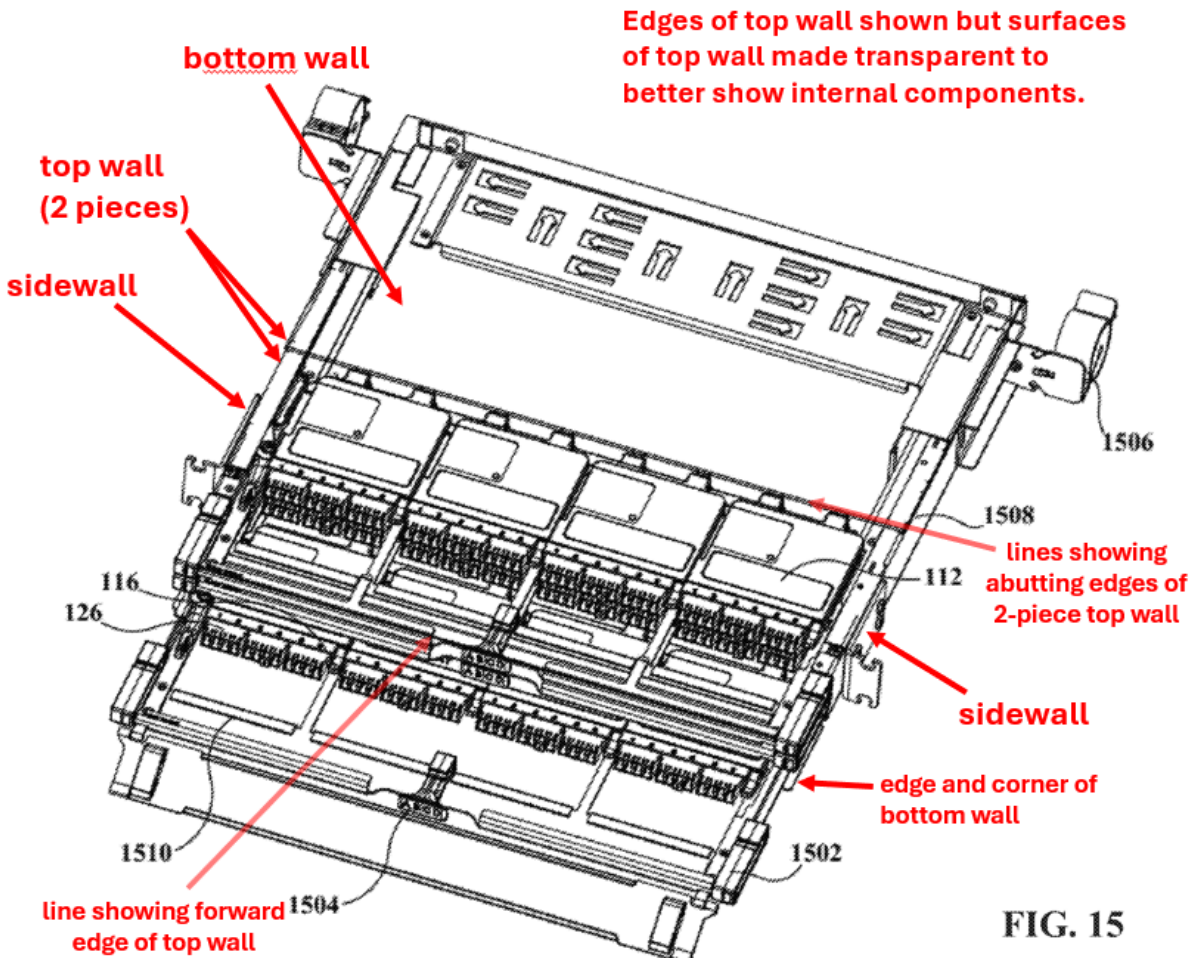
FIG.49

EX1005 Figs. 30-32, 44, 49.

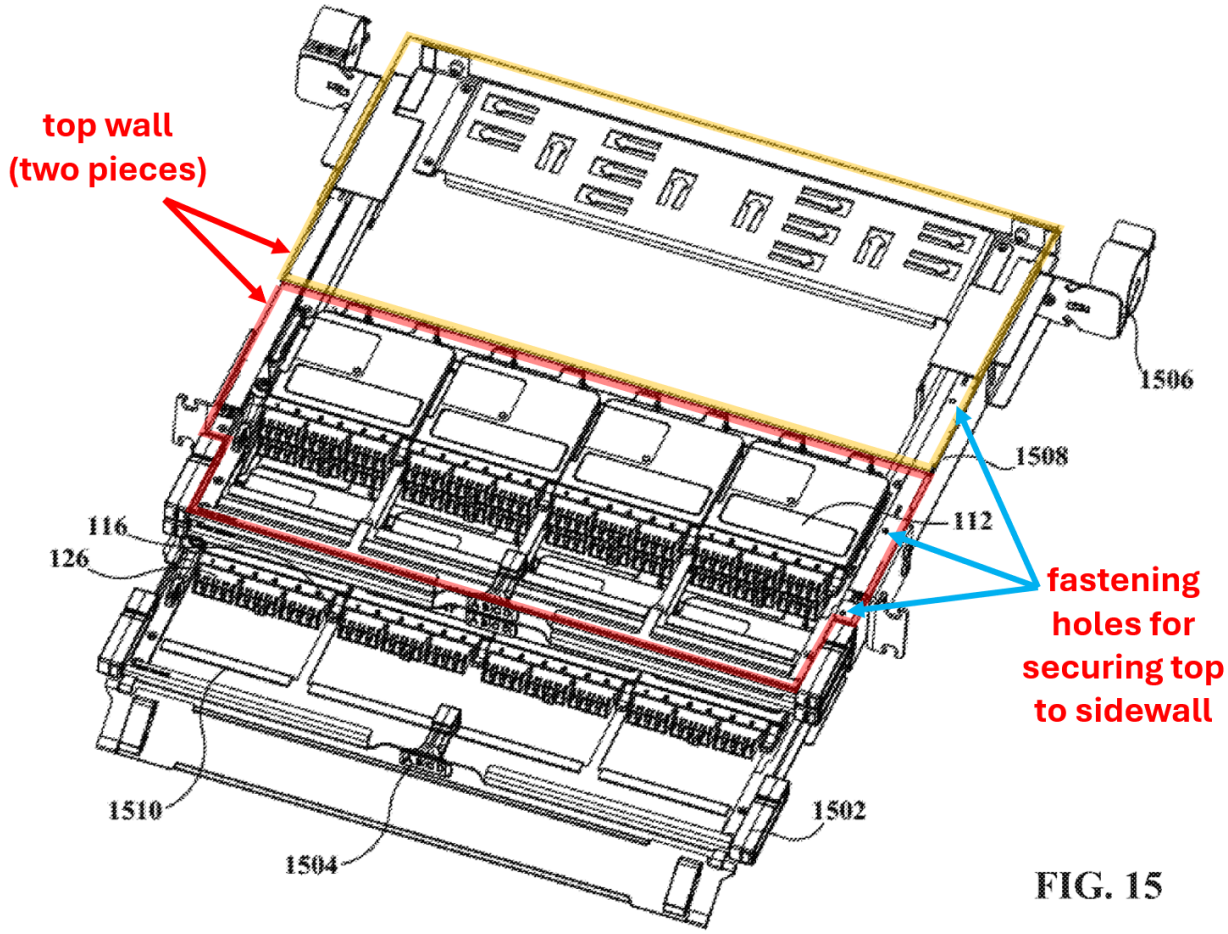
Figures 15 and 16 of Sauter show an enclosure that satisfies Element 1A. EX1006 3:1-3; Figs. 15, 16. The enclosure is element 1508. It is easy to see the opposed side walls and bottom wall of the enclosure in Figures 15 and 16. The top wall is more difficult to see, but it is there. The top wall in the figure has been made transparent to reveal internal components. Yet Fig. 15 still shows the edges of a two-piece top wall and fastener holes to secure the top wall to the sidewall. EX1003 ¶217.



EX1006, Fig. 16.



EX1006, Fig. 15.



EX1006, Fig. 15.

The drawings originally filed by Sauter with his application included greyscale shading that helped to identify certain structures. See, e.g., EX1013 at 37, 38, Figs. 15, 16. The shading in original Figs. 15 and 16 corroborate that a POSITA would understand Sauter's enclosure includes top and bottom walls. EX1003 ¶¶218-219.

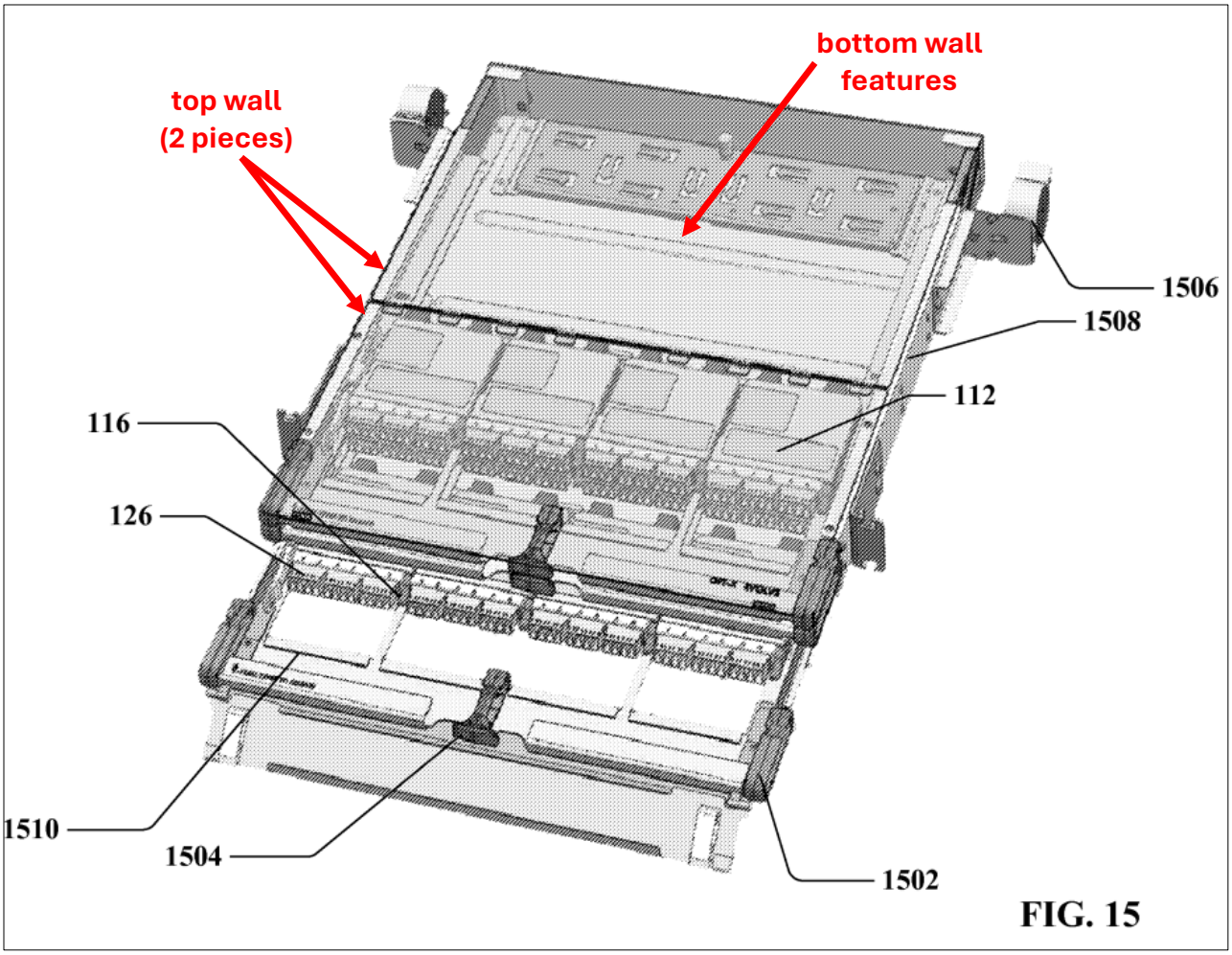


Figure 15 as originally filed by
Sauter included greyscale shading.

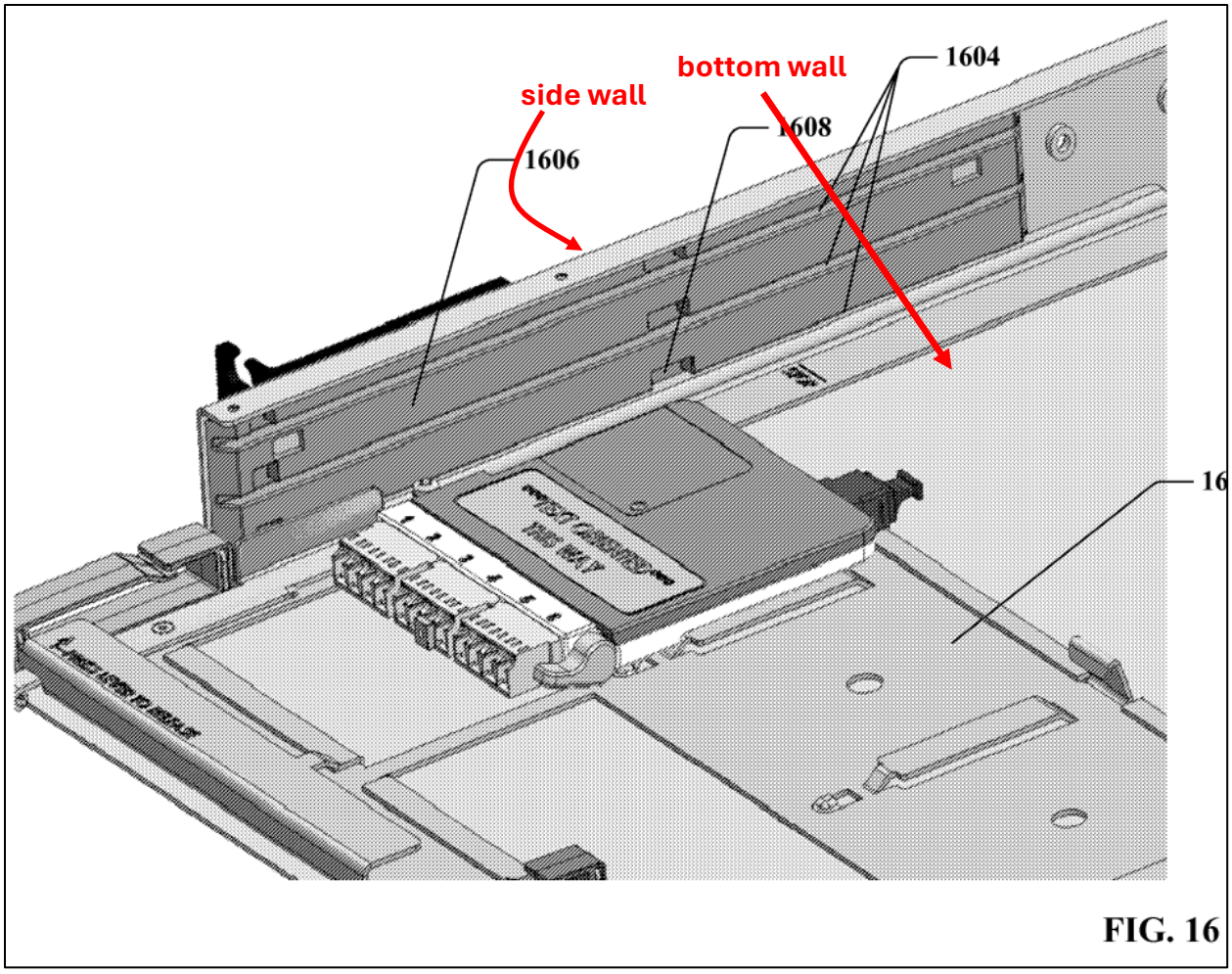


Figure 16 as originally filed by
Sauter included greyscale shading.

Alternatively, including top/bottom walls on Sauter's enclosure would have been obvious. It was well known that optical fibers are inherently fragile. It would have been obvious to protect the fiber optic components within Sauter's enclosure by including top and bottom walls to surround the components above and below, which would protect from inadvertent damage. EX1003 ¶220. Adding simple flat pieces of sheet metal to the top and/or bottom of the enclosure would have been

well within the skill level of a POSITA. EX1003 ¶220. A POSITA would have a reasonable expectation of success because it only requires a simple mechanical connection that could be secured with simple screws. EX1003 ¶220. Sauter already include suggested fastener hole locations for making the connection.

3. Element 1B

Sauter discloses trays, see, e.g., trays 102, 502, and 1510, that slide into a tray receiving space within an enclosure that meet all limitations of Element 1B. Numerous passages within Sauter disclose and describe trays. EX1006 at Abstract; 1:54-58; 4:1-28; 2:44-45; Figs. 1-5, 7-8, 11, 15-16; 10:4-5. EX1003 ¶221.

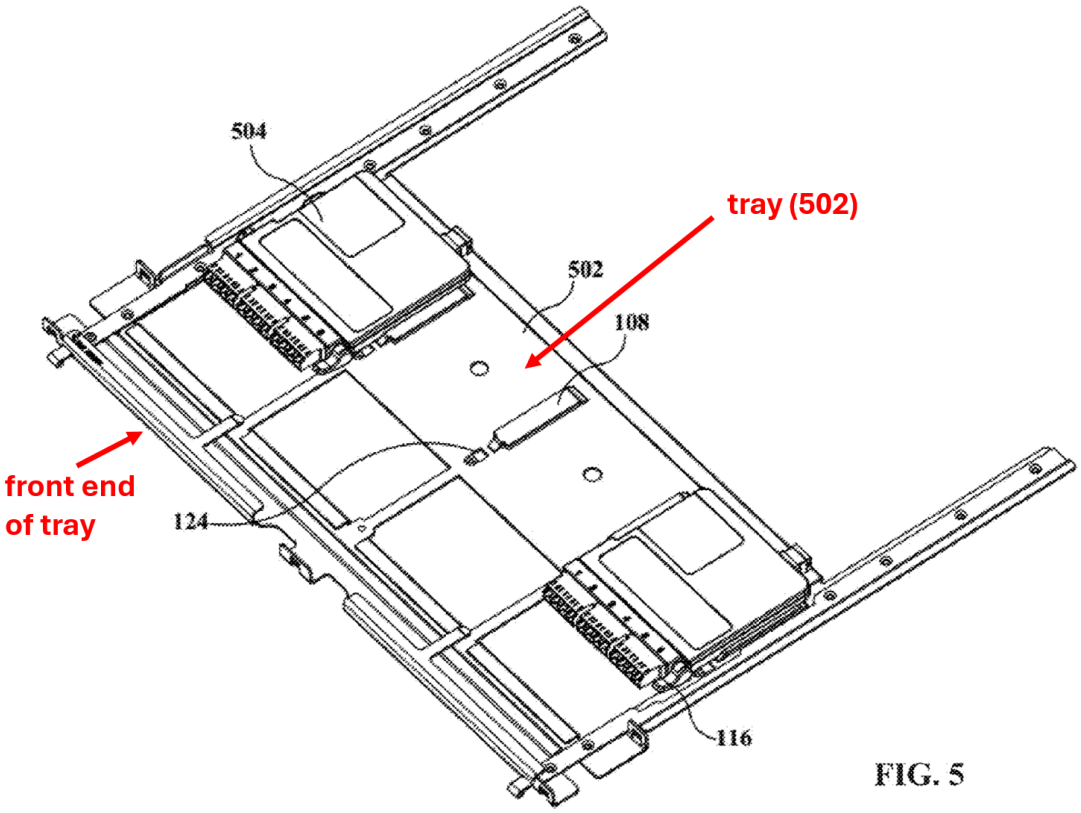
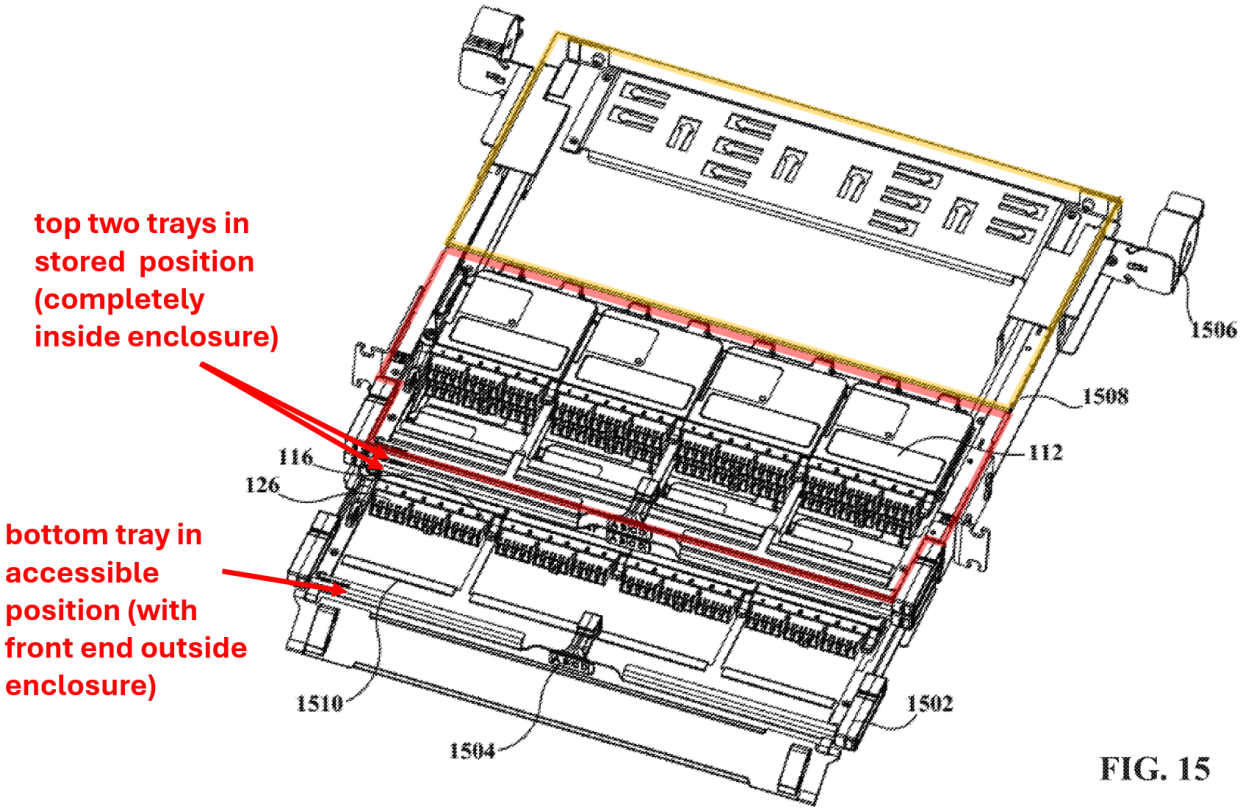


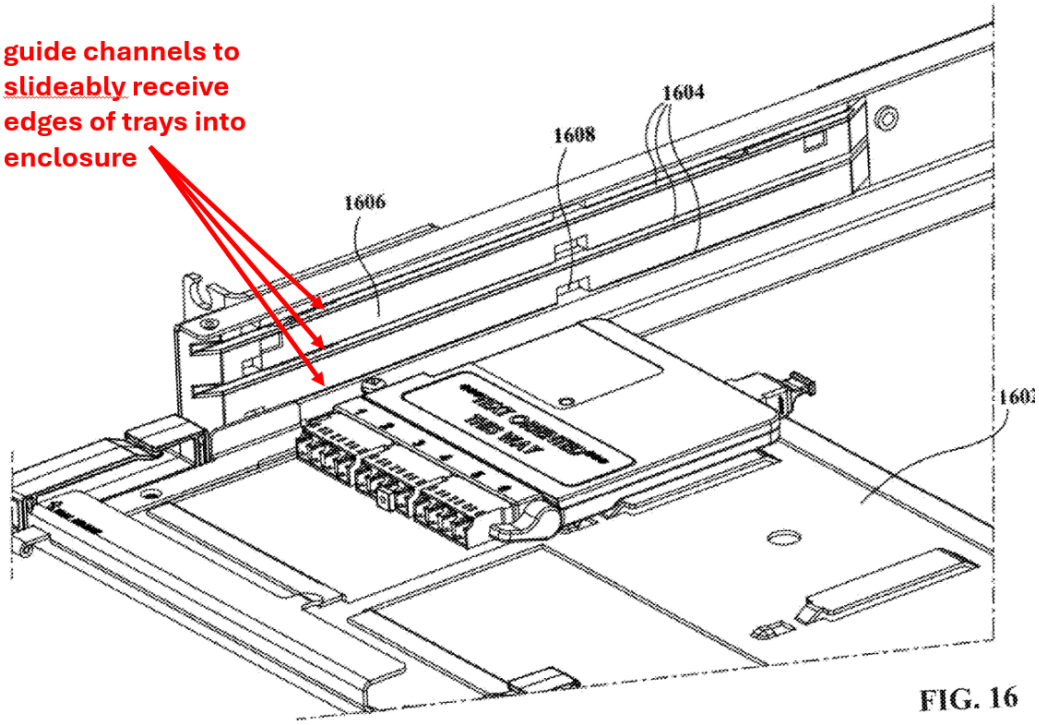
FIG. 5

Figs. 15 and 16 of Sauter show how the trays are slideably received by the enclosure in a stored position completely inside the enclosure or in an accessible position as claimed.



EX1006 at Fig. 15.

The enclosure incorporates guide channels in the sidewalls to slideably receive edges of trays. EX1006 at 10:21-28; Fig. 16; EX1003 ¶222-223.



Element 1B is Obvious in light of Sauter for the Same Reasons as Element 1A

If Sauter does not disclose a top or bottom wall and thus cannot receive a tray "completely within" the tray receiving space, adding such top/bottom walls would have been obvious for the same reasons given under Element 1A. EX1003 ¶224.

4. Element 1C.

"a set of fiber optic cassettes"

Sauter discloses a set of fiber optic cassettes. EX1006 at Figs. 2-3, 5-16; 4:32-34 ("Example tray 102 is designed to hold multiple fiber optic cassettes"); see also 1:5-9 ("cassettes of different sizes"). See, e.g., single-gang cassettes 112, 504 and double-gang cassettes 110.

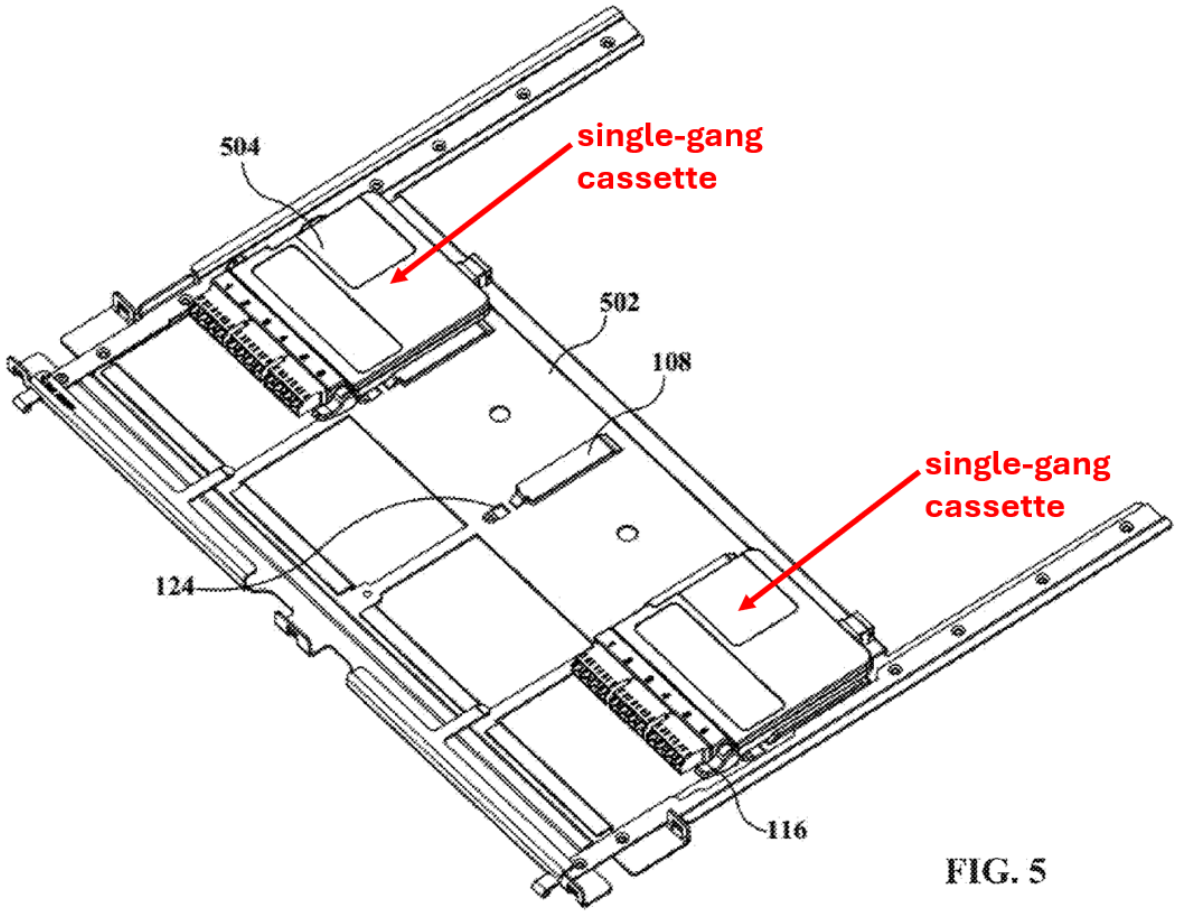


FIG. 5

EX1006 at Fig. 5; see also 2:44-45; 6:42-44. Sauter discloses that multiple cassettes of different sizes can be mounted on the same tray simultaneously. EX1006 at 1:54-58; 4:7-13; 5:1-17; EX1003 ¶¶226-227.

"a selected plurality of the cassettes arrangeable side by side"

Each of Figs. 2, 3, 5, 7, 8, 11, and 15 in Sauter show that selected cassettes in Sauter's system are arrangeable side by side along the trays.

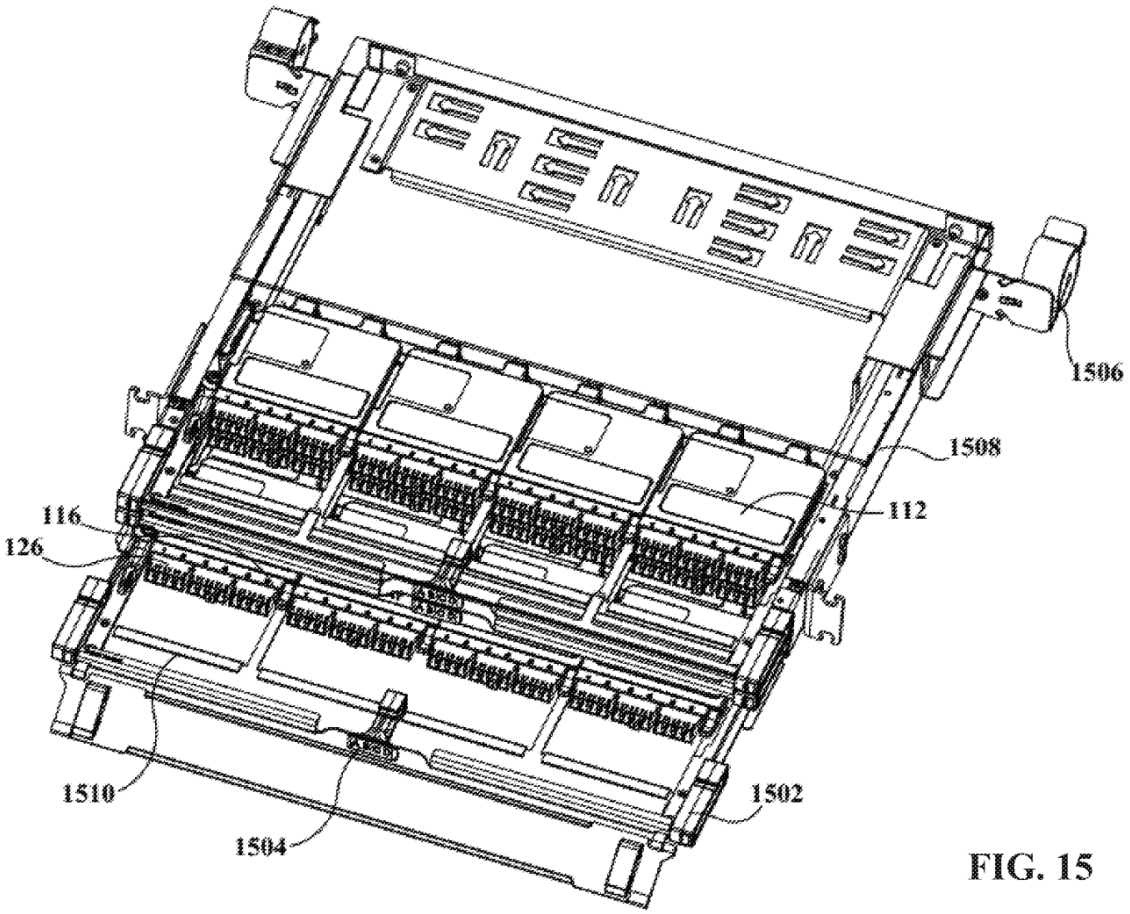

1506
1508
112
116
126
1510
1504
1502

FIG. 15

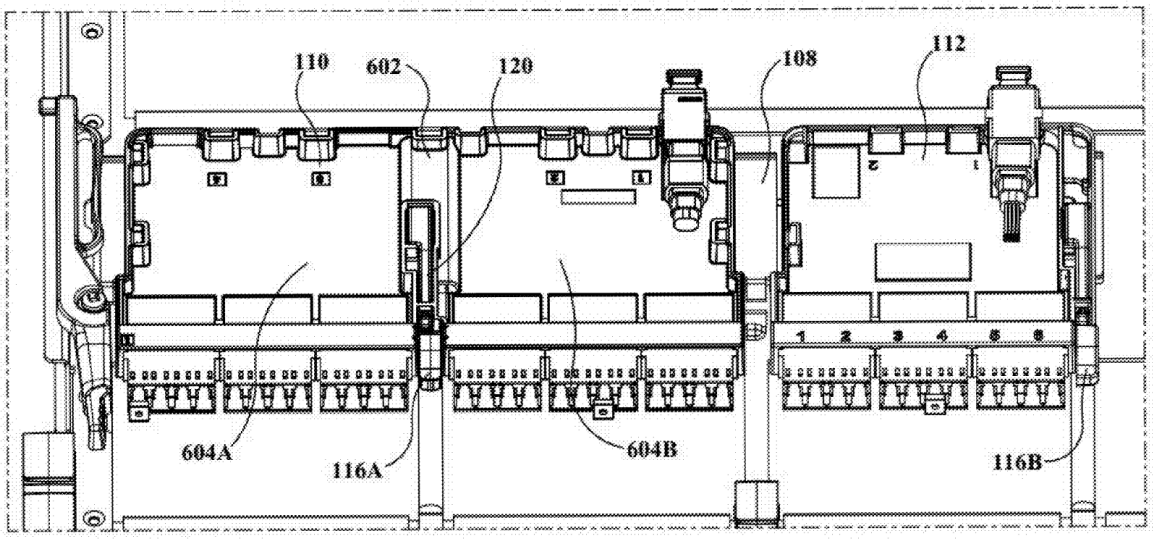

110
602
120
108
112
604A
116A
604B
116B

FIG. 7

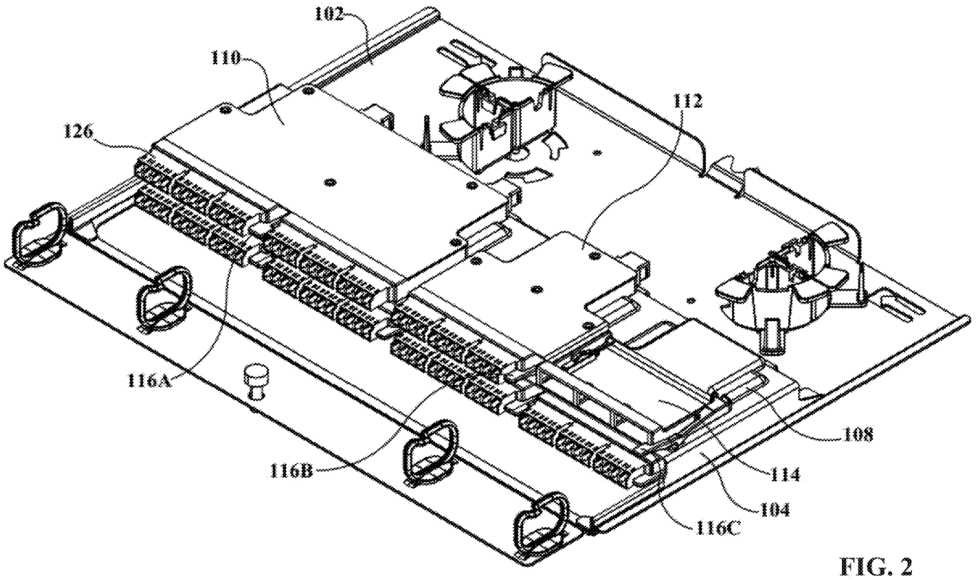


FIG. 2

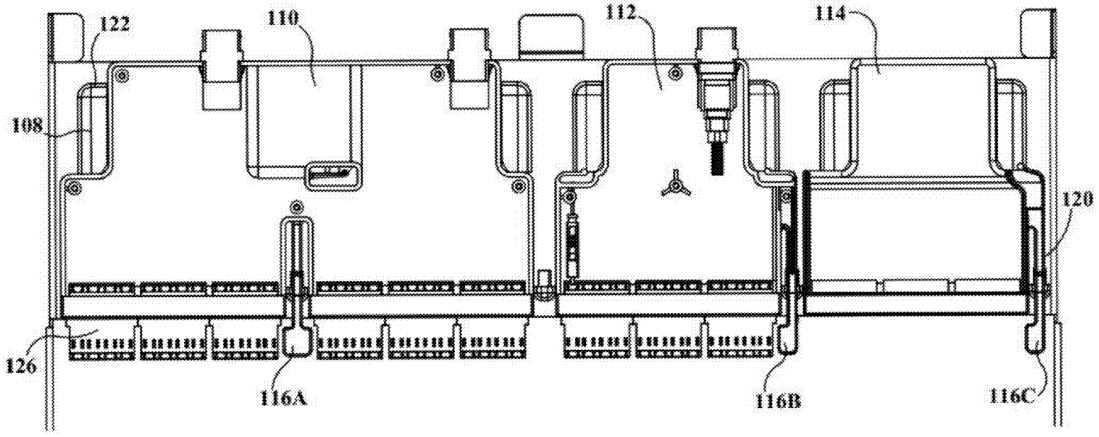


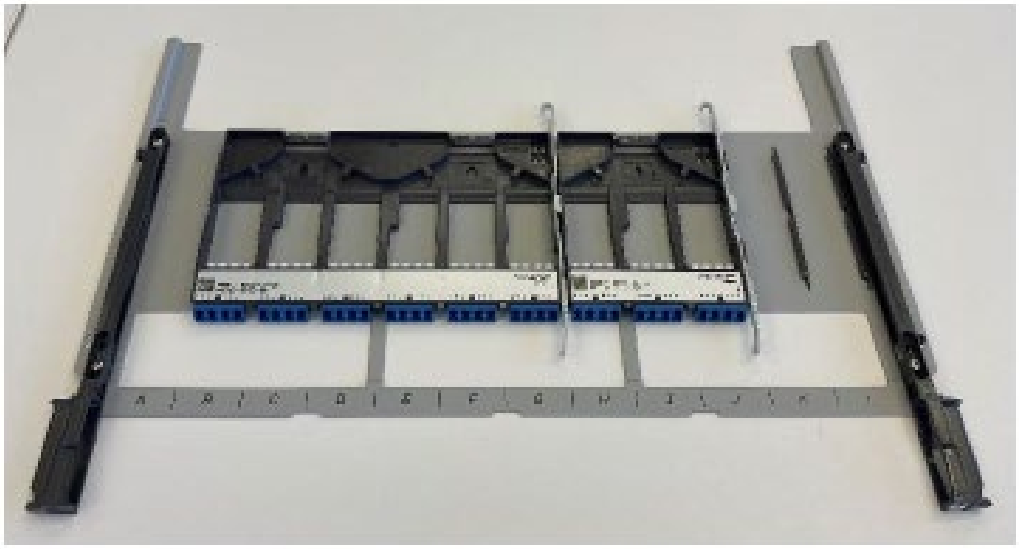
FIG. 3

EX1006 at Figs. 15, 7, 2, and 3; 6:42-56; 5:60-6:29; EX1003 ¶¶228-230. Any combination of cassettes can be selected, limited only by the available number of bays in the tray. EX1006 at 5:12-17.

"cassettes arrangeable … along said tray front end"

Under PO's application of this limitation Sauter's cassettes are arranged "along said tray front end." EX1003 ¶¶235-236. PO has accused a product just

like Sauter that places the cassettes set back from the front edge or end of the tray by finger access windows.



EX1012 at 3.

As shown in Figs. 5 and 15, Sauter's cassettes when mounted on a tray are not on said the "tray front end." Instead, the cassettes are arranged set back from the tray front end. As seen in the figures, Sauter's cassettes are arranged on rectangular openings formed in the bottom surface of tray. The openings themselves are also set back from the front end of the tray.

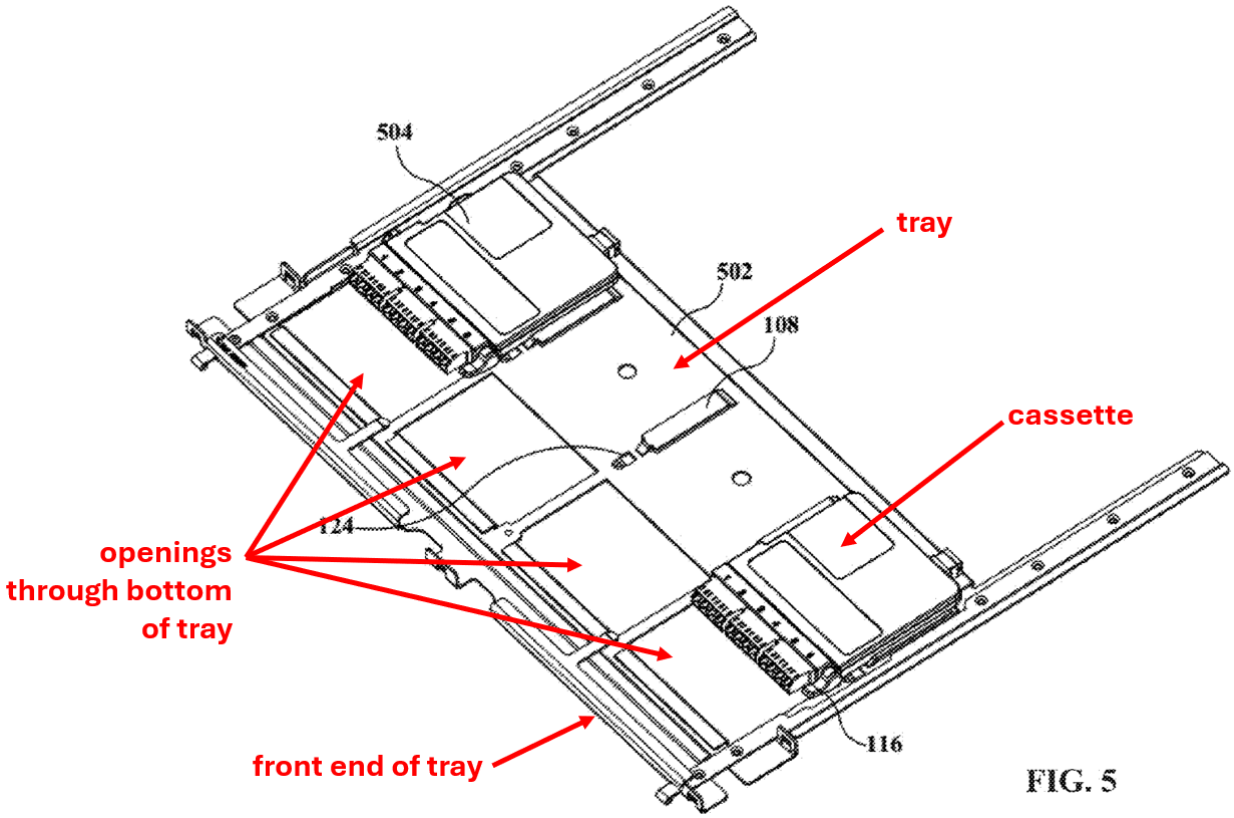


FIG. 5

A POSITA would recognize the openings exist to facilitate finger access to the connector locations when inserting or removing connectorized cables. EX1003 ¶¶231-232. If the cassettes were mounted on the front edge, the finger access openings would not be needed. EX1003 ¶232.

It would have been obvious to alter Sauter by mounting the cassettes on the front end of the tray. One would have been motivated to do so to improve the accessibility of the connection locations at the front of the cassettes and also to minimize the risk of damaging optical fiber components when sliding trays in and out of the enclosure. EX1003 ¶233. Mounting the cassettes on the front end of the tray makes their connection locations quicker and easier to reach. EX1003 ¶233.

A POSITA would have had a reasonable expectation of success. This modification would only require shifting the guide rails 122 and aperture 124 in the tray forward to the front end of the tray. EX1003 ¶234. Sauter already shows how this can be done. In Fig. 1, the upper row of cassette are positioned on the very front edge of the upper tray layer.

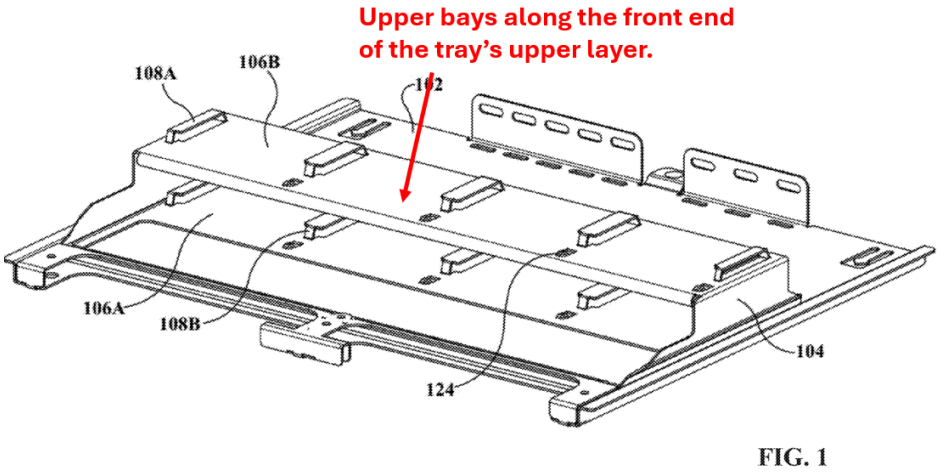


FIG. 1

EX1006 at Fig 1.

"wherein each of said cassettes comprises a plurality of optic plug receiving receptacles arranged side by side in a row along a front thereof"

The adapters 126 aligned side-by-side in a horizontal row at the front of Sauter's cassettes are fiber optic plug receiving receptacles. See, e.g., Figs. 2, 9, and 11 below:

adapters (plug receiving receptacles) side-by-side along front of cassettes

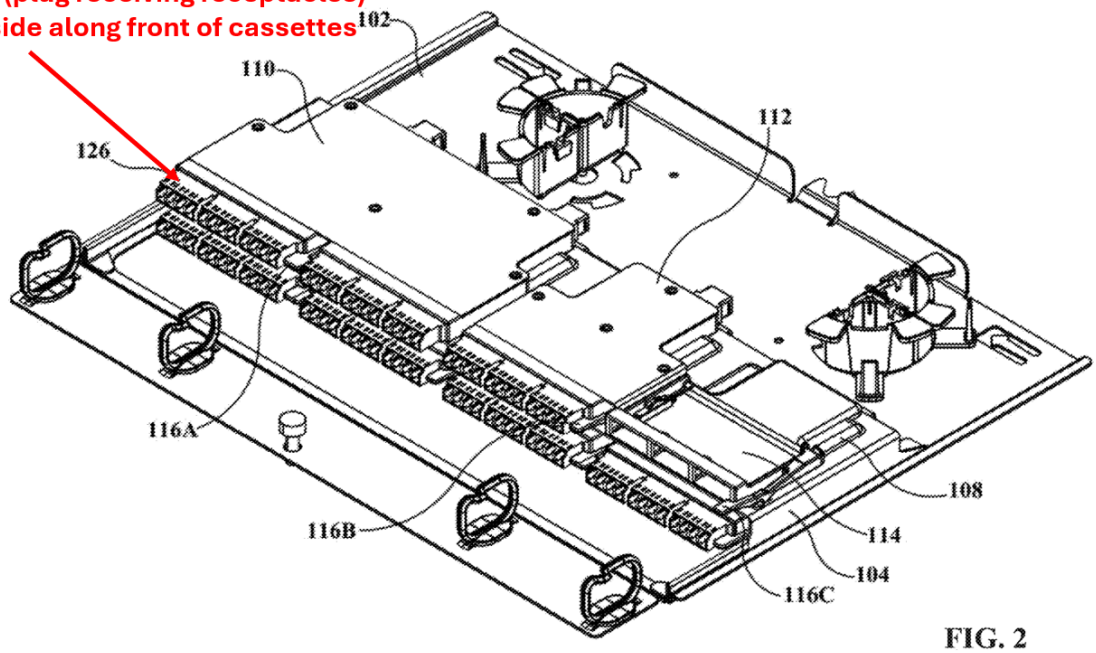
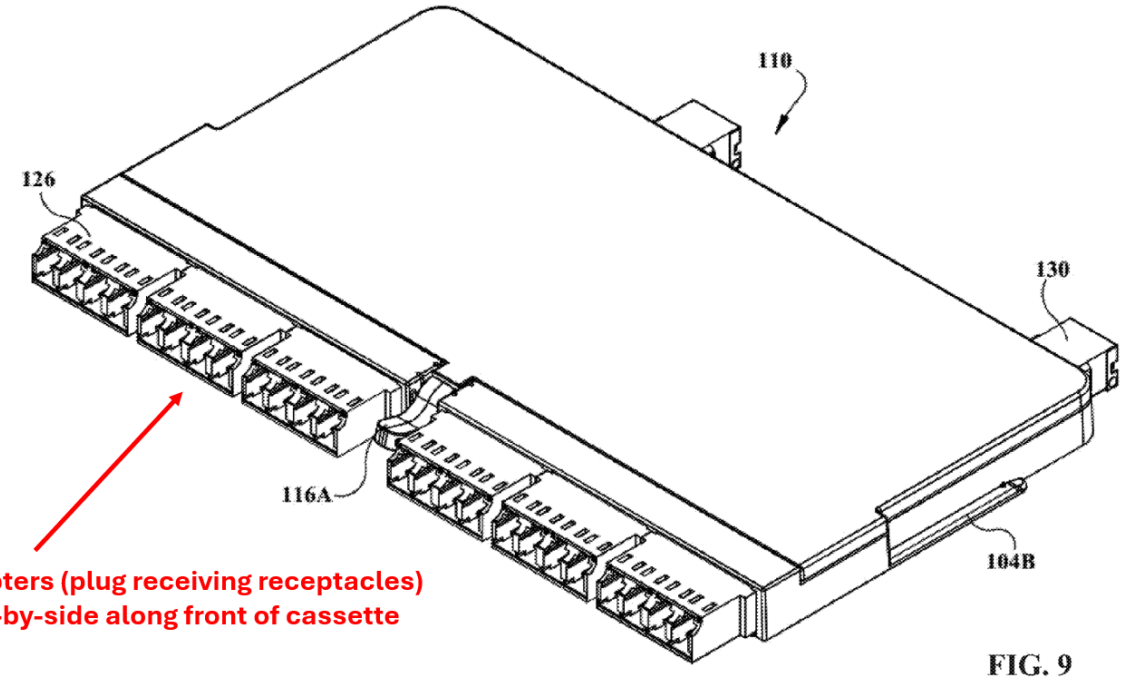


FIG. 2



adapters (plug receiving receptacles) side-by-side along front of cassette

FIG. 9

adapters (plug receiving receptacles)
side-by-side along front of cassettes

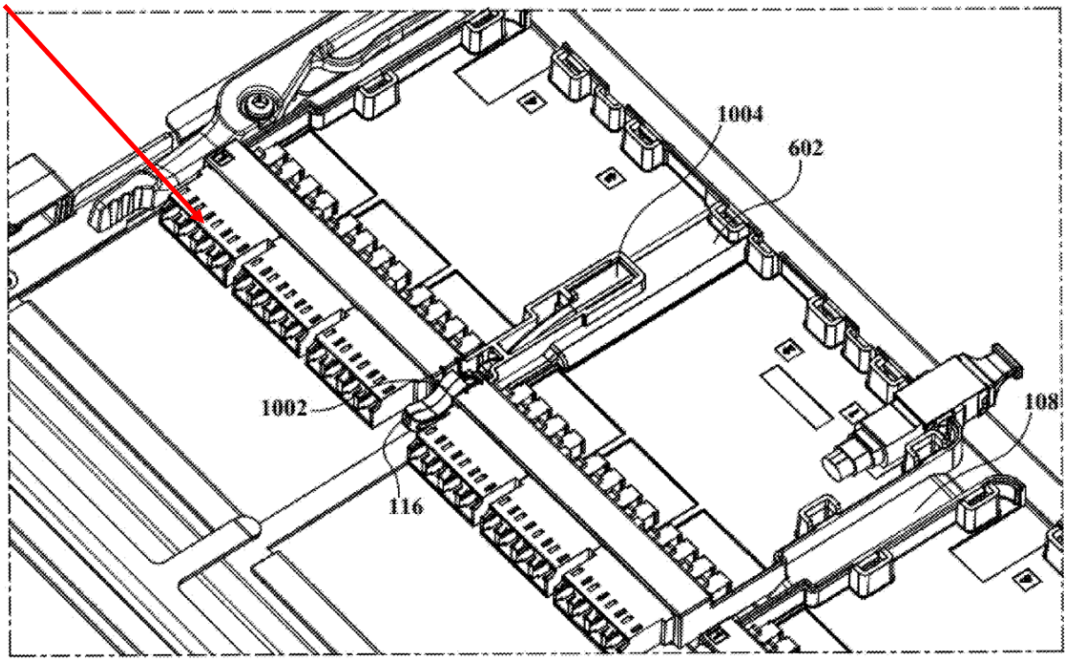


FIG. 11

See also EX1006 at Figs. 3, 5-7, 10, 13, 15-16; 8:4-6; 8:7-28; EX1003 ¶237.

"a first [second] of said set of cassettes comprising a first [second] cassette width of one of one, two, three, four and six standard width units"

At least under PO's interpretation, Sauter's sets of single/double/triple/multi-gang cassettes satisfy these limitations. As shown in Sauter's Fig. 7, the single-gang cassette 112 has a width that accommodates **three** quad LC adapter modules. EX1006, Fig. 7. Therefore, according to PO this is an example of a first cassette having a first cassette width as measured between outer side edges thereof of **three** standard width units. EX1003 ¶238.

The double-gang cassette accommodates six quad LC connector modules. Under PO's interpretation, therefore, the "double-gang" cassette 110 is an example of a cassette having a width of **six** standard width units. EX1003 ¶239.

Even if being multiples of a standard width unit is actually about the mathematical relationship of the measured width dimensions of the cassettes, not merely the number of modules they can accommodate, Sauter's cassettes disclose this relationship. Sauter discloses cassettes that are a multiple in size relative to each other. EX1006 at 4:50-61 ("approximately twice as wide…approximately three times as wide"). When the latching mechanism 120 of the double-gang cassette is positioned along the right-hand side of the cassette (as taught by Sauter at 7:48-60; 1:64-2:1), the width of the double-gang cassette mathematically equals twice the width of the single-gang cassette. EX1003¶240. The figures below illustrate what Sauter is teaching at 7:48-60. EX1003¶240.

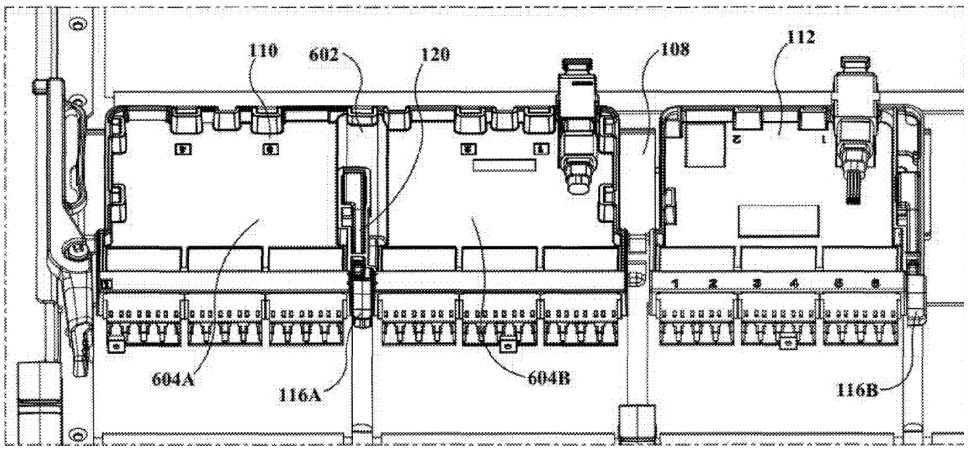
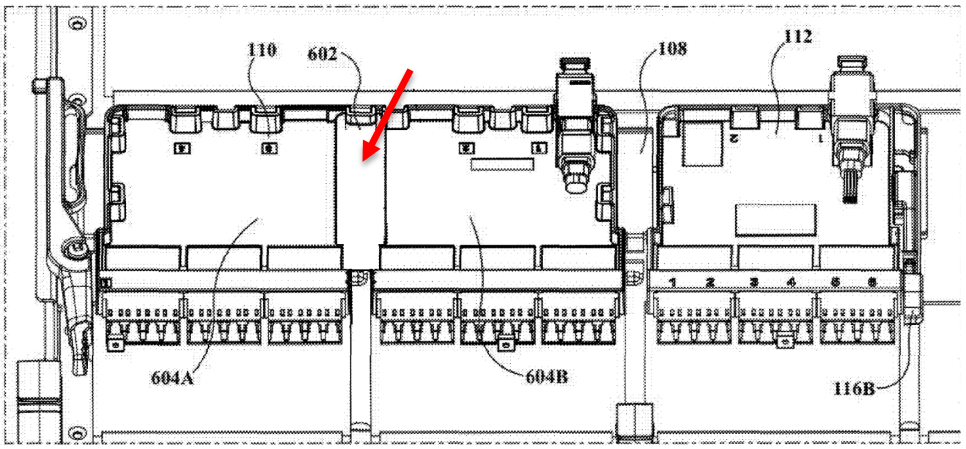
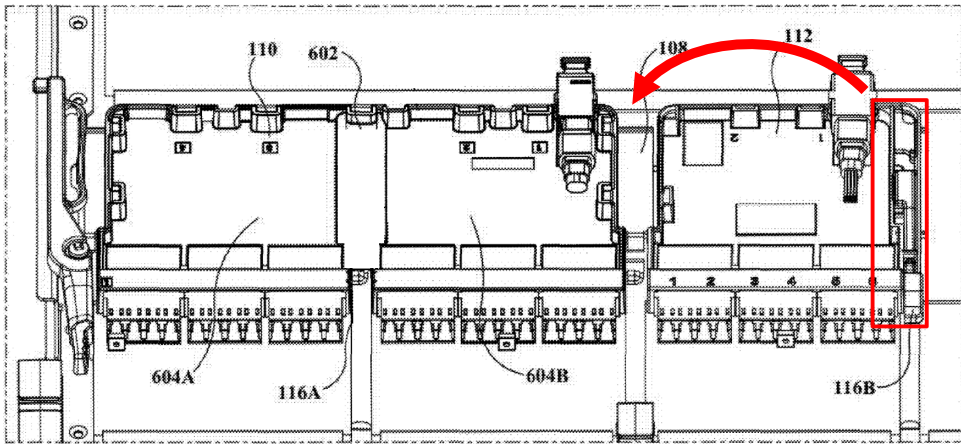
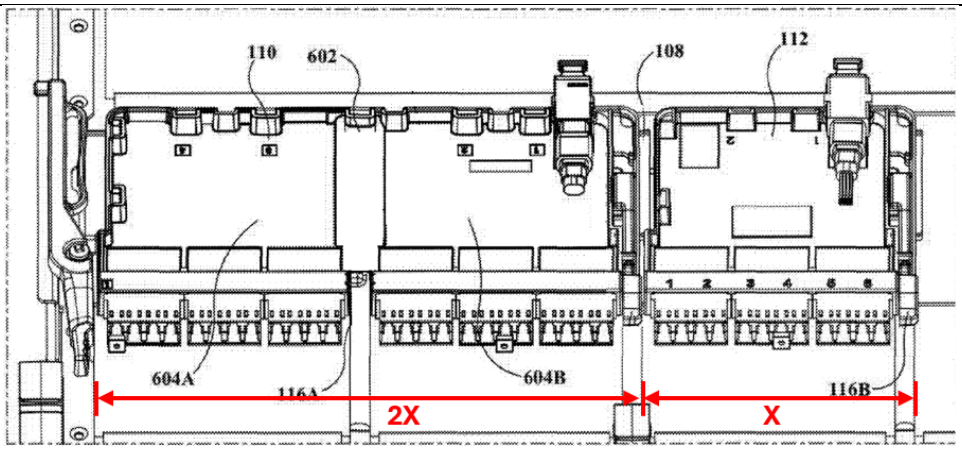
Fig. 7 as shown in Sauter (with latching mechanism 120 and 116A in the middle of cassette 110)	
Fig. 7 without middle latching mechanism 120 and 116A	

Fig. 7 indicating latch mechanism along right side of cassette 112 that Sauter teaches can be duplicated onto right side of cassette 110.	
Fig. 7 with latching mechanism located along right hand side of cassette 110 as taught by Sauter at 7:54-56.	

With this alternative taught by Sauter, cassette 110 mathematically equals twice the width of cassette 112, not merely "approximately" twice the width of cassette 112. EX1003¶240.

When the standard width unit is defined as 1/3 the width of the single-gang cassette 110, then the double-gang cassette will be equal to 6 times the standard width unit without any additional amount. The double-gang cassette will be evenly divisible by 1/3 the width of the single-gang cassette. EX1003¶241.

5. Element 1D

Sauter's cassettes include a fastener which is latching mechanism 120 and rails 404 that cooperate with apertures 124 and rail guides 108 on the tray to removably secure Sauter's cassettes to the tray. EX1006 at 5:60-6:14; 6:15-29; see also Figs. 1-2, 4-8, 10-14, 16; 4:4-11; 4:46-50; 4:13-25; 4:61-67; 8:63-66; 9:3-27; 6:16-29; 7:47-60; 8:37-49; 9:63-10:3; EX1003¶242-245.

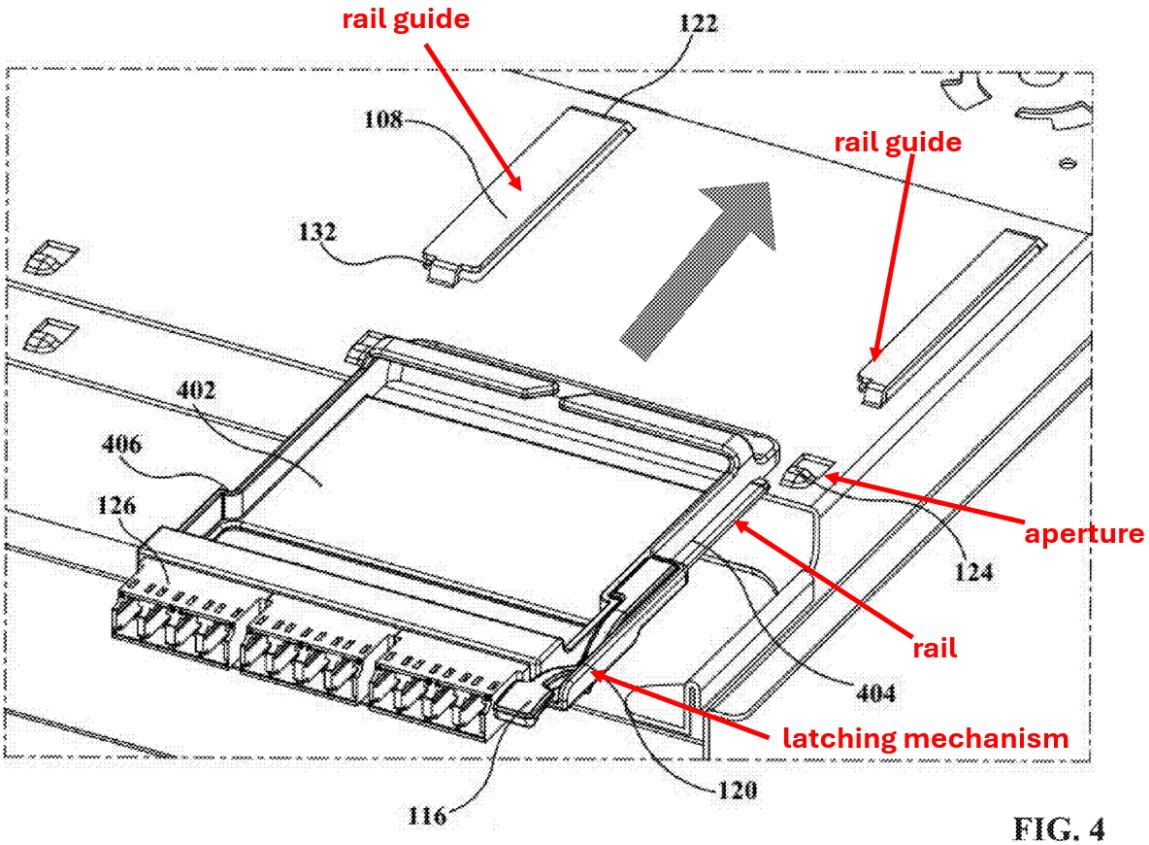


FIG. 4

Latching mechanism 120 and rails 404 on cassette are an example of a fastener that fit into rail guides 108 and aperture 124 on tray to releasably secure cassettes to tray.

6. Element 1E

"wherein when arranged on said at least one tray each of said fiber optic cassettes touches at least one other fiber optic cassette."

In Sauter, when the cassettes are arranged on the tray side-by-side, the cassettes are either touching or almost touching. For example, as shown in Fig. 15, there is no visible space between the cassettes.

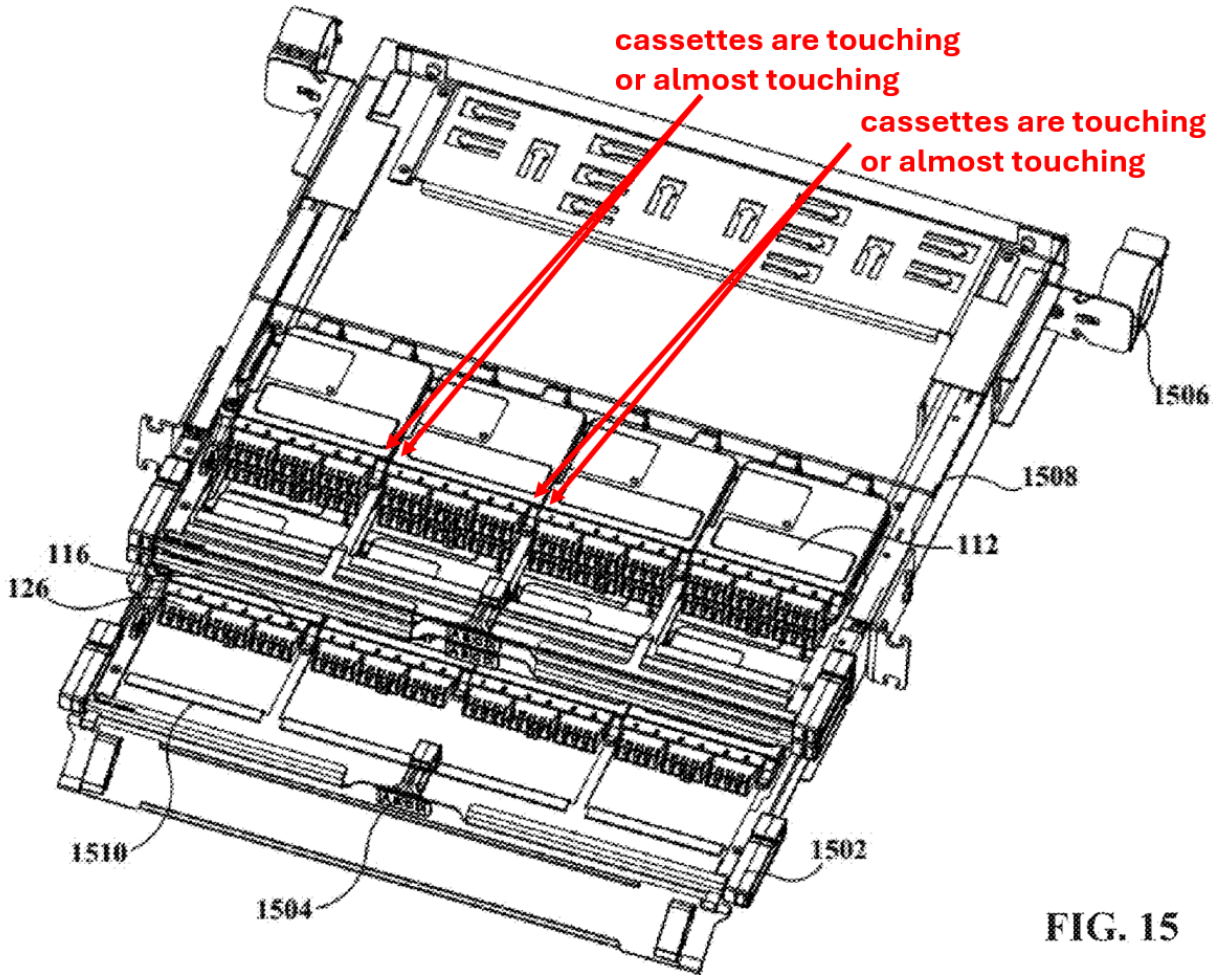
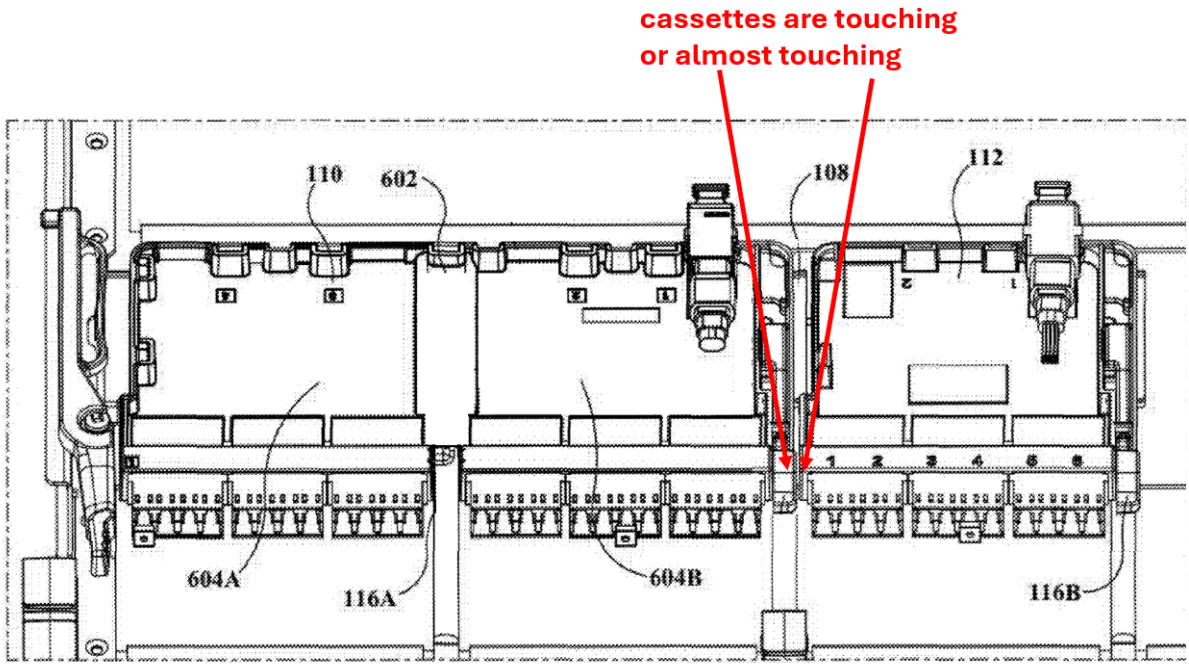


FIG. 15

EX1006 Fig. 3; EX1003 ¶246.

Sauter, as explained above, teaches to place the latching mechanism of a double-gang cassette on the right side of the cassette. The result is that the right

side of the double-gang cassette is touching or almost touching the single-gang cassette:



EX1003 ¶247.

Even if there is a tiny gap (that cannot be seen) between the cassettes, then it would have been obvious based on Sauter alone or in light of Laarveld (EX1026) to modify Sauter's cassettes so that they touch. EX1003 ¶248. This is an insignificant modification to Sauter. A POSITA could easily make this modification by making the cassettes a tiny amount wider.

Motivation. First, a POSITA would have been motivated to make the cassettes touch to aid in aligning cassettes during installation, making installation

quicker and easier. EX1003 ¶249-250. It would provide a convenient, easy, and intuitive registration feature. EX1003 ¶249-250.

Second, a POSITA would have been motivated to make the cassettes wide enough to touch to provide for additional or stronger cassette components. The additional size would allow cassette features to be made stronger (slightly thicker walls) to be more resistant to accidental damage. EX1003 ¶251.

A POSITA would have a reasonable expectation of success. At most, this is an insignificant modification. It was already known to make adjacent cassettes touch. *See, e.g.*, EX1026 at 3:4-9, Figs. 5; EX1010 at Figs. 3-4; EX1004 at Fig. 8, 7:46-51; EX1003 ¶252.

In addition it would have been obvious to modify Sauter so that the cassettes touch in light of Laarveld. EX1026. As explained above, Laarveld discloses fiber optic cassettes much like Sauter's cassettes.

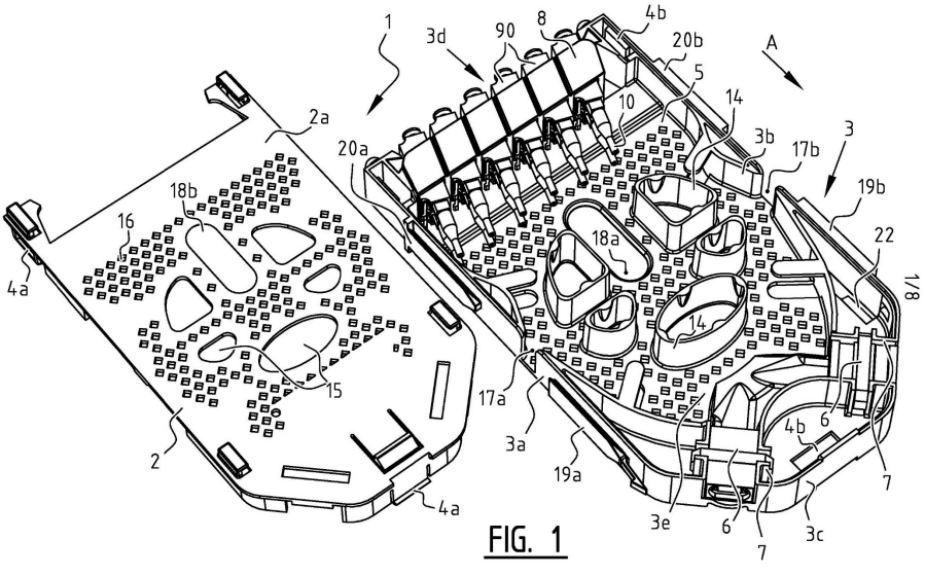


FIG. 1

EX1026, Fig. 1, 10:19-20, 11:18-19; 11:11-12; EX1003 ¶253.

Laarveld also discloses that two cassettes can be positioned to touch each other (see Fig. 5) so that fiber can transition directly from one cassette to another adjacent cassette via passageways through their adjacent walls.

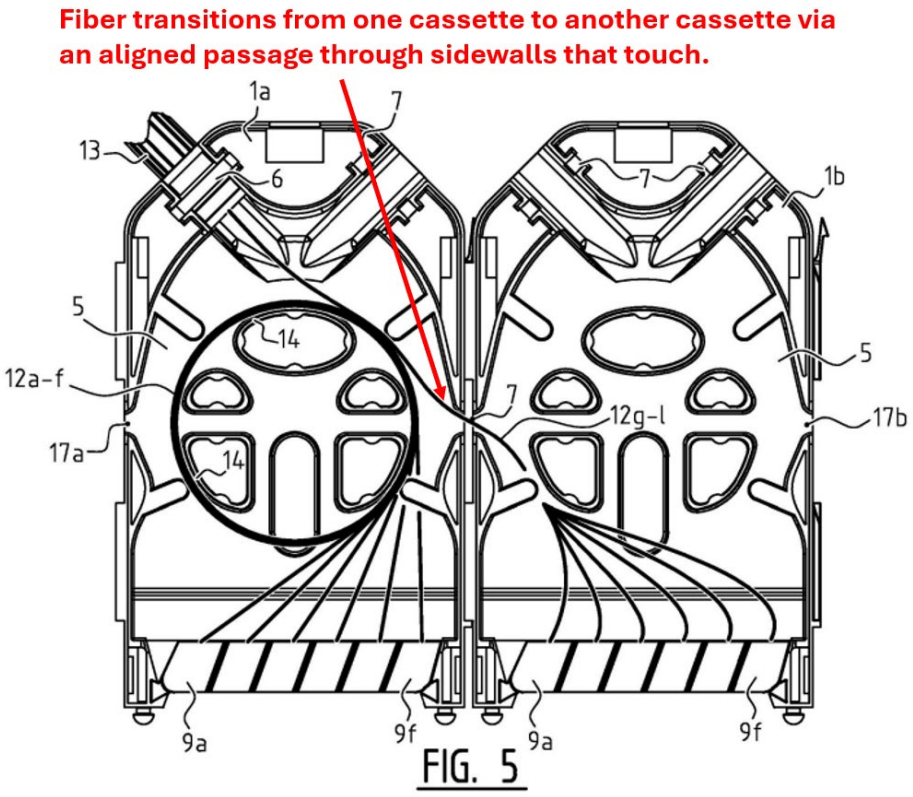


FIG. 5

EX1026 at Fig. 5; 10:28-29; 14:23-15:14; 3:4-9; EX1003 ¶254.

It would have been obvious to make Sauter's cassettes touch as taught by Laarveld. A POSITA would be motivated by the same reasons articulated above, i.e., to aid in aligning cassettes during installation and to provide space for additional or stronger cassette components. EX1003 ¶255. Laarveld provides an additional motivation, to permit fibers to transition horizontally from one cassette

to another. EX1003 ¶255. Bringing the cassettes into contact ensures that a fiber transitioning from one cassette to another is protected, not exposed. Id.

A POSITA would have a reasonable expectation of success of combining Sauter and Laarveld for the same reasons as discussed above based on Sauter alone. EX1003 ¶256.

B. Claim 2

Sauter's tray has a width dimensioned to receive at least twelve standard width units side by side. If the standard width unit is considered 1/3 the width of a single-gang cassette, and the trays accommodate four such cassettes, then the tray that is dimensioned to receive at least 12 standard width units side by side. See EX1006 at Fig. 15, 3, 2; EX1003¶257.

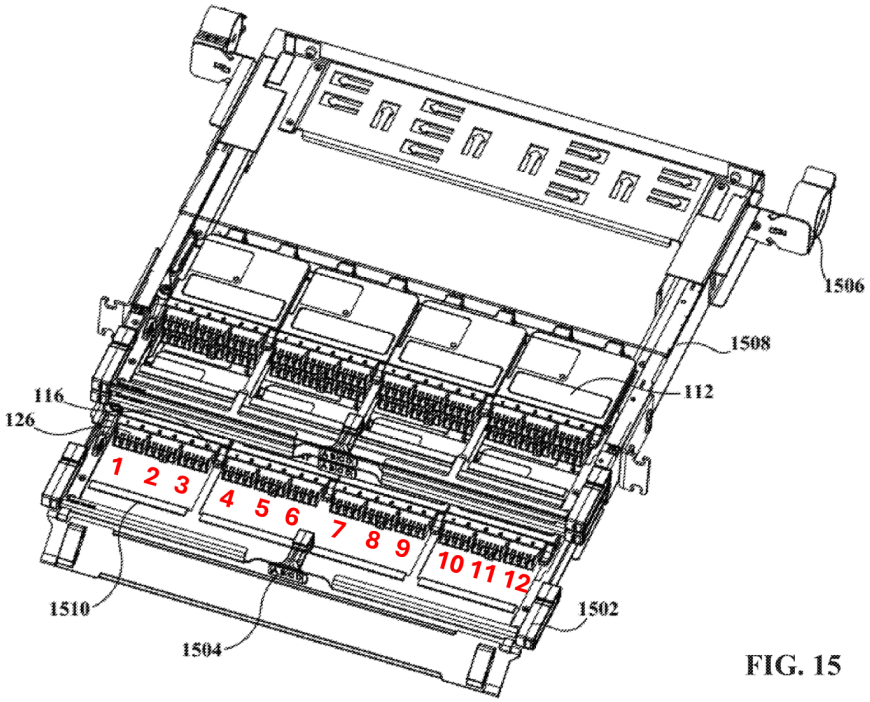


FIG. 15

See also Figs. 2 and 3, annotated below:

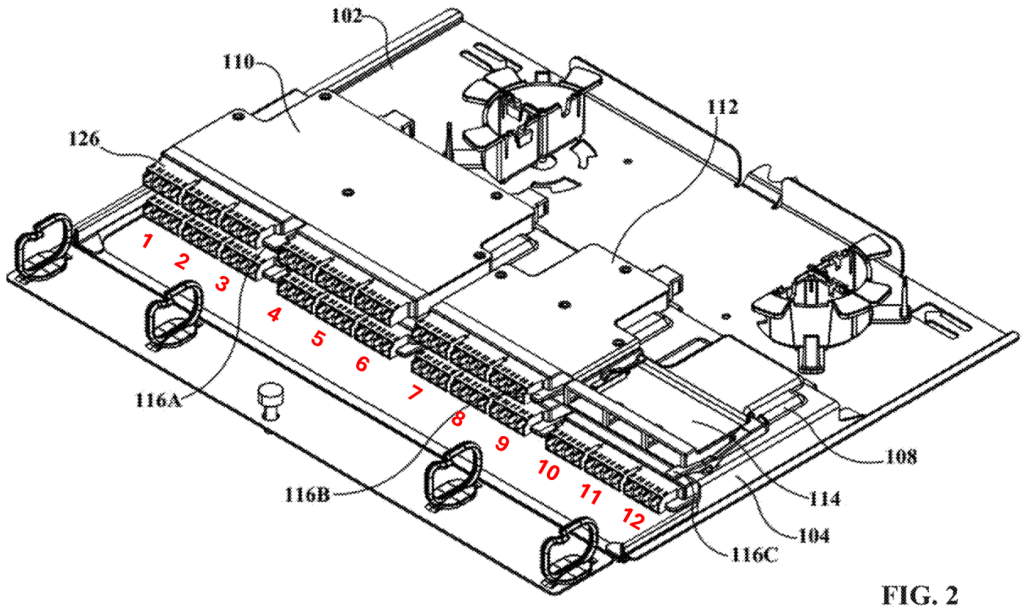


FIG. 2

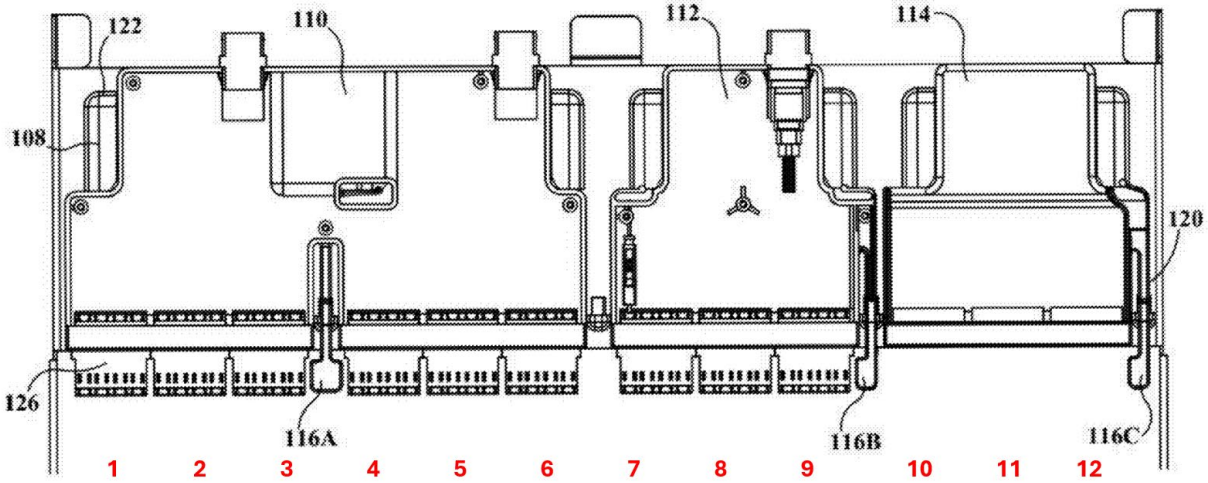


FIG. 3

C. Claim 3

Sauter discloses that his cassettes include an interfacing connector 130 at the rear of the cassettes in a connector receptacle which is a multifiber connector receptacle and that fibers from the multifiber connector and receptacle can be

connected to the rear side of the adapter receptacles 126 at the front of the cassettes. See EX1006 at 8:4-28, Figs. 10, 7, 6, 13 EX1003 ¶258.

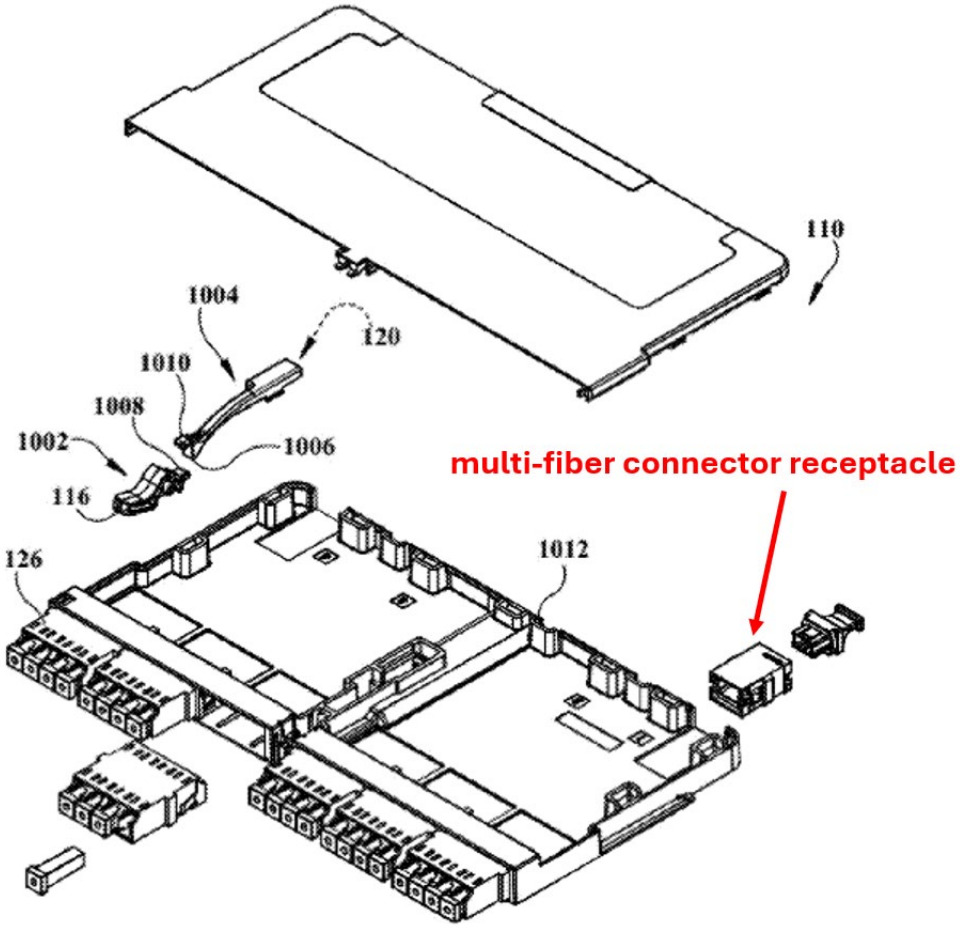


FIG. 10

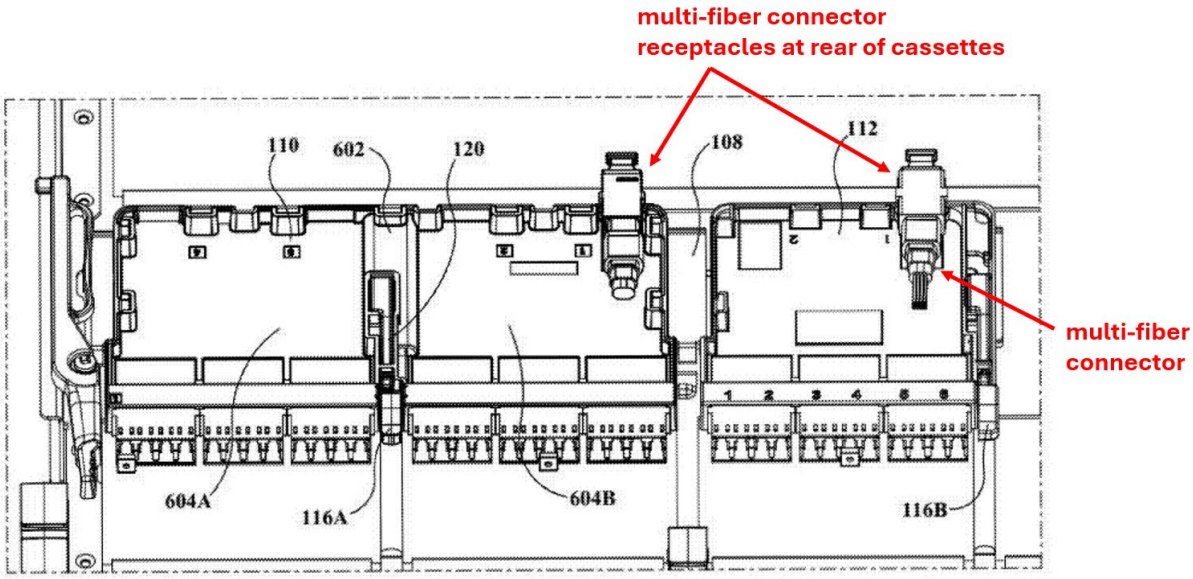

multi-fiber connector receptacles at rear of cassettes
110
602
120
108
112
multi-fiber connector
604A
116A
604B
116B

FIG. 7

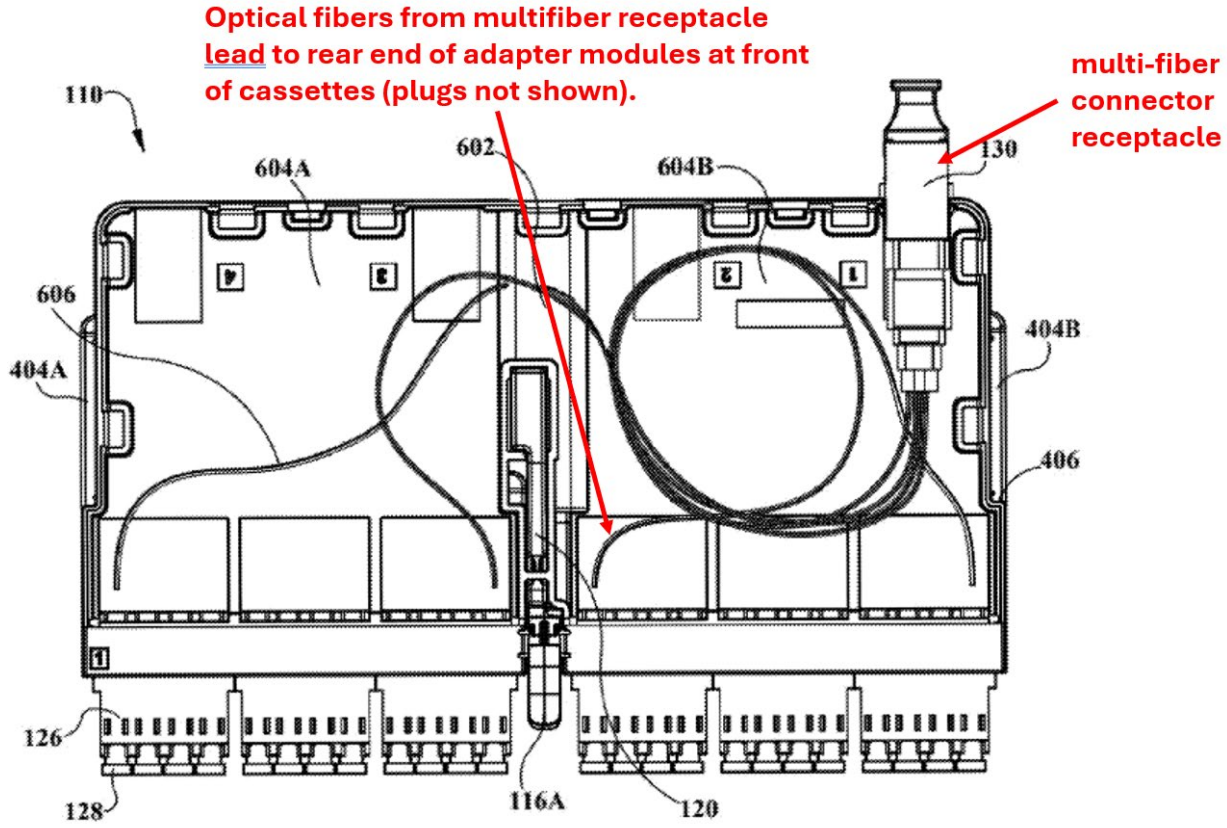

Optical fibers from multifiber receptacle lead to rear end of adapter modules at front of cassettes (plugs not shown).
multi-fiber connector receptacle
110
602
604A
604B
130
606
404B
404A
406
126
128
116A
120

FIG. 6

D. Claim 4

Sauter's cassettes include quad LC adapter modules along a front of each cassette. Each quad LC adapter module includes four fiber optic plug receiving receptacles arranged side by side in a row, and there is one quad adapter module in a cassette for each standard width unit of the cassette. EX1006 at Figs. 7, 10, 13 and 8:4-36; EX1003 ¶259.

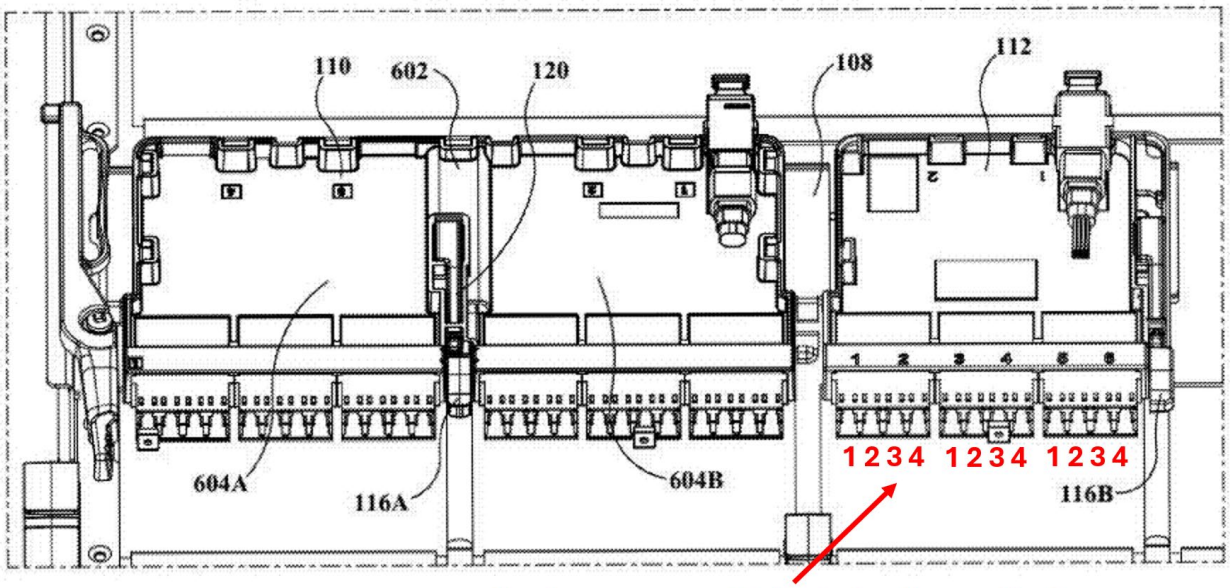


FIG. 7

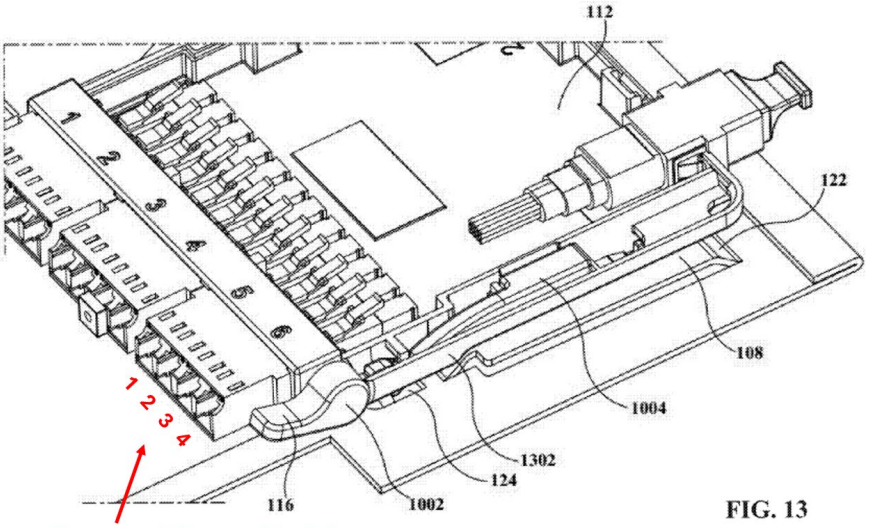


FIG. 13

Adapter modules each include four plug receiving receptacles side by side.

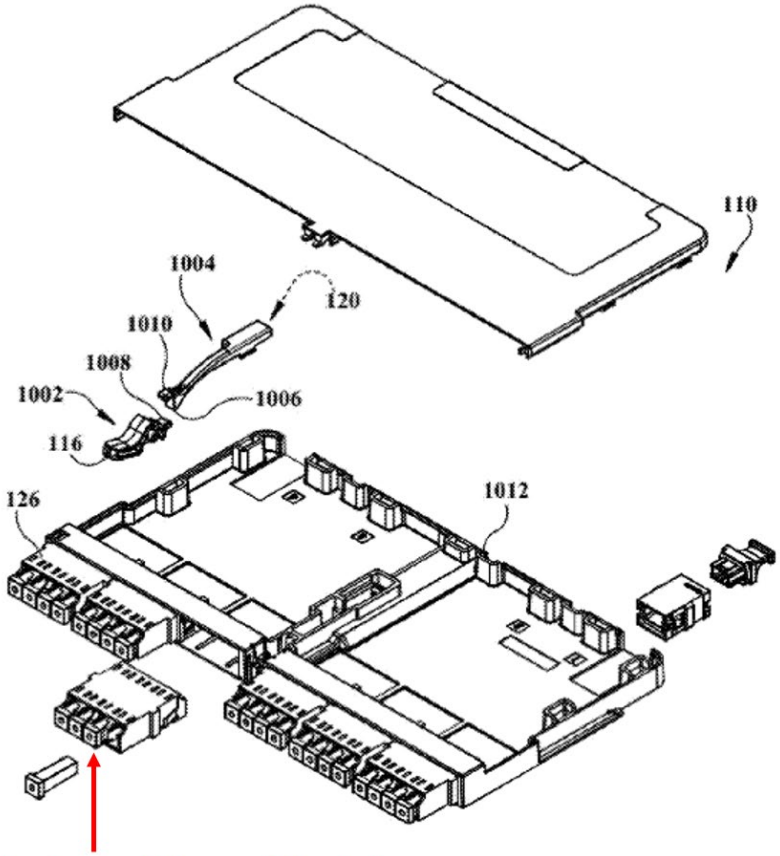


FIG. 10

Adapter modules each include four plug receiving receptacles side by side.

E. Claim 5

Sauter discloses a pair of mounting brackets on the outer sidewalls for securing the enclosure to a rack. See, e.g., Figs. 15, 16; EX1003 ¶¶260-261.

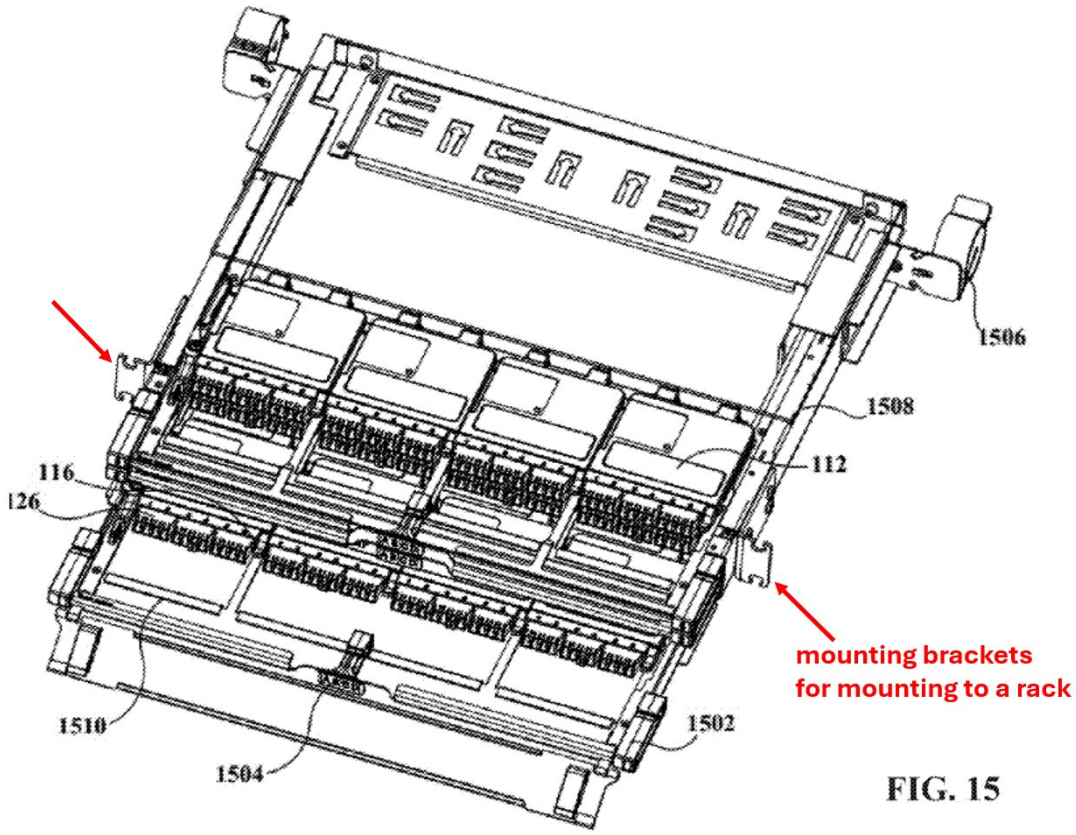


FIG. 15

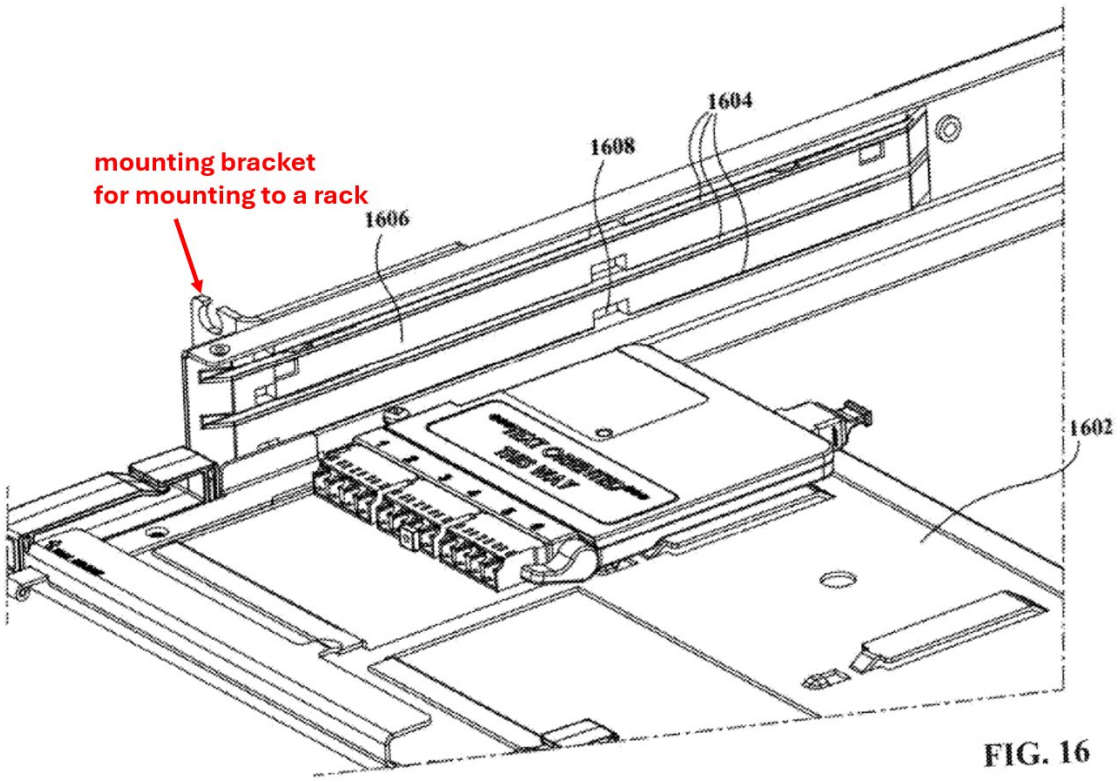


FIG. 16

F. Independent Claim 8

1. Preamble

Sauter discloses the preamble. Sauter discloses organizing trays, having a front edge, see, e.g., trays 102, 502, and 1510, that are used to store and organize fiber optic connections and that slide into a tray receiving space within an enclosure of a fiber optic interconnect system. See, e.g., EX1006 at Abstract; 1:54-58; 4:1-28; 2:44-45; Figs. 1-5, 7-8, 11, 15-16; 10:4-5; 1:23-28; 4:25-28; 4:29-40; 8:4-20; EX1003 ¶¶262-263.

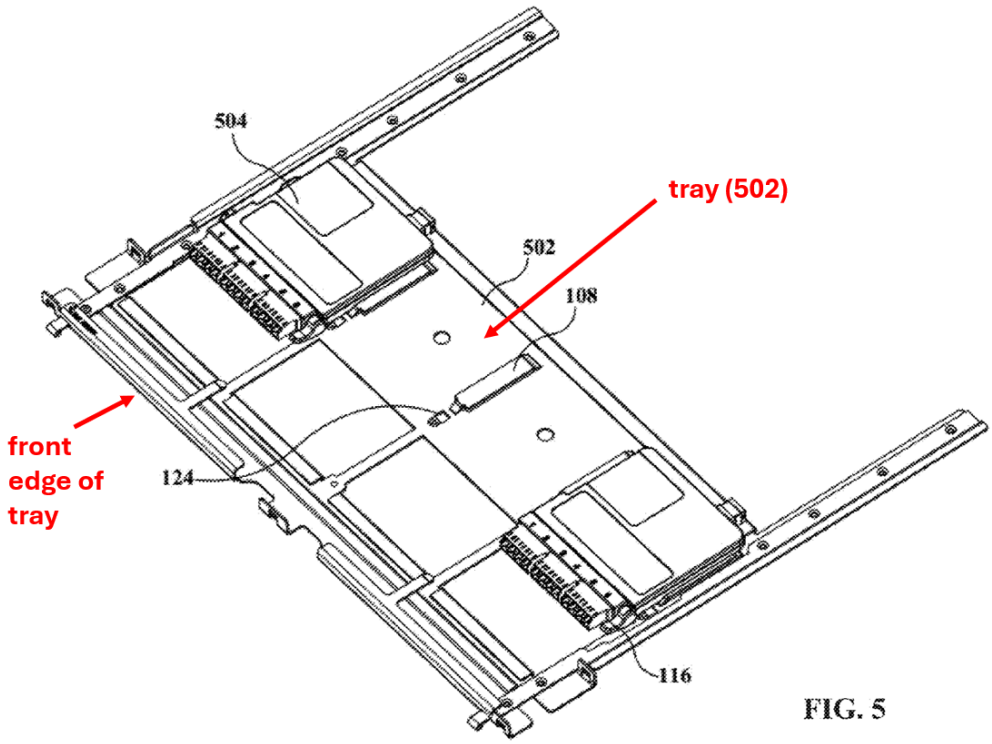


FIG. 5

2. Element 8A

Sauter discloses this element. As explained above with respect to Element 1C, which is reincorporated here by reference, Sauter's single-gang cassettes each have a width of **three** standard width units. A standard width unit, in this instance would inherently be defined as one third of the width of a single-gang cassette. Three units per cassette times four cassettes in a tray, means the tray front edge is evenly divisible by and fits twelve standard width units. See, e.g., EX1006 at Figs. 15, 5, 3, 2, 1, 7; 6:42-51; 4:50-54; EX1003 ¶¶265-268.

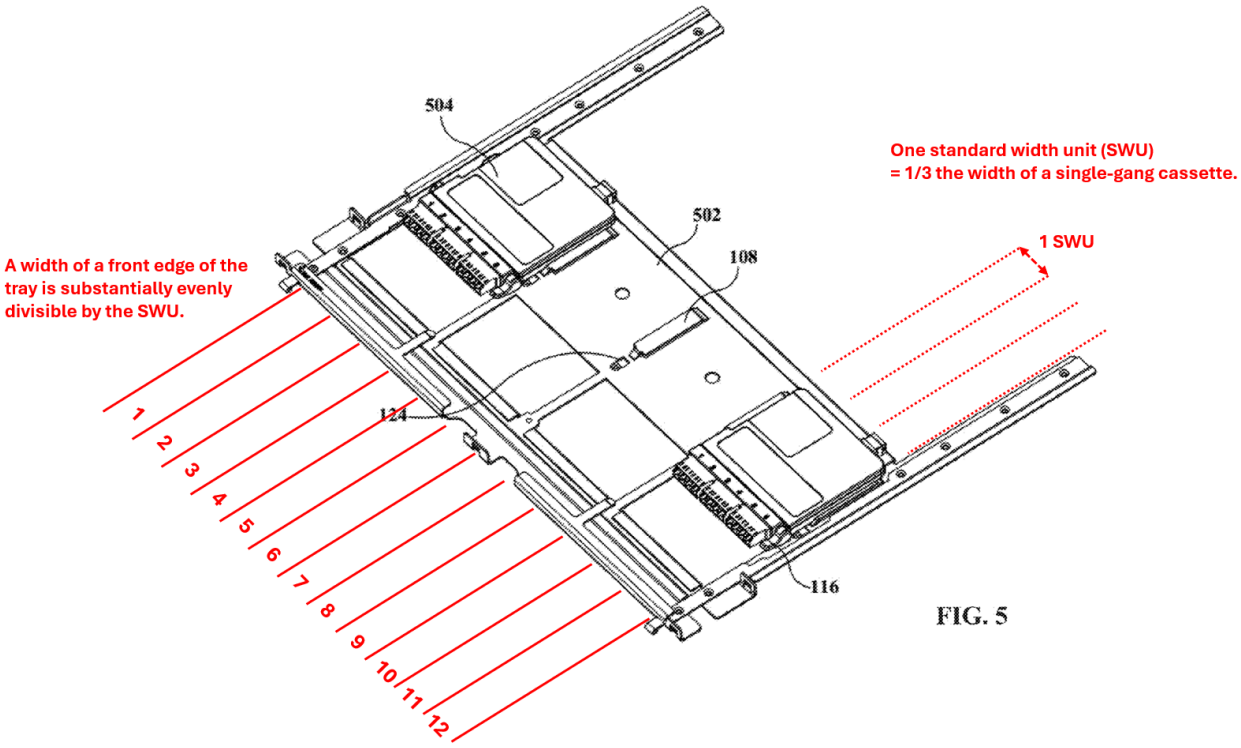
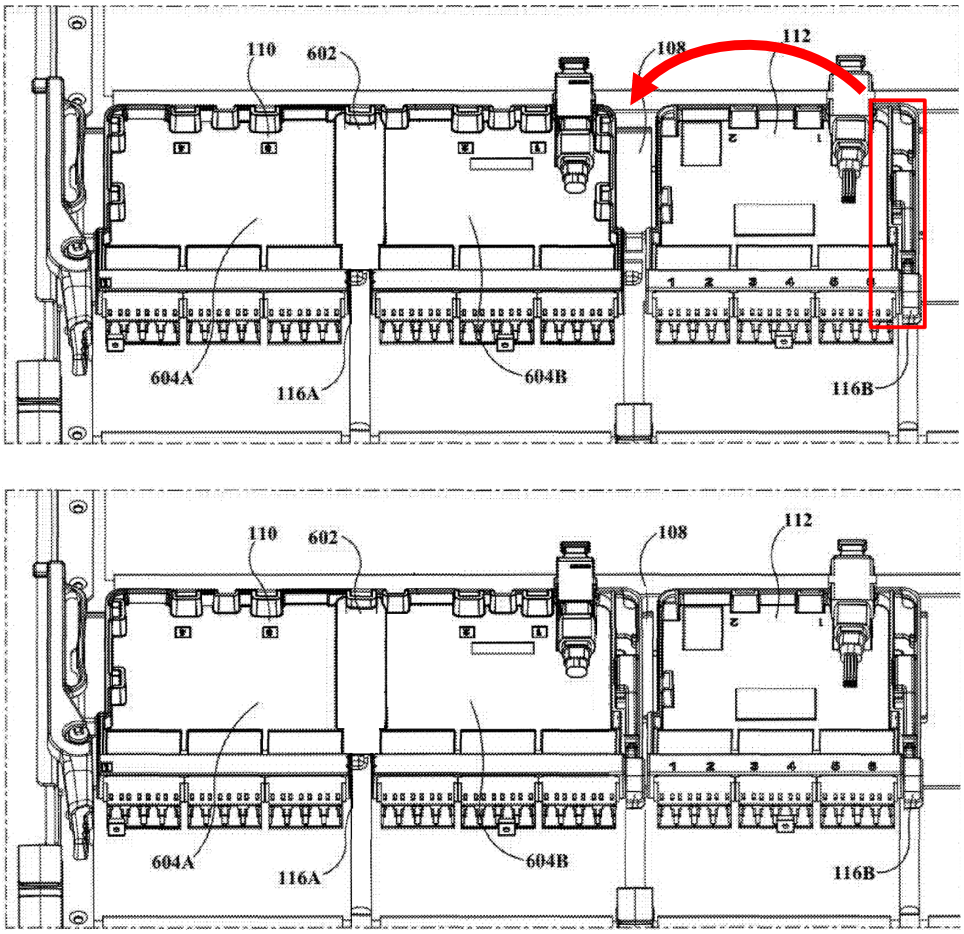

504
502
108
124
116
1
2
3
4
5
6
7
8
9
10
11
12
One standard width unit (SWU)
= 1/3 the width of a single-gang cassette.
1 SWU
A width of a front edge of the tray is substantially evenly divisible by the SWU.

FIG. 5



EX1003 ¶267. Sauter's system also satisfies the PO's definition of this limitation. EX1011 at p. 13. One third the width of Sauter's single-gang cassette will accommodate one LC quad receptacle module. The width of the front edge of the tray equals twelve of these units wide plus some excess space at the ends (i.e., between where the cassettes end and the end of the front edge of the tray.) EX1003 ¶268.

3. Element 8B

Sauter teaches this limitation. Sauter teaches to select a plurality of cassettes with different widths for installation on the same tray. Sauter's single-gang

cassette, double-gang cassette, triple-gang cassette and other multi-gang cassettes are all cassettes having different widths. EX1006 at 10:63-11:15; 6:42-51; 4:7-14; 9:49-56: 9:60-62; EX1003 ¶269.

In addition, for the same reasons given above with respect to the cassette size limitations in Element 1C, Sauter discloses that two different cassette widths are evenly divisible by said standard width unit. In the present example, the standard width unit is defined to be one third of the width of a single-gang cassette. As addressed above with respect to Element 1C, when the double-gang cassette is configured as taught by Sauter with the latching mechanism located along the right-hand side of the cassette (see EX1006 at 7:48-60, 1:64-2:1), its width is evenly divisible by and equal to twice the width of the single-gang cassette. Dividing the width of the double-gang cassette by one third the width of the single-gang cassette yields exactly six, with no remainer. EX1003 ¶270.

4. Element 8C

See the analysis of Element 1D above.

Also, as discussed above for Element 1C, in Sauter the cassettes are not secured on the tray "front end." "The front edge of the tray" is found at the same location as "said tray front end." EX1003 ¶¶271-272. As set forth above for Element 1C, at least under PO's interpretation and application of "along the front edge of the tray," Sauter teaches this limitation.

Further, securing the cassettes on "the front edge of the tray" would have been obvious in light of Sauter by itself for the reasons discussed above regarding Element 1C and the "front end" of the tray. EX1003 ¶273.

5. Element 8D

See the analysis of Element 1E.

G. Claim 10

In Sauter, as shown in Fig. 15, all the selected cassettes can have the same width. EX1006 Fig. 15; EX1003 ¶275.

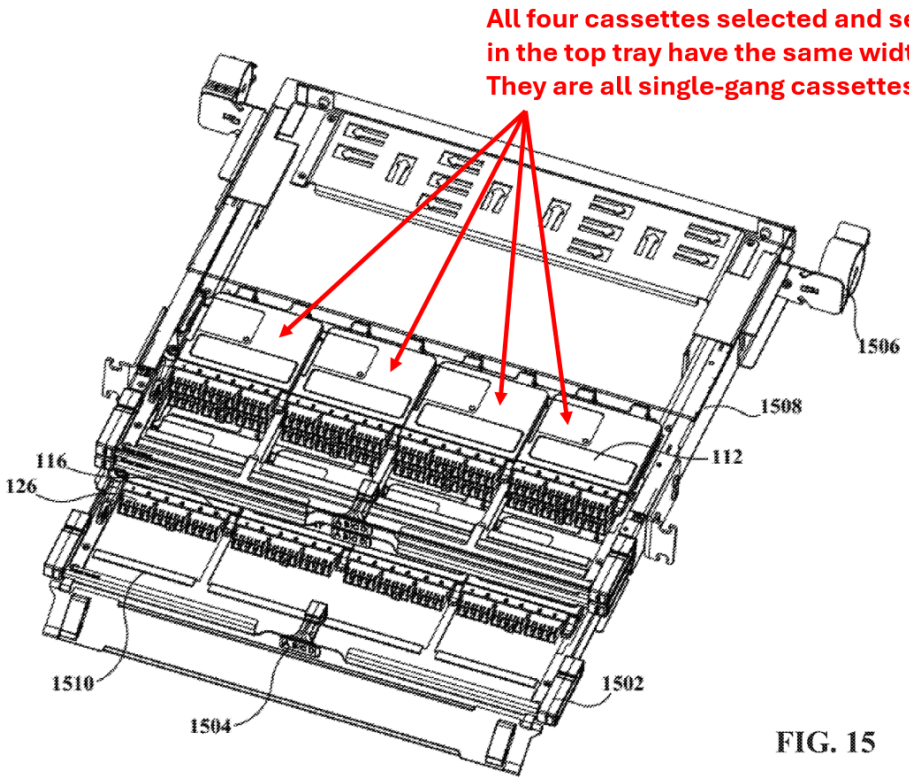


FIG. 15

See also Fig. 5 of Sauter and its description at 6:42-56.

H. Claim 11

Sauter discloses that both single-gang and double-gang cassettes can be selected and installed on the same tray simultaneously. See, for example, EX1006 at 5:12-17; 9:49-63; 4:7-14; Fig. 5; 6:42-56; EX1003 ¶276. See also Figs. 15, 7, 8, 11, 17.

I. Claim 12

See the analysis of Dependent Claim 2. As shown in Figs. 15, 2, and 3 annotated below, the width of the front edge of Sauter's tray is evenly divisible by a maximum of twelve standard width units. EX1003 ¶277.

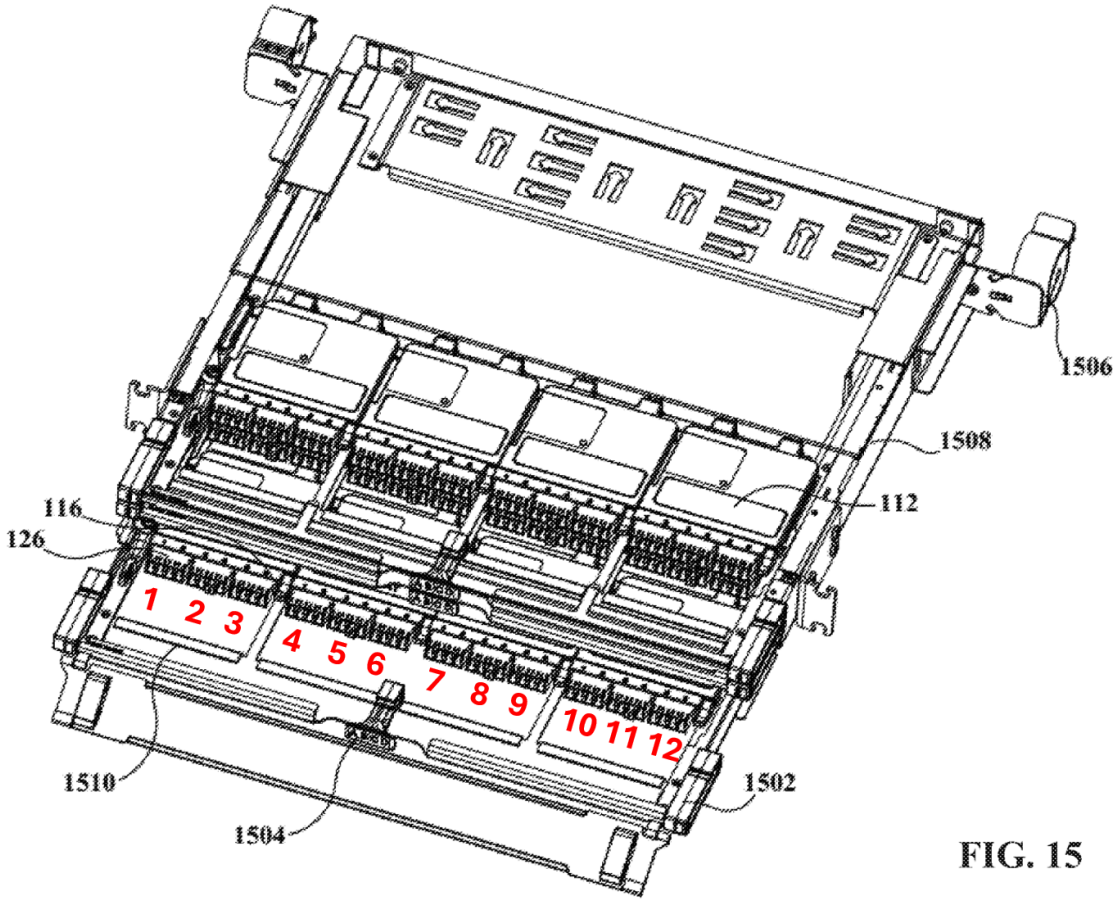


FIG. 15

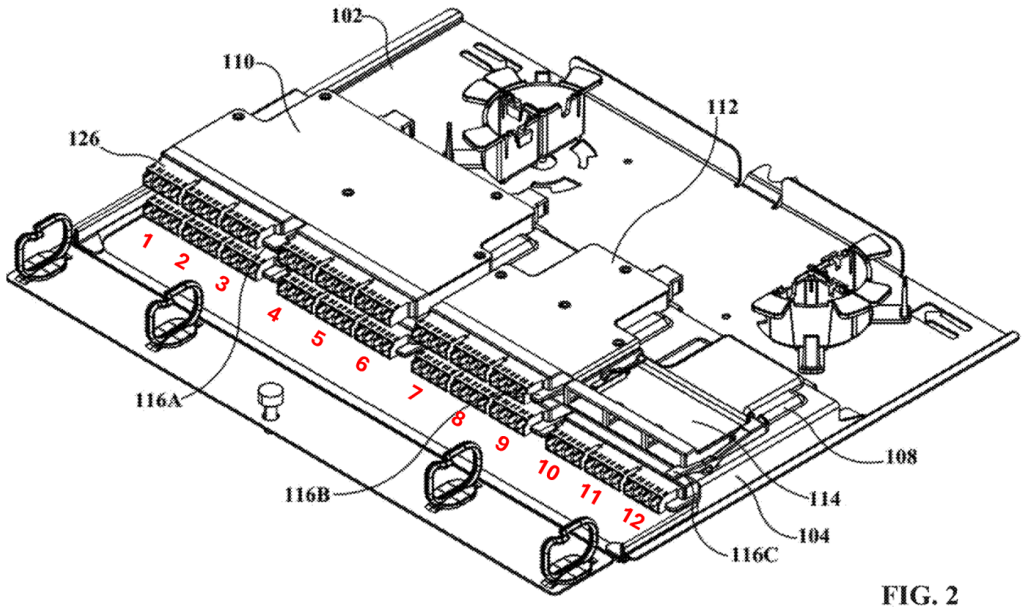


FIG. 2

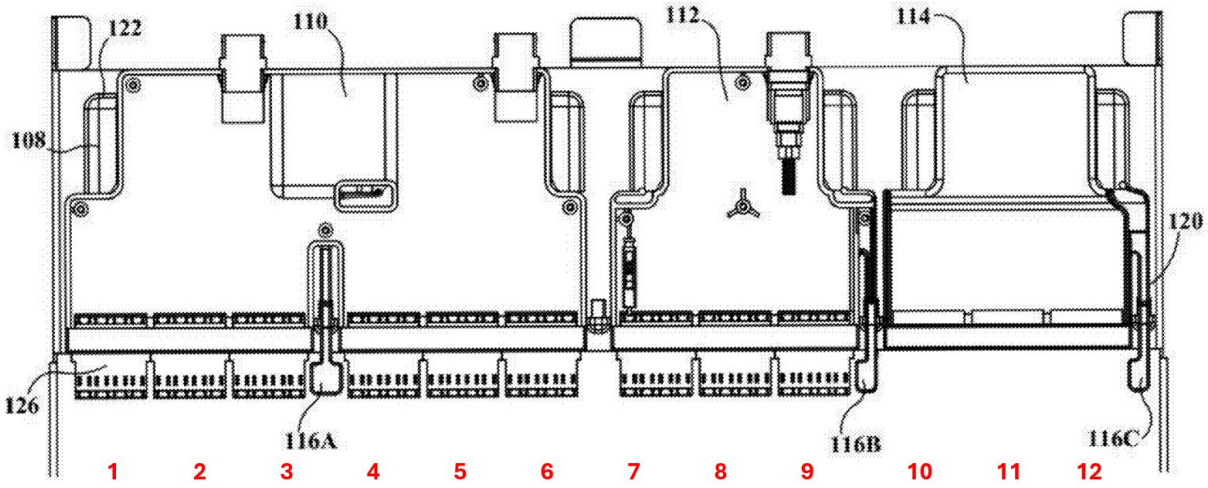


FIG. 3

J. Claim 13

In addition to the single-gang and dual-gang cassette sizes, Sauter discloses a three-gang cassette and additional "multi-gang" cassettes. See, e.g., EX1006 at 4:50-61; 7:38-47; 5:12-17.

There is limited space to receive cassettes on the same tray. All three sizes of the exemplary cassettes that Sauter teaches could fit on the same tray if the tray were a two tier tray as shown, for example, in Fig. 1 of Sauter that defines multiple rows of cassettes bays. EX1003 ¶¶278-279.

Ground 5: Sauter in light of Fukui renders Claims 1-5, 8, 10-13 obvious

A. Limitations 1E and 8D

"said fiber optic cassettes touches at least one other fiber optic cassette"

Sauter in light of Fukui (EX1004) renders these claims obvious. It would have been obvious to use the cassette fastening features from Fukui on Sauter's cassettes to eliminate the need for any rail guides on Sauter's tray and allow for Sauter's cassettes to touch when arranged on the tray. EX1003 ¶281.

Fukui shows that cassettes can be releasably secured to a tray using hooks that protrude from the bottom of the cassette instead of rails and rail guides. EX1004 at 8:52-56; Figs. 2, 9; EX1003 ¶282.

Fig.2

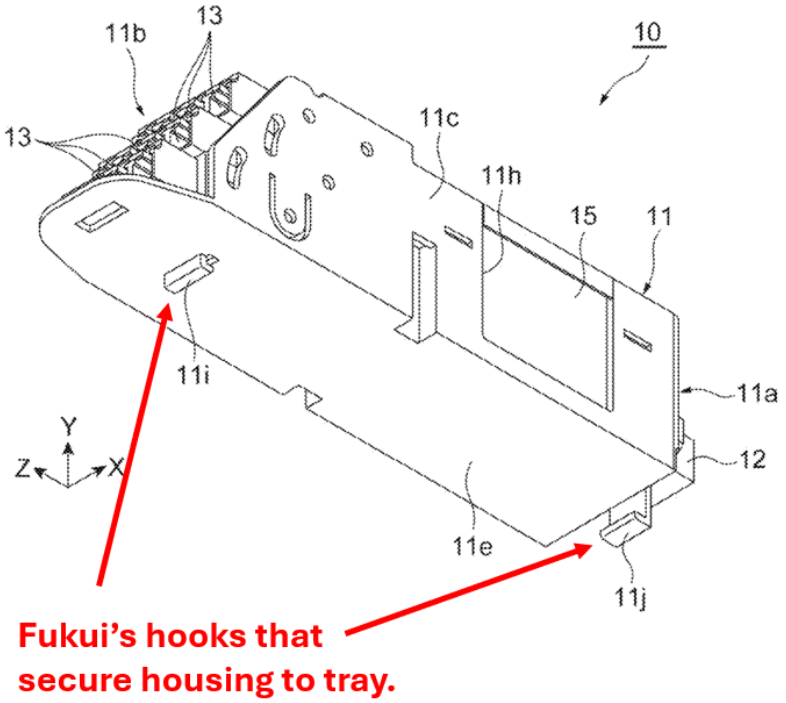
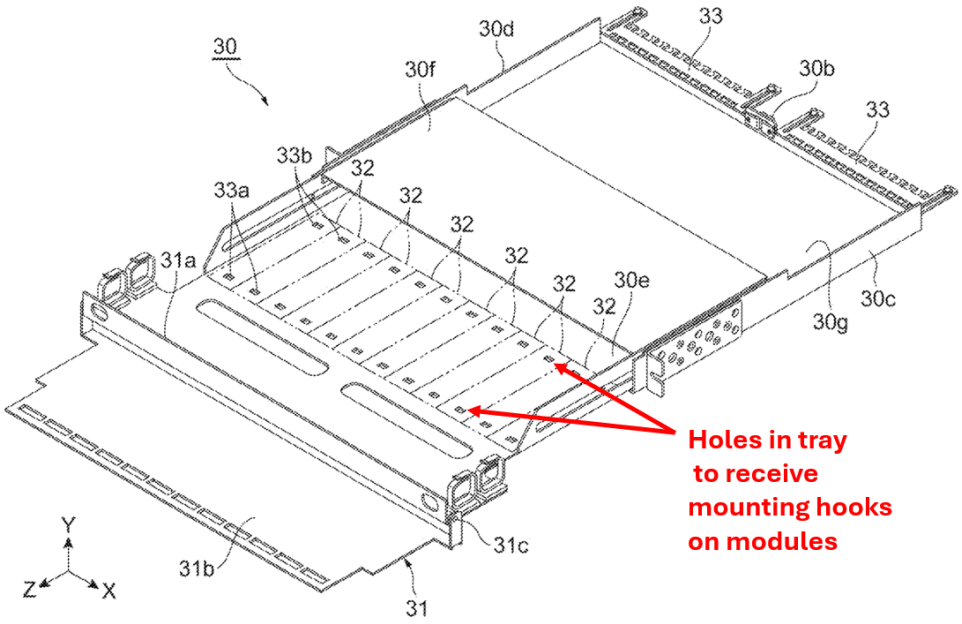


Fig.9



EX1004 Fig. 9.

During prosecution the examiner mistakenly said that rails on the tray in Sedor were "essential" and ""necessary" to affix modules to the tray. EX1007 (Notice of Allowability, p. 3); EX1003 ¶283. The examiner was not aware that Fukui taught an alternative.

A POSITA would have been motivated to use the mounting technique taught by Fukui (hooks and holes) in Sauter's system for multiple reasons. First, each cassette could be made narrower by eliminating the portion devoted to the rails/latch mechanism and instead using hooks. EX1003 ¶284.

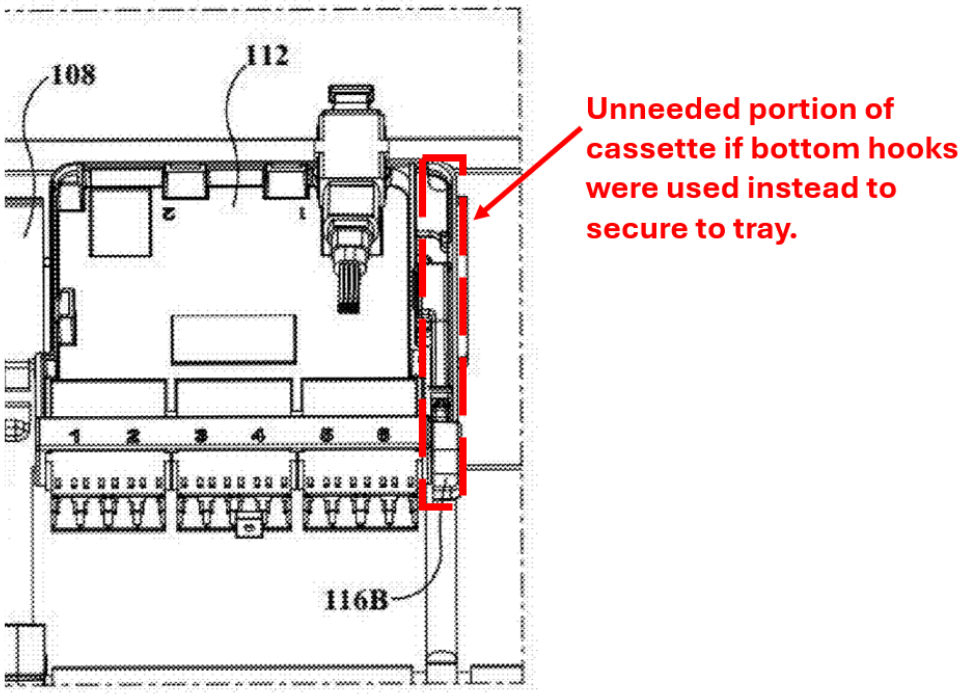


FIG. 7

Second, using Fukui's mounting mechanism to allow Sauter's cassettes to touch when arranged on the tray would permit transitioning fibers horizontally

from one cassette to another. As discussed above, Laarveld and Fukui both teach this is a desirable feature. EX1003 ¶284.

Third, making this modification would also free up additional space within Sauter's cassettes. Sauter's use of rail guides on the tray requires Sauter to sacrifice interior space within each multi-gang cassette to create a "clearance area 602" that spans over intermediate rail guides on the tray. See EX1006 at Fig. 8, 7:19-28; EX1003 ¶¶284-285. By contrast, Fukui's hook approach needs no clearance areas.

A POSITA would be further motivated to make this modification based on the similarity in the cassette design approach of Sauter and Fukui. EX1003 ¶286. Both teach to make fiber cassettes of different widths in the same tray, and both teach to make the larger cassette widths using multiples of a smaller cassette size. EX1003 ¶286. These similarities would have motivated a POSITA following Sauter to look also to Fukui's features for mounting the cassettes to the tray. EX1003 ¶286.

A POSITA would have a reasonable expectation of success. EX1003 ¶286. Sauter's technique already relies on holes/apertures (called "locking apertures 124") in the tray that receive tabs (1006) on the cassettes when mounting the cassettes to the tray. EX1006 at Figs. 4, 12, 14, 1.

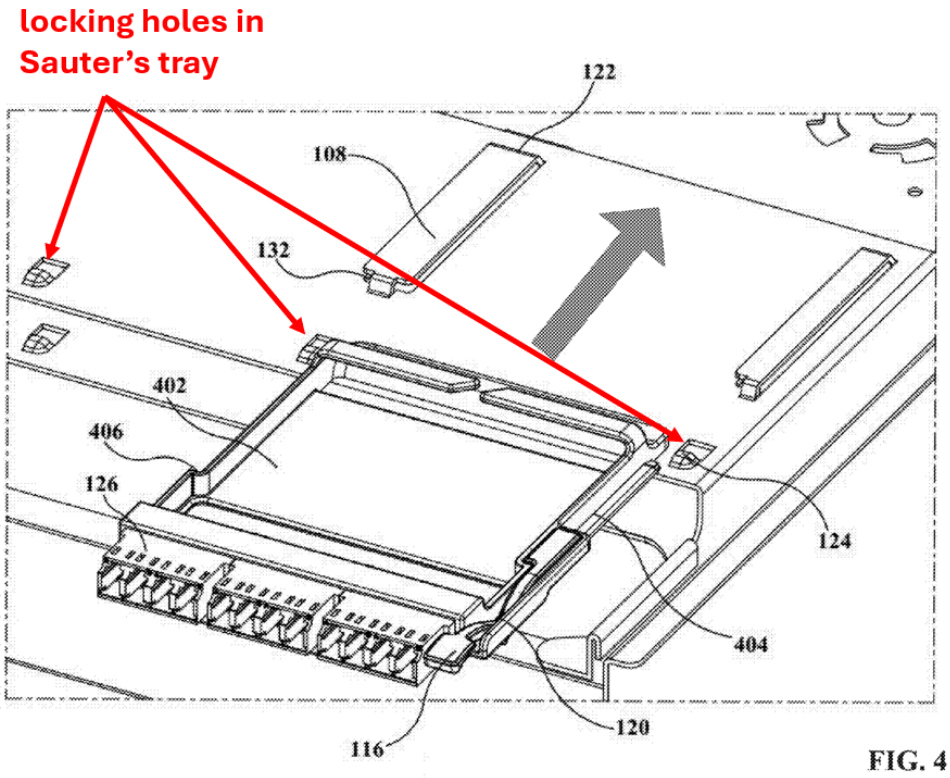


FIG. 4

That Sauter already relied on tray holes to mount cassettes demonstrates that a POSITA would have a reasonable expectation of success making Fukui's holes for hooks. EX1003 ¶287.

All the remaining limitations in claims 1 and 8 would still be satisfied. The recited "fastener" would no longer be Sauter's latch and rail mechanism, but would, instead be Fukui's hooks and matching holes.

B. Size limitations in 1C, 8B

If PO argues that Sauter does not satisfy the width size limitations of the claims, then the combination of Sauter in light of Fukui renders the claims obvious. Similar to Sauter's "multi-gang" cassettes, Fukui discloses creating larger width

fiber modules by coupling together multiple smaller modules. This is facilitated by the mounting features (i.e., the hooks and holes) that secure the modules to the tray in Fukui. For the reasons discussed above it would have been obvious to incorporate these mounting features from Fukui into Sauter's cassettes and tray, and when Fukui's mounting features are used instead of Sauter's rails/rail guides/latch, the resulting cassettes, would be exact multiples in width of the smallest gang cassette. EX1003 ¶289.

Specifically, Fukui teaches to form a pattern of holes in the tray that have a pitch equal to the width of the smallest module. *See* EX1004, Fig. 9 (holes 32a and 32b); EX1003 ¶290. Using this mounting technique on Sauter's cassettes would result in Sauter's cassettes being like Fukui's in that they are exact multiples in width of the smallest "single-gang" cassette. EX1003 ¶290. One of ordinary skill in the art would be motivated to make this modification (use Fukui's mounting features instead of rails and rail guides and latch) and would have a reasonable expectation of success doing so for the same reasons discussed above under obviousness of Element 1E and 8D (re touching). EX1003 ¶290.

C. Claim 13

Sauter in view of Fukui renders claim 13 obvious. In addition to the single-gang and dual-gang cassette sizes, Sauter discloses a three-gang cassette and

"multi-gang" cassettes. See, e.g., EX1006 at 4:50-61; 7:38-47; 5:12-17. There is, however, limited space to receive cassettes on one tray. EX1003 ¶¶291-292.

Fukui teaches cassettes having narrower widths, such as module 20 that accommodates the width of **two** quad LC adapter modules. It would have been obvious to modify Sauter so that the "single-gang" cassette had a width that would accommodate only two quad LC adapter modules, instead of three. EX1003 ¶293. As modified, the single-gang cassette would include eight receptacle ports (not twelve), a "dual-gang" cassette would include sixteen receptacle ports (not twenty-four), and a "three-gang" cassette would include twenty-four receptacle ports (not thirty-six). EX1003 ¶293.

Sauter's use of the generic term "gang" which refers to a set of items grouped together, itself suggests that the base number in one "gang" does not have to be twelve. Sauter's use of the term suggests to define a group, and then create multiples of that number. If a "gang" were based on a group of eight receptacles, then one could position all three sizes of cassettes (single, double, triple) in a single row on Sauter's tray. EX1003 ¶293. The standard width unit in this case would be one half the single-gang (8 port) cassette width, and each cassette size would still be an exact multiple of that standard width unit as already taught by Sauter. EX1003 ¶293.

A POSITA would be motivated to make a single "gang" in Sauter equal to eight receptacles to match BASE-8 systems. EX1003 ¶294. It was known that "parallel" fiber cable systems were migrating to grouping fibers in connectors and cables into groups of **eight**, not twelve. See, e.g., EX1030 at ¶¶0003-0005, ¶0045; see also EX1031 ¶¶0020-0027; and EX1032 4:20-43; EX1003 ¶294. BASE-8 systems would have motivated a POSITA to make the "gang" taught by Sauter to be eight receptacles wide (as shown in Fukui's module 20) to match MPO connectors and cabling in a BASE-8 system and to make most efficient use of available cassette space and fiber infrastructure (i.e., avoid leaving some fibers or cassette capacity dark). EX1003 ¶295. A POSITA would have a reasonable expectation of success because the components of the cassettes would function the same way, just fewer of them (only two adapter modules, not three). EX1003 ¶296.

Ground 6: Either of Grounds 3 or 4 in further combination with Sedor

A. Element 1A

Adding a top and/or bottom wall to Sauter's enclosure as recited in Element 1A, would have been obvious in view of Sedor. EX1003 ¶¶297-298. Sedor discloses a "high density fiber enclosure" (200). EX1005 at 7:33-34; Fig. 44:

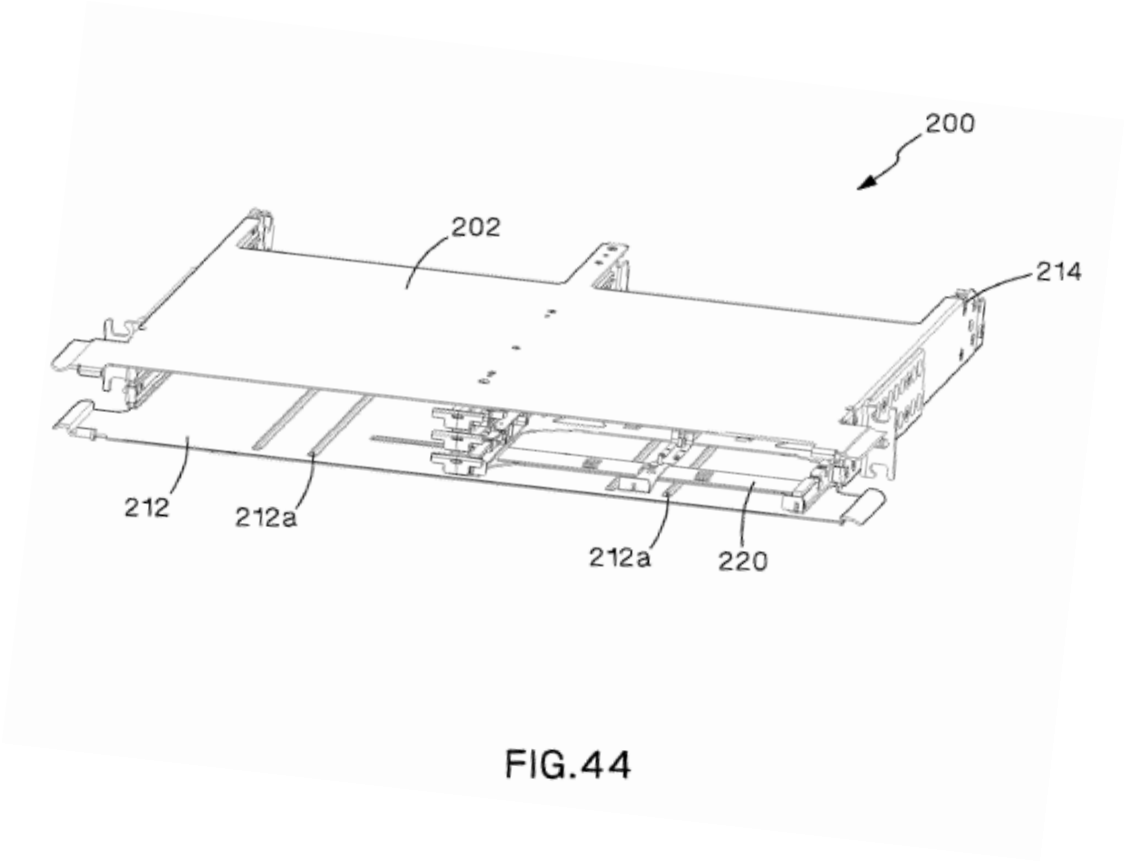


FIG.44

The enclosure includes a top (202), bottom (212), and side walls with a tray 220 received completely within. EX1005 7:32-35; see also Figs. 1A-3, 30, 31, and 32; EX1003 ¶¶299-300.

For all the reasons and motivations given above regarding the Fukui reference under Ground 1 (e.g., for added protection), it was also obvious to modify Sauter's "enclosure" to include top and/or bottom walls satisfying Element 1A. EX1003 ¶301.

B. Elements 1C and 8C

"…cassettes…arrangeable… along said tray front end"
"…securing said selected cassettes along the front edge of the tray"

Positioning cassettes on the tray front end/edge would have been obvious in further view of Sedor, e.g., in Figs. 7-12. EX1003 ¶302.

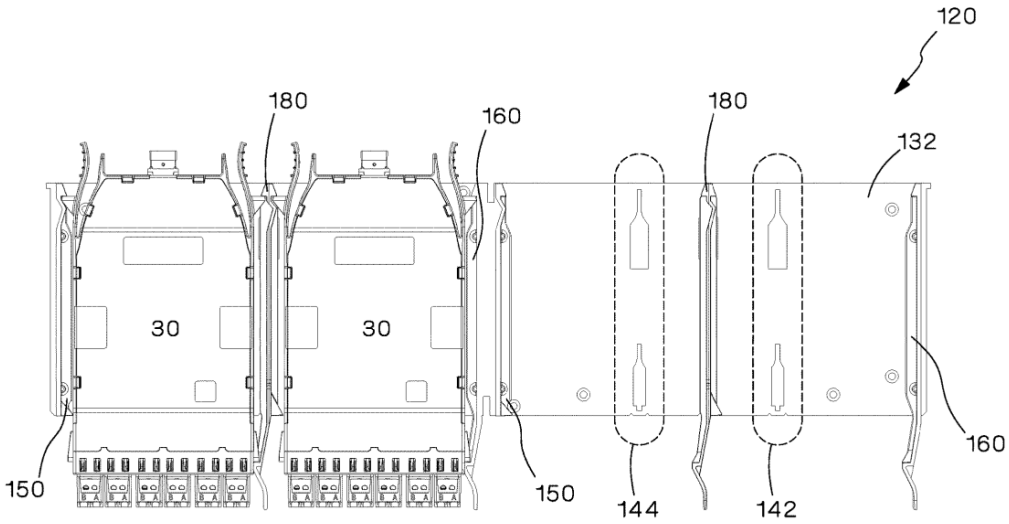


FIG.7

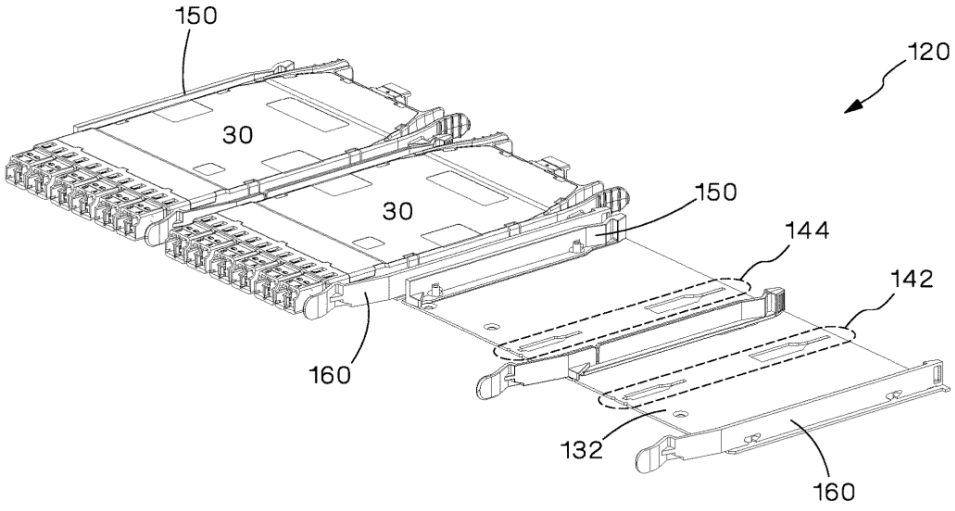


FIG.8

EX1005, Figs. 7-8. For the same reasons given above that it was obvious based on Sedor to modify Fukui to position the cassettes on the tray front end (e.g., to improve access to connector locations), it was also obvious based on Sedor to position Sauter's cassettes on the front end of Sauter's tray. EX1003 ¶302.

C. Claim 13

Sauter teaches a third cassette size, specifically a "three-gang cassette" size. However, Sauter's tray is not wide enough to receive all three cassette sizes simultaneously, unless the "gang" were reduced from twelve ports, to eight ports. Sedor teaches a fiber cassette with a width of eight LC connector ports. See, for example, Sedor's cassette 40 in Figs. 9 and 10:

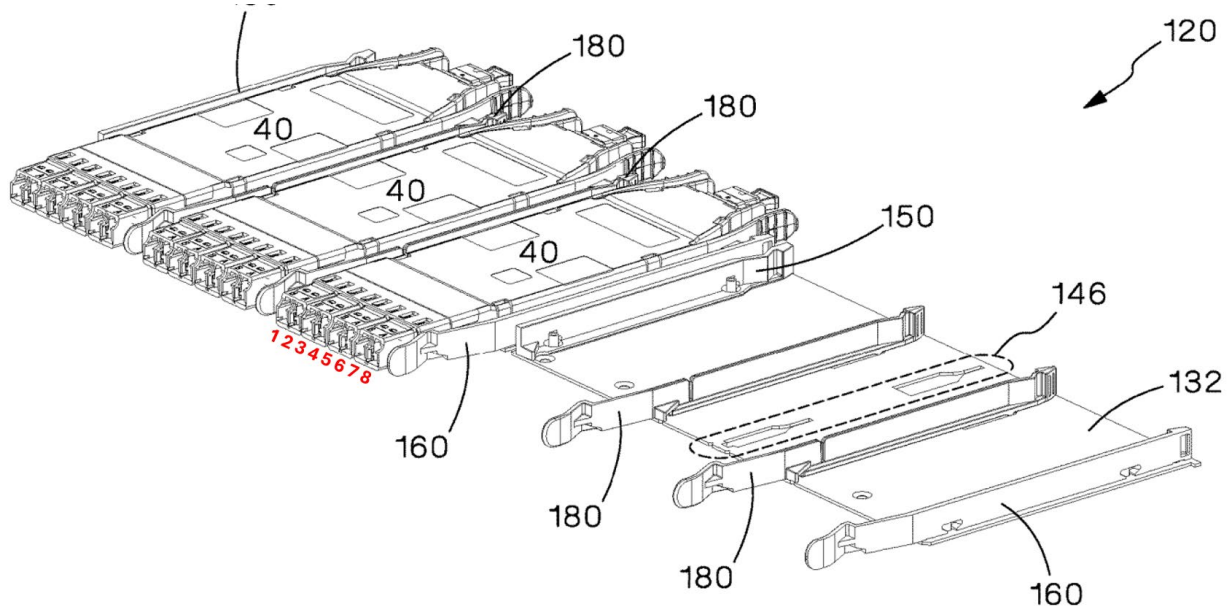


FIG.10

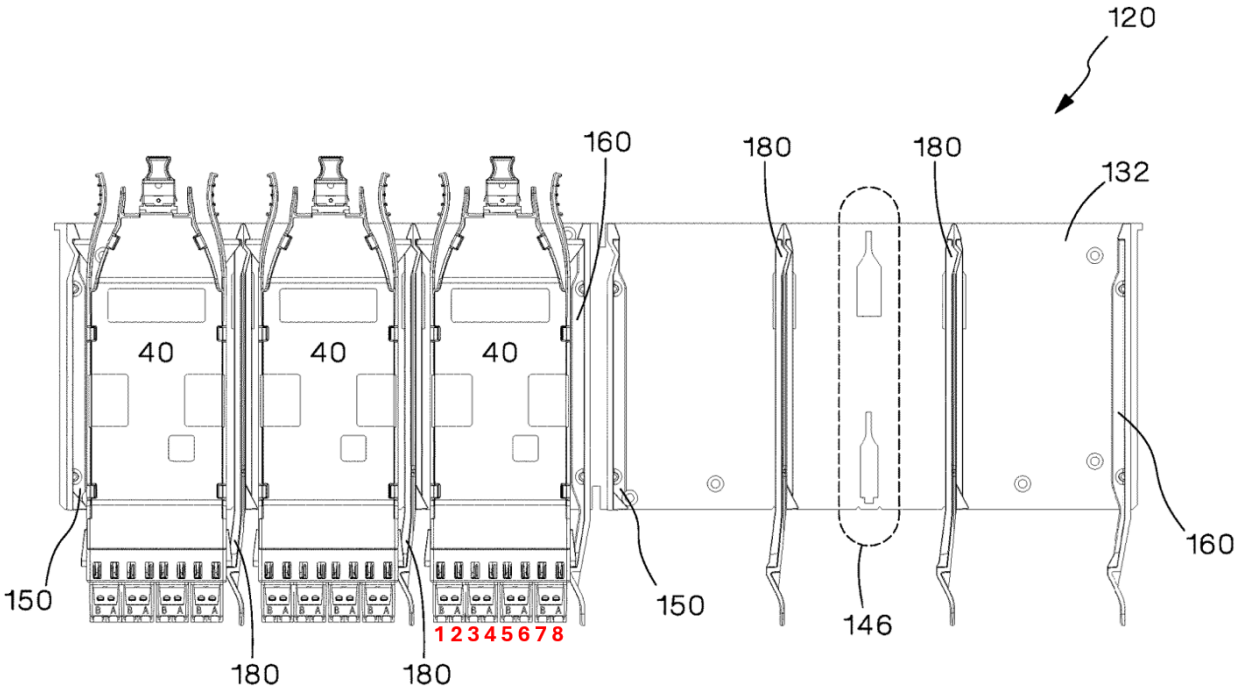


FIG.9

It would have been obvious in light of Sedor to modify Sauter's "gang" to be the width of eight LC ports instead of twelve LC ports. EX1003 ¶¶303-304. A POSITA would be motivated and expect success making this change for the reasons given above regarding Sauter plus Fukui for claim 12 (e.g., for use in BASE-8 systems). EX1003 ¶304.

Using 8-port "gangs," all three sizes of Sauter's cassettes can fit within a single row on Sauter's tray, and each would still be an exact multiple of a standard width unit (one half the width of the 8-port single-gang cassette). EX1003 ¶305.

Conclusion

There is at least a reasonable likelihood claims 1-5, 8-13 are invalid.

Respectfully submitted,

Dated: July 26, 2024

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Claims Listing Appendix

U.S. Patent No. 10,795,107
Challenged Claims 1-5, 8-13

Designation	Claim 1
Preamble	1. A modular fiber optic cassette system, the system comprising:
Element 1A	a case comprising a top and a bottom wall and two opposed side walls, each of said sidewalls attached between respective side edges of said top and bottom wall, said walls together defining a tray receiving space there between and a forward edge of each said wall together defining an opening to said tray receiving space;
Element 1B	at least one tray slideably received within said tray receiving space for movement between a stored position wherein said tray is completely inside said tray receiving space and an accessible position wherein a front end of said tray is in front of said opening and outside of said tray receiving space;
Element 1C	a set of fiber optic cassettes, a selected plurality of the cassettes arrangeable side by side along said tray front end wherein each of said cassettes comprises a plurality of optic plug receiving receptacles arranged side by side in a row along a front thereof, a first of said set of cassettes comprising a first cassette width of one of one, two, three, four and six standard width units and a second of said cassettes comprising a second cassette width different from said first cassette width and one of one, two, three, four and six standard width units; and
Element 1D	a fastener for removeably securing each of said cassettes to said tray
Element 1E	wherein when arranged on said at least one tray each of said fiber optic cassettes touches at least one other fiber optic cassette.
Claim 2	2. The modular fiber optic cassette system of claim 1, wherein said tray has a width dimensioned to receive at least twelve standard width units side by side.
Claim 3	3. The modular fiber optic cassette system of claim 1, wherein each of said cassettes comprises a multi fiber connector receiving receptacle arranged on a rear thereof and a plurality of optic fibers, one of said optic fibers interconnecting a respective one of said optic plug receiving receptacles with said multi fiber connector receiving receptacle.

Claim 4	4. The modular fiber optic cassette system of claim 1, wherein each of said cassettes comprises four fiber optic plug receiving receptacles arranged side by side in a row along a front thereof for each standard width unit.
Claim 5	5. The modular fiber optic cassette system of claim 1, wherein said system is for mounting in a rack and further comprising a pair of mounting brackets, one of said brackets attached to each of said sidewalls on either side of an outside of said case, said mounting brackets for securing said case to the rack.
Designation	**Claim 8**
Preamble	8. A method for organising a tray comprising a front edge in a fiber optic interconnect system, the method comprising:
Element 8A	defining a standard width unit wherein a width of the front edge is substantially evenly divisible by said standard width unit;
Element 8B	selecting a plurality of cassettes for installation on the tray from a set of cassettes having a plurality of different widths, wherein each of said different widths is evenly divisible by said standard width unit; and
Element 8C	releasably securing said selected cassettes along the front edge of the tray;
Element 8D	wherein when arranged on the tray each of said selected cassettes touches at least one other selected cassette.
Claim 9	9. The method for organising a tray of claim 8, wherein said set of cassettes comprises cassettes comprising widths of one, two, three, four and six standard width units.
Claim 10	10. The method for organising a tray of claim 8, wherein said selected cassettes all comprise the same width.
Claim 11	11. The method for organising a tray of claim 8, wherein said selected cassettes comprise a first cassette having a first width and a second cassette having a second width different from said first width.
Claim 12	12. The method for organising a tray of claim 8, wherein the width of the front edge is substantially evenly divisible by a maximum of twelve (12) of said standard width units.
Claim 13	13. The method for organising a tray of claim 12, wherein said selected cassettes further comprise a third cassette comprising a third width different from said first width and said second width.

Petitioner Exhibit List

Number	Description
EX1001	U.S. Patent No. 10,795,107 (the challenged patent)
EX1002	Prosecution history of U.S. Patent No. 11,435,542
EX1003	Declaration of Dr. Stephen Ralph
EX1004	U.S. Patent No. 10,101,551 ("Fukui")
EX1005	U.S. Patent No. 10,215,944 ("Sedor)"
EX1006	U.S. Patent 9,690,064 ("Sauter")
EX1007	Prosecution history of U.S. Patent No. 10,795,107
EX1008	EIA Standard, Cabinets, Racks, Panels, and Associated Equipment (EIA/ECA-310-E)
EX1009	International Standard, Part 20: Type LC connectors Family (IEC 61754-20)
EX1010	U.S. Patent Publication No. 2014/0099064 ("Fabrykowski")
EX1011	Joint Claim Construction Chart from co-pending litigation
EX1012	Exhibits D, E, and F filed by Plaintiff Belden with its Complaint for Patent Infringement in the matter of Belden Canada ULC v. CommScope, Inc. et al., 1:23-cv-00810 (D. Del. Jul. 27, 2023)
EX1013	Prosecution history of U.S. Patent 9,690,064 ("Sauter")
EX1014	U.S. Patent No. 9,690,065 ("Wiltjer")
EX1015	U.S. Patent No. 9,250,409 ("Blackwell")
EX1016	CommScope's user manual
EX1017	U.S. Patent No. 7,509,015
EX1018	U.S. Patent No. 9,008,485
EX1019	U.S. Patent No. 9,075,216
EX1020	U.S. Patent Publication No. 2016/0062050
EX1021	U.S. Patent No. 8,712,206
EX1022	Product literature for Leviton: FIBER SYSTEMS, Enclosure and Panel Selection Guide
EX1023	Product literature from Corning: EDGE™ HD Solutions
EX1024	Product literature from Panduit: HD Flex Fiber Cabling System
EX1025	WO2010148325A1
EX1026	NL2008155C2 ("Laarveld") (English translation)
EX1027	Declaration certifying translation of NL2008155C2
EX1028	NL2008155C2 ("Laarveld") (original in Dutch)
EX1029	Screen capture of Propel instructional video at https://www.youtube.com/watch?v=_agZJP5tZWc at 1:55)(showing cassette being mounted on rails)

EX1030	U.S. Patent Publication No. 2017/0192191
EX1031	U.S. Patent Publication No. 2017/0153406
EX1032	U.S. Patent No. 8,873,922
EX1033	Prosecution history of U.S. Patent No. 11,656,422

CERTIFICATION UNDER 37 CFR § 42.24(d)

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Petition for *Inter Partes* Review totals 13,937 words per Microsoft Word word count tool, which complies with requirement of 14,000 words allowed under 37 CFR § 42.24(a)(i).

Respectfully submitted,

Dated: July 26, 2024

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CERTIFICATE OF SERVICE

Pursuant to 37 CFR §§ 42.6(e)(4)(i) *et seq.* and 42.105(b), the undersigned certifies that on July 26, 2024 a complete and entire copy of this PETITION FOR INTER PARTES REVIEW OF UNITED STATES PATENT NO. 10,795,107 PURSUANT TO 35 U.S.C. §§ 311–319, 37 C.F.R. § 42 and all supporting exhibits were provided by Federal Express, to the Patent Owner by serving the correspondence address of record as follows:

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