

United States Patent and Trademark Office Before the Patent Trial and Appeal Board

Case No. IPR2023-01256
U.S. Patent No. 7,198,416

PATENT OWNER INNEOS LLC'S DEMONSTRATIVE EXHIBITS FOR HEARING

Nov. 12, 2024

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE



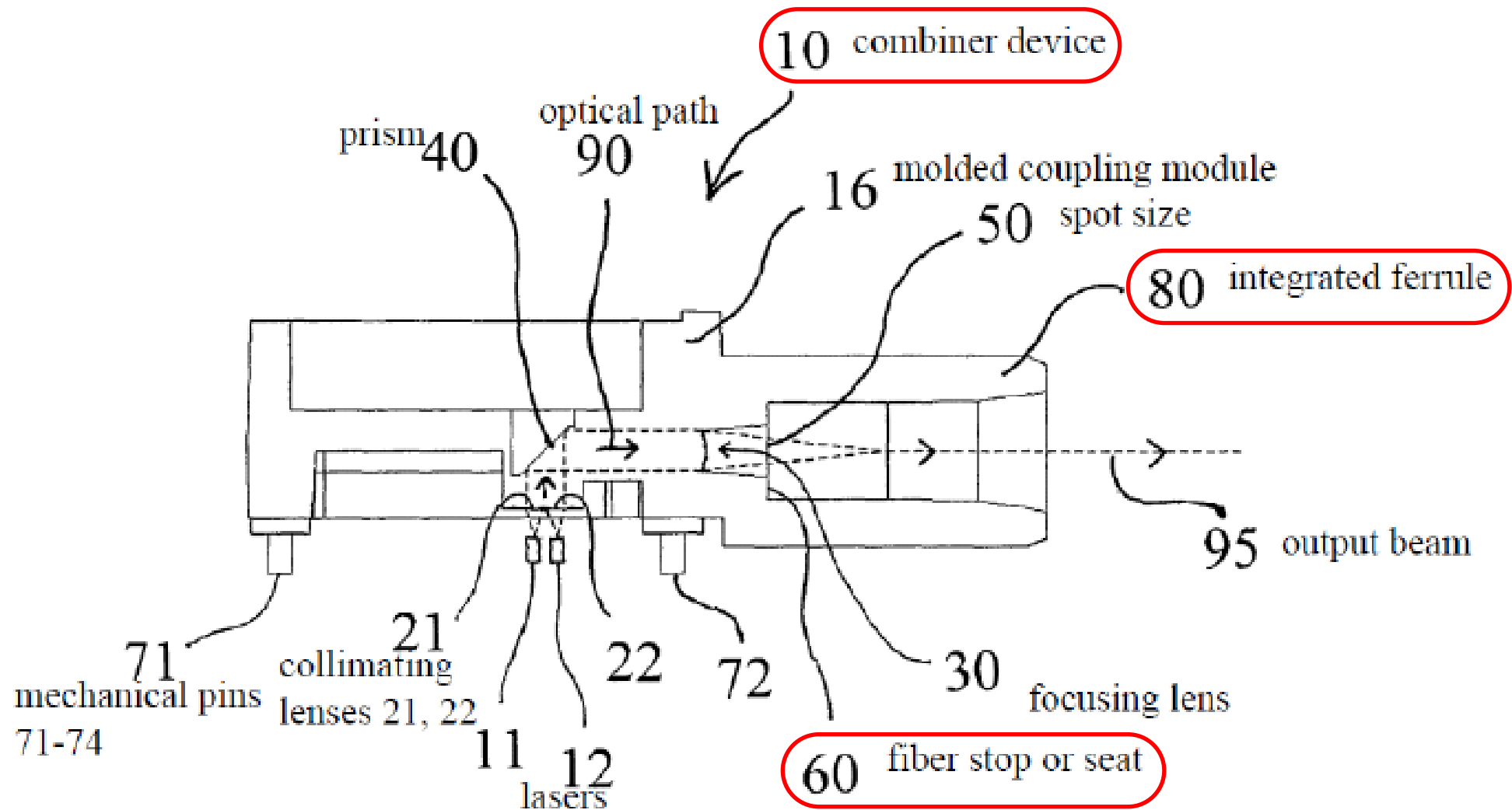
A POINT OF VIEW LIKE NO OTHER

Ex. 2057

OVERVIEW

- Petitioner's Improper Reply Material Should be Disregarded
- Claim Construction
 - Optical combiner
 - Stopped single optical fiber
- All Grounds Fail to Render the Challenged Claims Obvious
 - Ground 1: Kurita alone
 - Ground 3: Lemoff alone
 - Ground 2: Kurita + (Lemoff and/or LaMarche)
 - Ground 4: Lemoff + LaMarche
 - Ground 5: Bhandarkar, cited during prosecution, is not prior art

'416 PATENT – FIG. 1 AS LABELED IN INSTITUTION DECISION



REQUESTS TO DISREGARD

THE BOARD SHOULD DISREGARD NEW ARGUMENTS & EVIDENCE CONCERNING THE GRANN PATENTS

- The Grann Patents (EX1020 and EX2018) were not addressed in the Petition. (Paper 26 pp.2-5)
- Citations and cross-citations permeate the Reply. (Paper 26 pp. 2-5; Paper 30)
- The Grann Patents were available to Petitioner, and were cited repeatedly in the '416 Patent File History. (Paper 30; EX1002 pp. 9, 37, 46, 109)
- The Grann Patents are not offered to show general knowledge in the art. (Paper 26 pp. 2-5)
- Inneos' claim constructions and arguments have been consistent; Petitioner responded to them in Reply to POPR. (Paper 30 p. 3)

THE BOARD SHOULD DISREGARD PETITIONER'S INCORPORATION BY REFERENCE OF DR. WILLNER'S SUPPLEMENTAL DECLARATION (EX1016)

- EX1016 is an 89-page supplemental declaration; 77 pages of it are incorporated by reference in the Reply, citing only broad sections of EX1016. (Paper 26 pp. 5-6)
- Many paragraphs of EX1016 are not cited at all in the Reply. (Paper 26 pp. 5-6)

THE BOARD SHOULD DISREGARD DR. WILLNER'S IMPROPER BOLSTERING

- Dr. Willner refused or failed to respond to deposition questions.
Paper 18 pp.87-88.
- In EX1016, Dr. Willner improperly attempts to clean up his failures to respond. See Paper 26 pp. 6-9.
- Examples:
 - Construction of “optical combiner”
 - Meaning of “stopped”
 - Ways to “fix” a fiber optic cable
 - What the fiber is “fixed” to
 - Whether Kurita’s components are “integrated”

CLAIM CONSTRUCTION

EXEMPLARY CLAIMS 1-2 (TERMS TO BE CONSTRUED IN RED)

#	Claim Language (EX1001 Col. 5:23-40; Paper 18 pp. 16-31)
[1.0]	An optical combiner
[1.1]	usable in data communication systems for multiplexing the outputs of a plurality of n lasers wherein each of said n outputs has a different output wavelength,
[1.2]	for transmission into and through a stopped single optical fiber , comprising:
[1.3]	a plurality of n collimating lenses,
[1.4]	said lenses being spaced apart and positioned to receive and collimate the output of said n laser output beams, said n laser output beams have n different output wavelengths, and
[1.5]	focusing means for focusing said n collimated output beams onto a single spot at said stopped single optical fiber ,
[1.6]	said focusing means having n separate radial sectors on its surface, and each of said n collimated beams passes through a separate one of said n sectors of said focusing means whereby said n output beams having n different wavelengths are coupled into said single fiber.
[2]	The optical combiner of claim 1 wherein n=4 and wherein said four lasers and four collimating lenses are each formed in a two-dimensional, two by two array, wherein said focusing means is a single focusing lens, and wherein each radial sector is a pie-shaped quadrant.

“OPTICAL COMBINER”

Inneos’ construction: “An integrated subassembly of optical components for multiplexing light of different wavelengths, which includes an integrated pre-aligned connector with a stop to hold the single fiber optic cable”

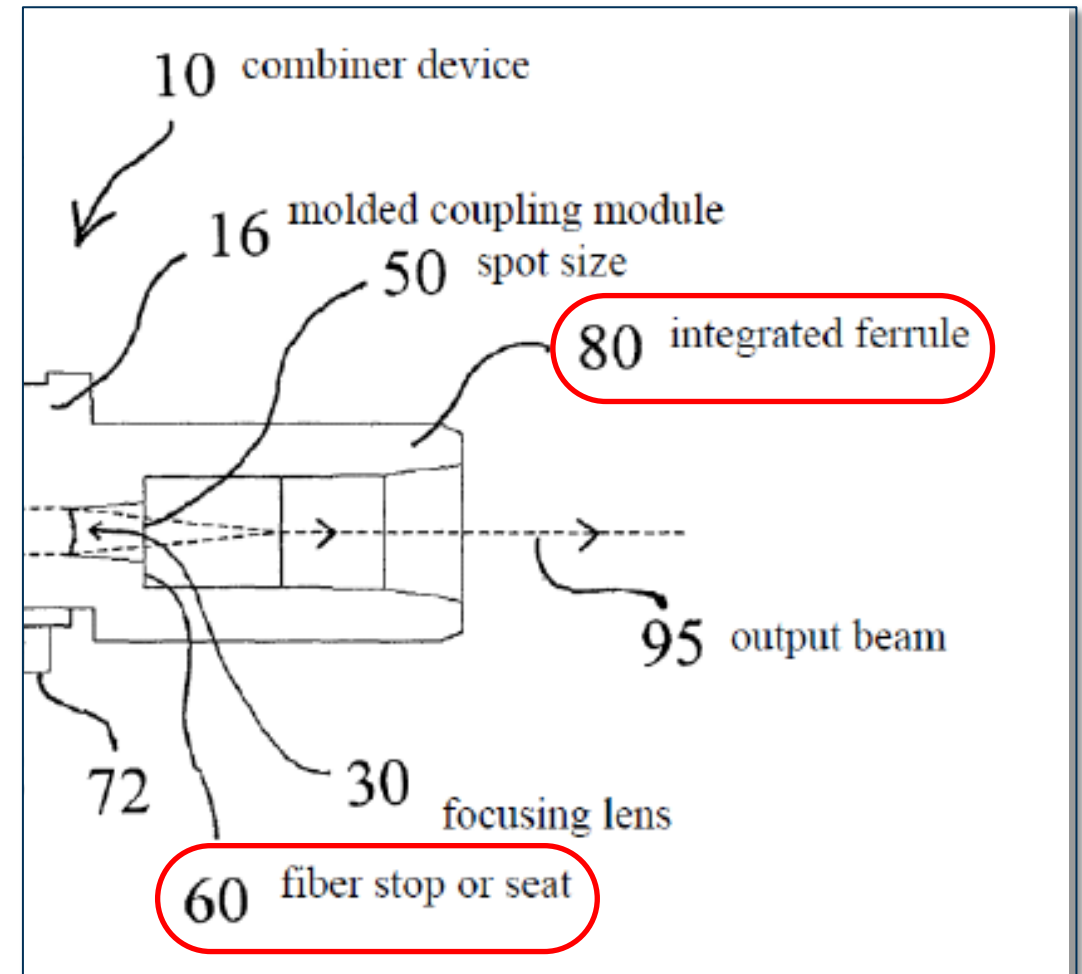
- Integrated subassembly of optical components
- For multiplexing light of different wavelengths
- Which includes an integrated pre-aligned connector with a stop to hold the single fiber optic cable

“INTEGRATED SUBASSEMBLY ...”

- “Each optical coupling and redirection component is integrated within a single monolithic plastic-molded device in most embodiments.” (EX1001, col. 4:61-63)
 - The specification supports limited options
 - “One example is a single plastic-injection molded part...”
(EX1001, Abstract; see *also* col. 2:11-12, 3:33)
- OR
- “An optional two-piece combiner is also provided ...”
(EX1001, col. 2:17; see *also* col. 4:37)

“...INTEGRATED PRE-ALIGNED CONNECTOR WITH A STOP”

- 80 integrated ferrule
- 60 fiber stop or seat



INTEGRATED PRE-ALIGNED CONNECTOR

- “Another object of the present invention is to integrate a fiber optic connector within the optical module, to passively align an optical fiber to the coupling optic.” (EX1001, col. 2:38-40)
- Embodiment 1: “The integrated ferrule 80 enables one to place an output fiber optic cable into the pre-aligned connector.” (Col. 3:17-18)
- Embodiment 2: “Similar to the embodiment described in FIGS. 1–4, the embodiment shown here utilizes ... a fiber connector 180 that allows one to place a fiber optic cable into the pre-aligned connector.” (Col. 3:54-60)
- Embodiments 3 and 4 (Figs. 7-11):
 - Ferrule and stop not depicted in figures, but not excluded
 - Specification for third embodiment references stopped single optical fiber (Col. 4:24, 26)

WITH A STOP

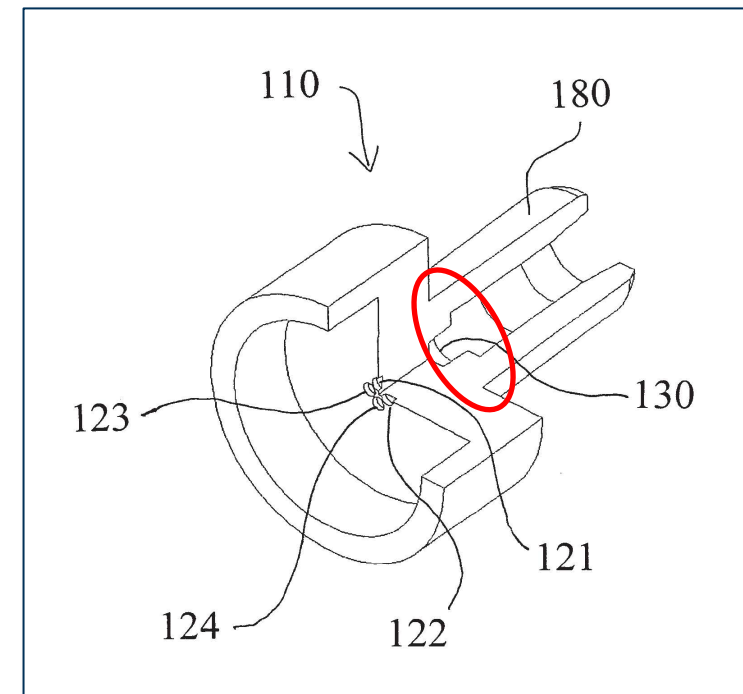
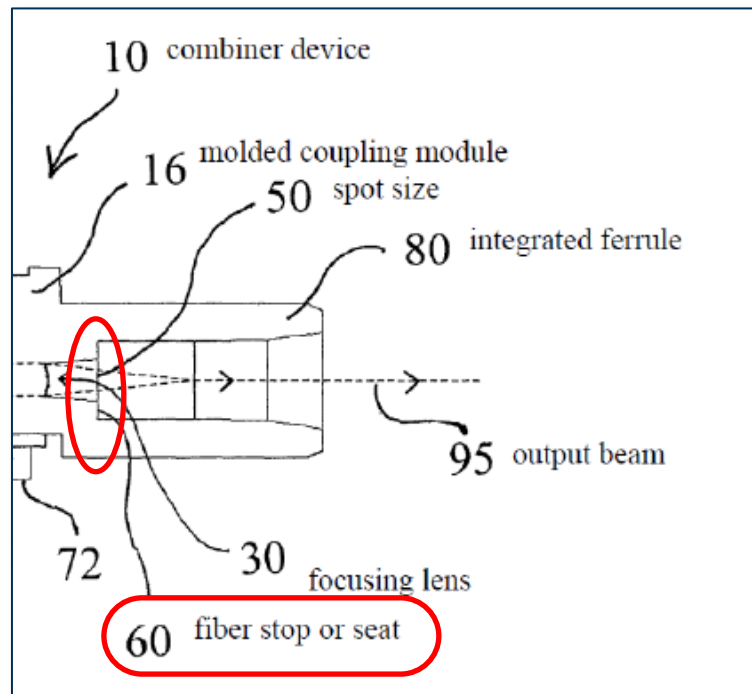
- Embodiment 1: “a spot at which a single optical fiber (not shown) is stopped by fiber stop or seat 60 formed in ferrule 80.” Col. 3:13-15
- “the fiber (not shown) inserted into ferrule 80, seated at the fiber stop 60,” Col. 3: 23-24
- Embodiment 2: Same stop as shown in Figs. 1, 4 is shown in Fig. 6
- Embodiment 3: Combiner is “shown generally” and specification refers to “stopped single fiber optic” or “stopped fiber optic” Col. 3:62; Col. 4: 24, 26

CLAIM DIFFERENTIATION

#	Claim Language (EX1001 Col. 5:23-40; Paper 18 pp. 16-31)
[1.0]	An optical combiner
[1.1]	usable in data communication systems for multiplexing the outputs of a plurality of n lasers wherein each of said n outputs has a different output wavelength,
[1.2]	for transmission into and through a stopped single optical fiber, comprising:
[1.3]	a plurality of n collimating lenses,
[1.4]	said lenses being spaced apart and positioned to receive and collimate the output of said n laser output beams, said n laser output beams have n different output wavelengths, and
[1.5]	focusing means for focusing said n collimated output beams onto a single spot at said stopped single optical fiber,
[1.6]	said focusing means having n separate radial sectors on its surface, and each of said n collimated beams passes through a separate one of said n sectors of said focusing means whereby said n output beams having n different wavelengths are coupled into said single fiber.
[2]	The optical combiner of claim 1 wherein n=4 and wherein said four lasers and four collimating lenses are each formed in a two-dimensional, two by two array, wherein said focusing means is a single focusing lens, and wherein each radial sector is a pie-shaped quadrant.
[3]	The optical combiner of claim 2 wherein a prism is positioned between each of said collimating lenses and said focusing lens, and wherein said collimating lenses, said prism and said focusing lens are formed as a single, monolithic molded block .

STOPPED SINGLE OPTICAL FIBER

- “A single optical fiber that has been inserted into the optical combiner until it abuts a physical structure that prevents the fiber from being inserted further into the optical combiner.”



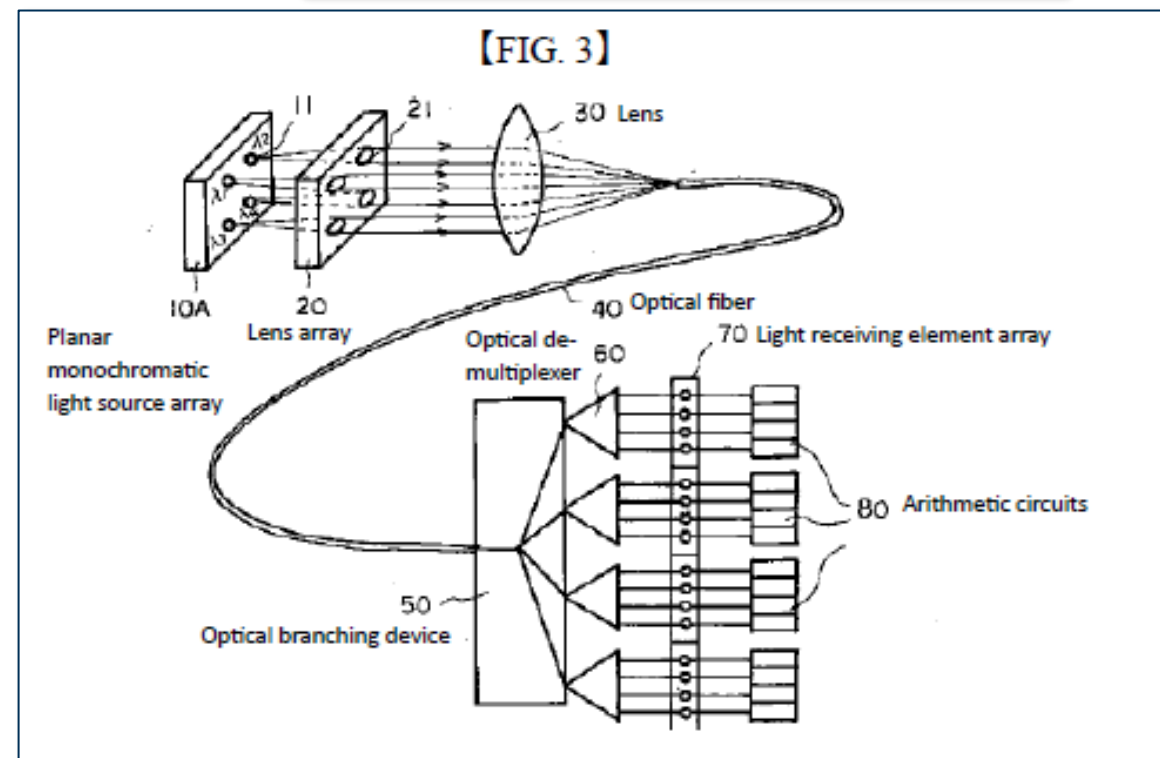
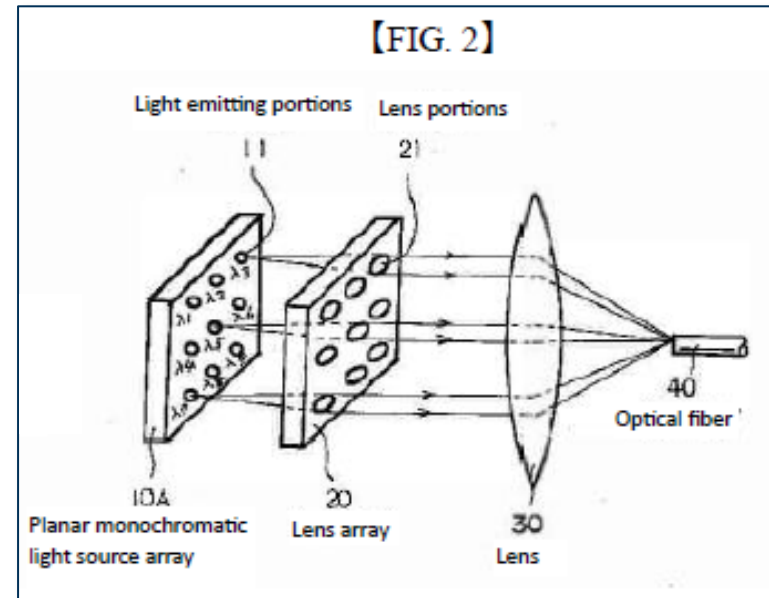
DR. WILLNER'S TESTIMONY THAT "STOPPED" MEANS "FIXED" IS UNSUPPORTED

- “Stopped” does not have a plain and ordinary meaning as understood by a POSITA at the time of the invention.” (EX1003 ¶117)
- “Fixed” does not appear in the 416 Patent. (EX1001)
- “‘Stopped’ means ‘fixed’ ... in a spatial sense” (EX1003 ¶122)
 - BUT – Dr. Willner later modifies his position to argue that “stopped” means “fixed” “*with respect to the optical combiner.*” (EX1016 ¶51)
- Dr. Willner provides no support for any structure or construction other than the ferrule-and-seat disclosed in the specification.

GROUND 1: KURITA

EX1004 - KURITA

1. Does not disclose “optical combiner”
 - a. Not integrated
 - b. No integrated pre-aligned connector / cannot use passive alignment
2. Does not disclose “stopped single optical fiber”
3. Does not disclose “radial sectors” (EX1001, claim 1) or “quadrants” (EX1001, claims 2, 7)



EXEMPLARY CLAIMS 1-2 (TERMS TO BE CONSTRUED IN RED)

#	Claim Language (EX1001 Col. 5:23-40; Paper 18 pp. 16-31)
[1.0]	An optical combiner
[1.1]	usable in data communication systems for multiplexing the outputs of a plurality of n lasers wherein each of said n outputs has a different output wavelength,
[1.2]	for transmission into and through a stopped single optical fiber , comprising:
[1.3]	a plurality of n collimating lenses,
[1.4]	said lenses being spaced apart and positioned to receive and collimate the output of said n laser output beams, said n laser output beams have n different output wavelengths, and
[1.5]	focusing means for focusing said n collimated output beams onto a single spot at said stopped single optical fiber ,
[1.6]	said focusing means having n separate radial sectors on its surface, and each of said n collimated beams passes through a separate one of said n sectors of said focusing means whereby said n output beams having n different wavelengths are coupled into said single fiber.
[2]	The optical combiner of claim 1 wherein n=4 and wherein said four lasers and four collimating lenses are each formed in a two-dimensional, two by two array, wherein said focusing means is a single focusing lens, and wherein each radial sector is a pie-shaped quadrant.

KURITA DOES NOT DISCLOSE OR SUGGEST “OPTICAL COMBINER” OR “STOPPED SINGLE OPTICAL FIBER”

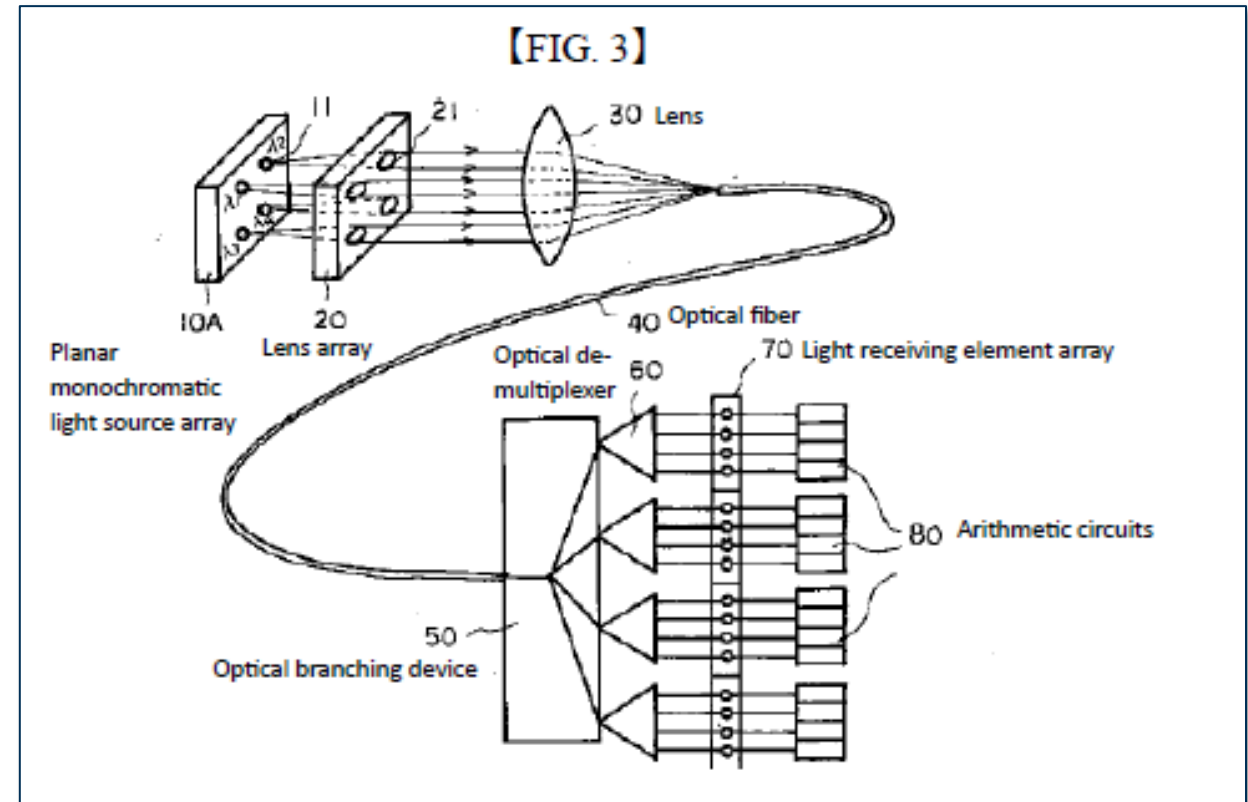
- “An ~~integrated subassembly~~ of optical components for multiplexing light of different wavelengths, which includes an ~~integrated pre-aligned connector with a stop to hold the single fiber optic cable~~”

【0015】 FIG. 3 being a conceptual configuration diagram for the element in the third example according to the present invention, this one is an example whereby a light connection device is composed as a 4×4 wavelength multiplexing switch. This multiplexing switch is provided with

【0017】 Therefore, with this wavelength multiplexing switch as well, on the input side of the optical fiber 40, in particular, on account of it being composed of a planar monochromatic light source array 10A, a lens array 20, and a lens 30, each being singular,

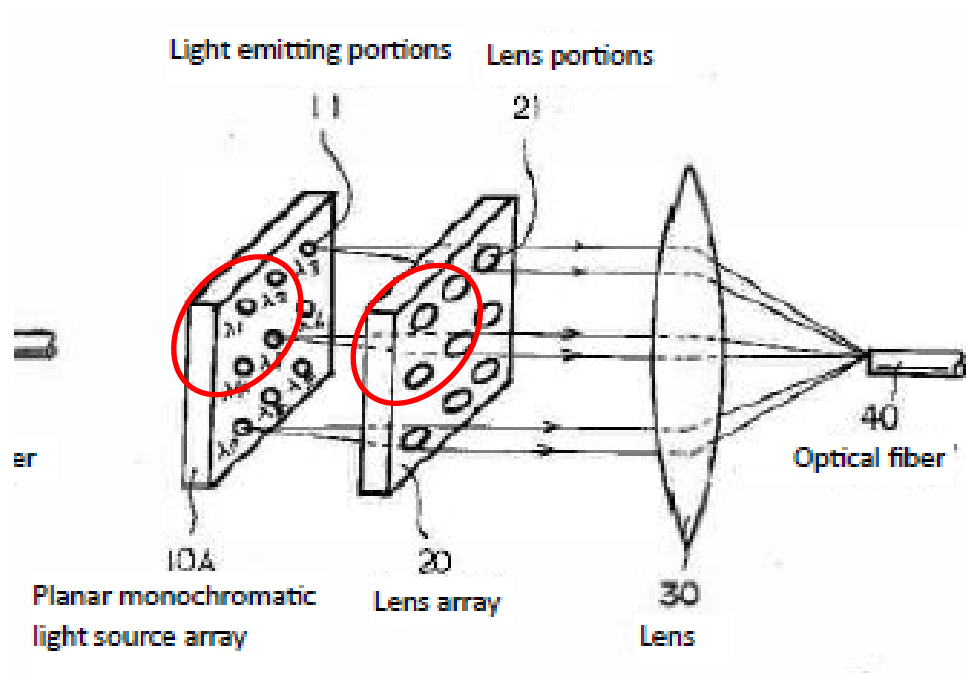
[Page 3 of 5, Column 6]

as the number of component parts is small and, further, the number of optical elements through which the lights from individual light emitting portions 11 of the planar monochromatic light source array 10A pass is small, a low cost and low loss multiplexing switch is composed.

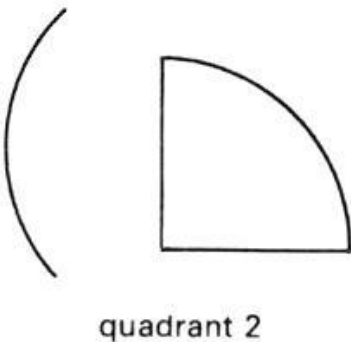


KURITA DOES NOT DISCLOSE OR SUGEST “RADIAL SECTORS” OR “QUADRANTS” – 2X2 ARRAY NOT REQUIRED TO BE CENTERED

[FIG. 2]



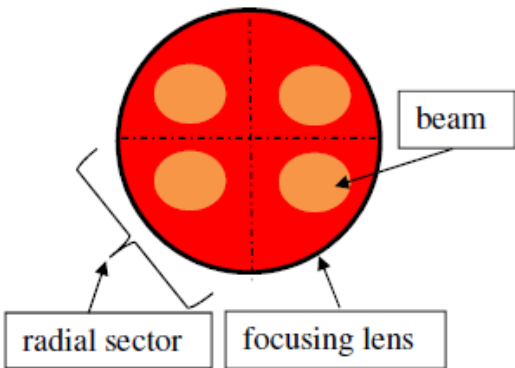
quad-rant \ˈkwäd-rənt\ *n* [ME, fr. L *quadrant*-, *quadrans* fourth part; akin to L *quattuor* four — more at **FOUR**] (15c) **1 a** : an instrument for measuring altitudes consisting commonly of a graduated arc of 90° with an index or vernier and usu. having a plumb line or spirit level for fixing the vertical or horizontal direction **b** : a device or mechanical part shaped like or suggestive of the quadrant of a circle **2 a** : an arc of 90° that is one quarter of a circle **b** : the area bounded by a quadrant and two radii **3 a** : any of the four parts



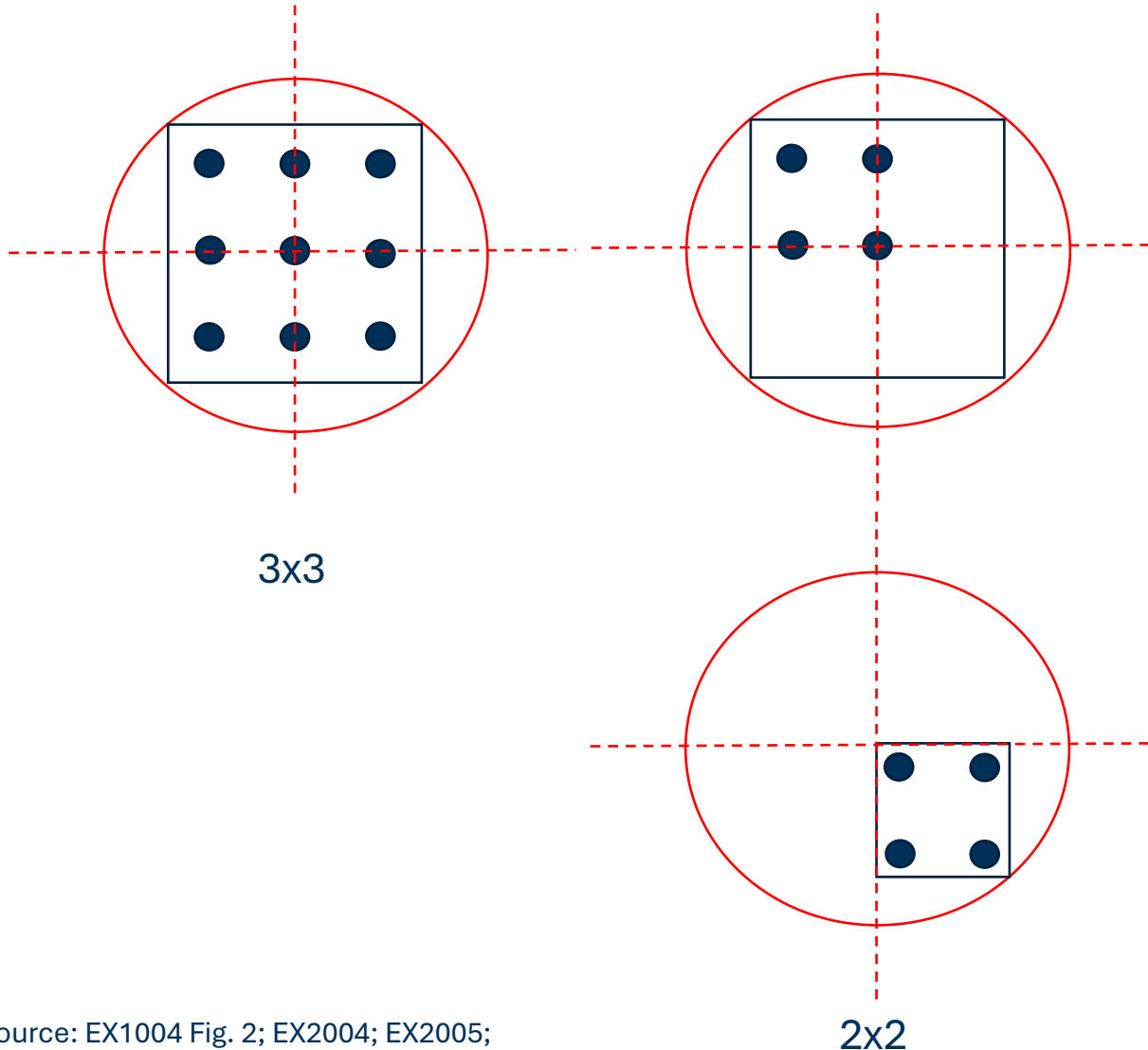
Ex 2004

radial. Radiating from a common centre; pertaining to a *radius* (q.v.). (*Zool.*) In *Crinoidea*, a whorl of ossicles supporting the oral disk.

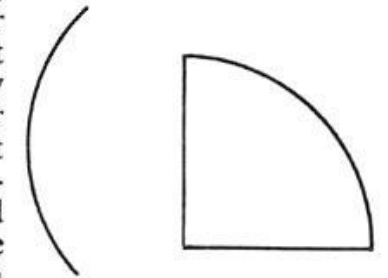
Ex 2005



KURITA DOES NOT DISCLOSE OR SUGGEST “RADIAL SECTORS” OR “QUADRANTS” – 2X2 ARRAY NOT REQUIRED TO BE CENTERED



quad·rant \ˈkwād-rənt\ *n* [ME, fr. L *quadrant*, *quadrans* fourth part; akin to L *quattuor* four — more at FOUR] (15c) **1** *a* : an instrument for measuring altitudes consisting commonly of a graduated arc of 90° with an index or vernier and usu. having a plumb line or spirit level for fixing the vertical or horizontal direction *b* : a device or mechanical part shaped like or suggestive of the quadrant of a circle **2** *a* : an arc of 90° that is one quarter of a circle *b* : the area bounded by a quadrant and two radii **3** *a* : any of the four parts



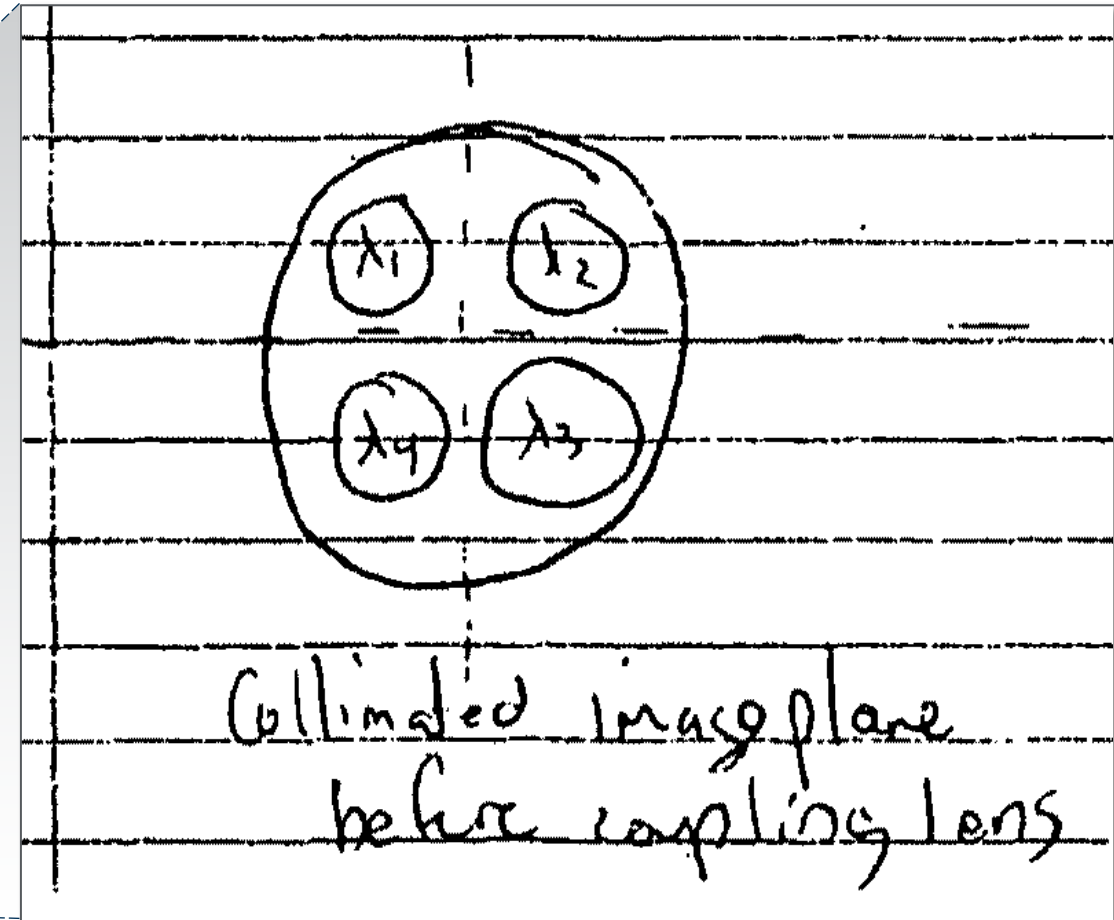
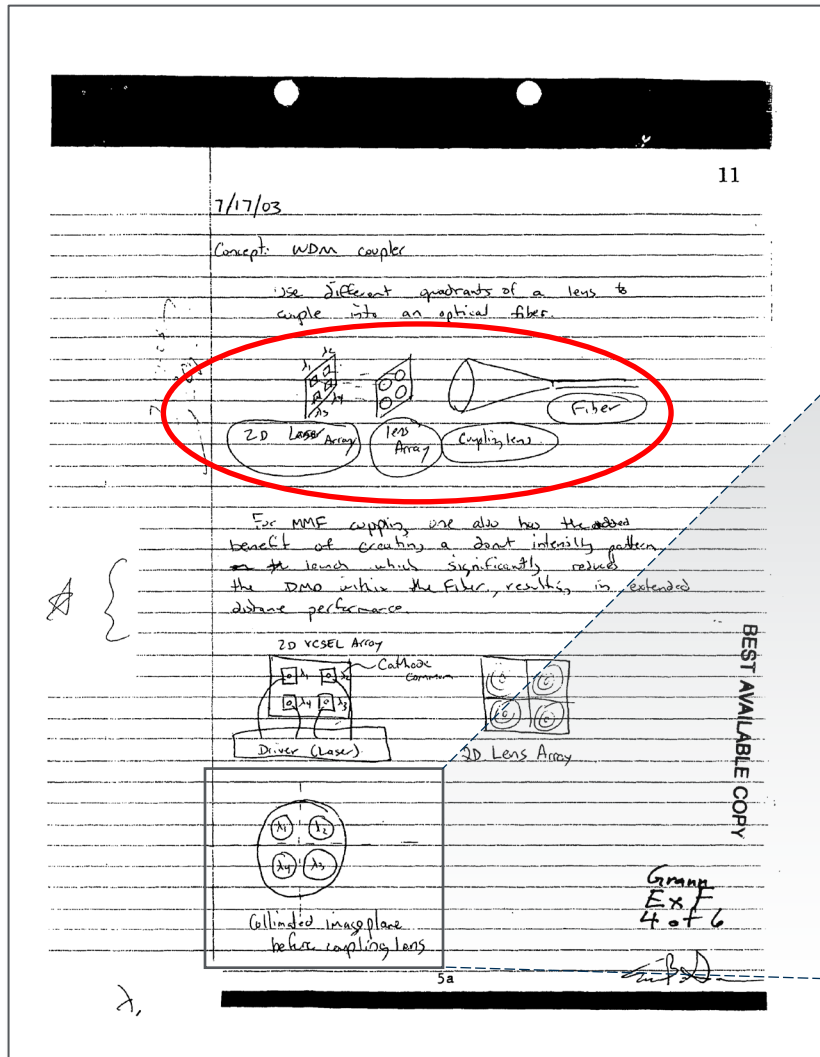
quadrant 2

Ex 2004

radial. Radiating from a common centre; pertaining to a *radius* (q.v.). (*Zool.*) In *Crinoidea*, a whorl of ossicles supporting the oral disk.

Ex 2005

KURITA AND INVENTOR NOTEBOOK NOT THE SAME; NOTEBOOK ALSO SHOWS QUADRANTS



KURITA (EX1004) DOES NOT RENDER THE CLAIMS OBVIOUS

#	Claim Language (EX1001 Col. 5:23-40; Paper 18 pp. 16-31)
[1.0]	~~An optical combiner~~
[1.1]	usable in data communication systems for multiplexing the outputs of a plurality of n lasers wherein each of said n outputs has a different output wavelength,
[1.2]	~~for transmission into and through a stopped single optical fiber~~ , comprising:
[1.3]	a plurality of n collimating lenses,
[1.4]	said lenses being spaced apart and positioned to receive and collimate the output of said n laser output beams, said n laser output beams have n different output wavelengths, and
[1.5]	focusing means for focusing said n collimated output beams onto a single spot at ~~said stopped single optical fiber~~ ,
[1.6]	said focusing means having n separate ~~radial sectors~~ on its surface, and each of said n collimated beams passes through a separate one of said n sectors of said focusing means whereby said n output beams having n different wavelengths are coupled into said single fiber.
[2]	The optical combiner of claim 1 wherein n=4 and wherein said four lasers and four collimating lenses are each formed in a two-dimensional, two by two array, wherein said focusing means is a single focusing lens, and ~~wherein each radial sector is a pie-shaped quadrant~~ .

GROUND 3: LEMOFF

EX1006: LEMOFF

1. Does not disclose or suggest “optical combiner” (Paper 18 pp.56-57)
2. Does not disclose or suggest collimating lenses (Paper 18 pp. 58-62)
3. Does not disclose or suggest “stopped single optical fiber” (Paper 18 p.57)
4. Does not disclose or suggest focusing means’s function of “focusing said n collimated output beams onto a single spot at said stopped single optical fiber” (Paper 18 pp. 63-64)

(EX1006 p.2)

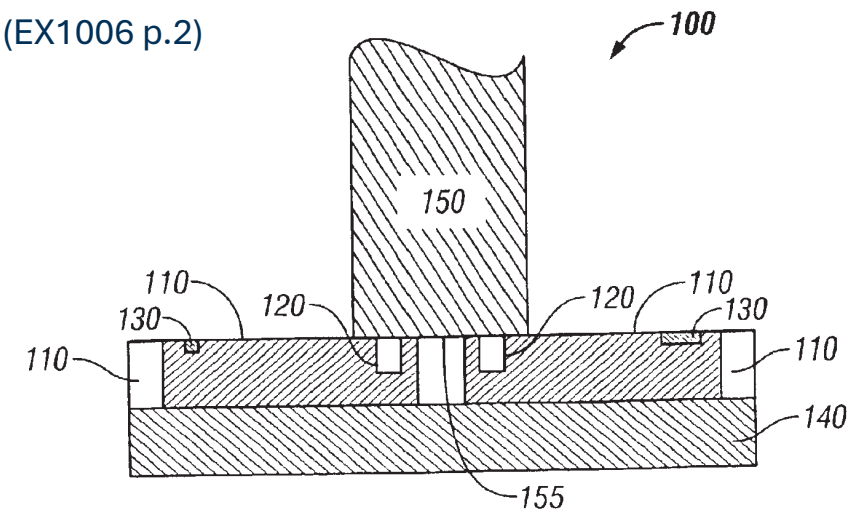


FIG. 1B

(EX1006 p.3)

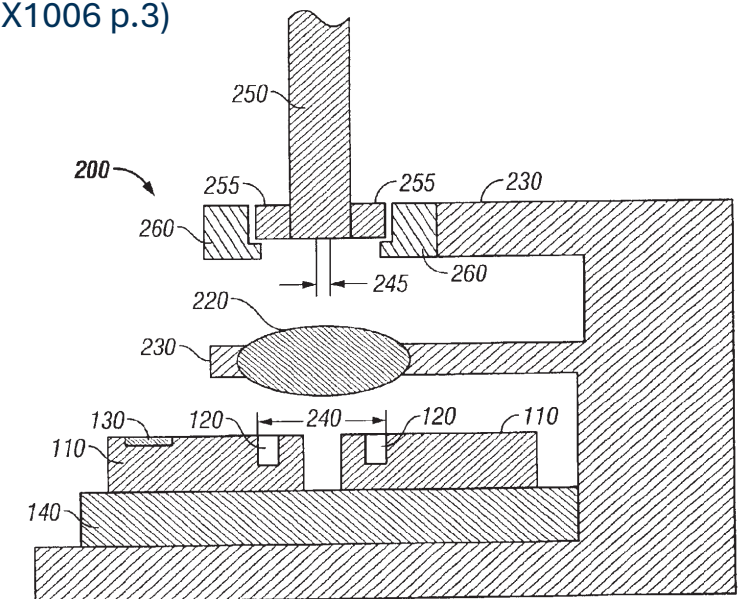


FIG. 2

EXEMPLARY CLAIMS 1-2 (TERMS TO BE CONSTRUED IN RED)

#	Claim Language (EX1001 Col. 5:23-40; Paper 18 pp. 16-31)
[1.0]	An optical combiner
[1.1]	usable in data communication systems for multiplexing the outputs of a plurality of n lasers wherein each of said n outputs has a different output wavelength,
[1.2]	for transmission into and through a stopped single optical fiber , comprising:
[1.3]	a plurality of n collimating lenses,
[1.4]	said lenses being spaced apart and positioned to receive and collimate the output of said n laser output beams, said n laser output beams have n different output wavelengths, and
[1.5]	focusing means for focusing said n collimated output beams onto a single spot at said stopped single optical fiber ,
[1.6]	said focusing means having n separate radial sectors on its surface, and each of said n collimated beams passes through a separate one of said n sectors of said focusing means whereby said n output beams having n different wavelengths are coupled into said single fiber.
[2]	The optical combiner of claim 1 wherein n=4 and wherein said four lasers and four collimating lenses are each formed in a two-dimensional, two by two array, wherein said focusing means is a single focusing lens, and wherein each radial sector is a pie-shaped quadrant.

LEMOFF DOES NOT DISCLOSE OR SUGGEST “OPTICAL COMBINER”

- Lemoff does not combine the laser beams
 - Not a “combiner”
- Lemoff does not satisfy Petitioner’s construction
 - Does not “combine” laser beams into “an output”
- Lemoff does not satisfy Patent Owner’s construction
 - Does not “multiplex” light of different wavelengths
 - Does not include an integrated pre-aligned connector with a stop

LEMOFF DOES NOT DISCLOSE OR SUGGEST A MULTIPLEXER

However, one problem with WDM is that additional complexity in the design, Fabrication, and packaging of the required devices can dramatically increase production and maintenance costs. For example, an optical wavelength multiplexer is often used to collect the optical signal components from different sources and cause these components to spatially overlap and enter into a single optical fiber. An optical multiplexer can be a costly, high precision device.

This drawback to the use of WDM is particularly problematic in applications requiring only relatively short distance links. Such applications of optical communication systems are typically more cost sensitive than other applications. If a complex optical multiplexer is required then an optical communication system may not be cost effective for such links.

The invention provides a multi-channel optical signal emitter for a wavelength division multiplexed (WDM) communication system that combines multiple signal components into a multi-channel optical signal without using an optical multiplexer or other device external to the emitter.

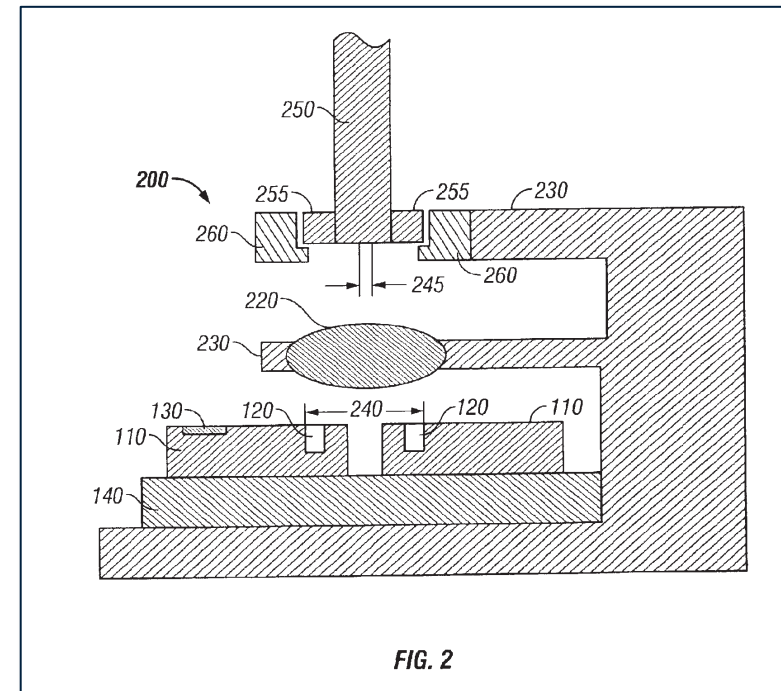
In accordance with the invention, a multi-channel optical signal emitter is manufactured by fabricating multiple opti-

2

cal signals emitters, each configured to emit an optical signal from an emission aperture near an aperture corner of the optical signal emitter. Then, the optical signal emitters are positioned on the substrate with the emission apertures near each other; and are attached to the substrate.

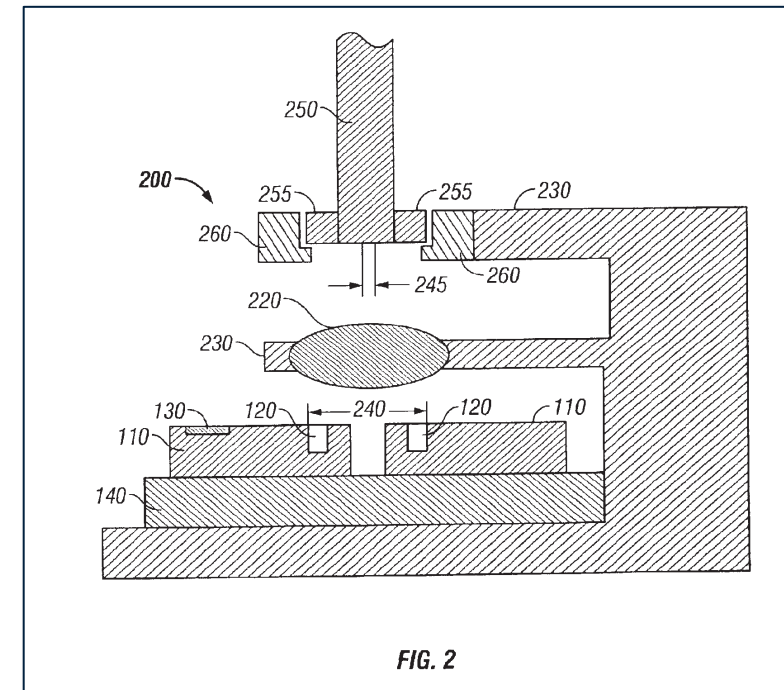
LEMOFF DOES NOT DISCLOSE OR SUGGEST COLLIMATING LENSES LIMITATION

- No explicit disclosure of collimating lenses
- Statement that optical imaging element 220 may include “any arrangement of one or more optical components ...” is insufficient.
 - Does not disclose or suggest collimating lenses “being spaced apart and positioned to receive and collimate the output of said n laser output beams”
 - Does not enable the inclusion of collimating lenses and a focusing lens at element 220
- General rationale of “improving coupling efficiency” is insufficient.
 - Dr. Willner’s explanation fails to go beyond generalities to address the specific device in Lemoff



LEMOFF DOES NOT DISCLOSE OR SUGGEST “STOPPED SINGLE OPTICAL FIBER”

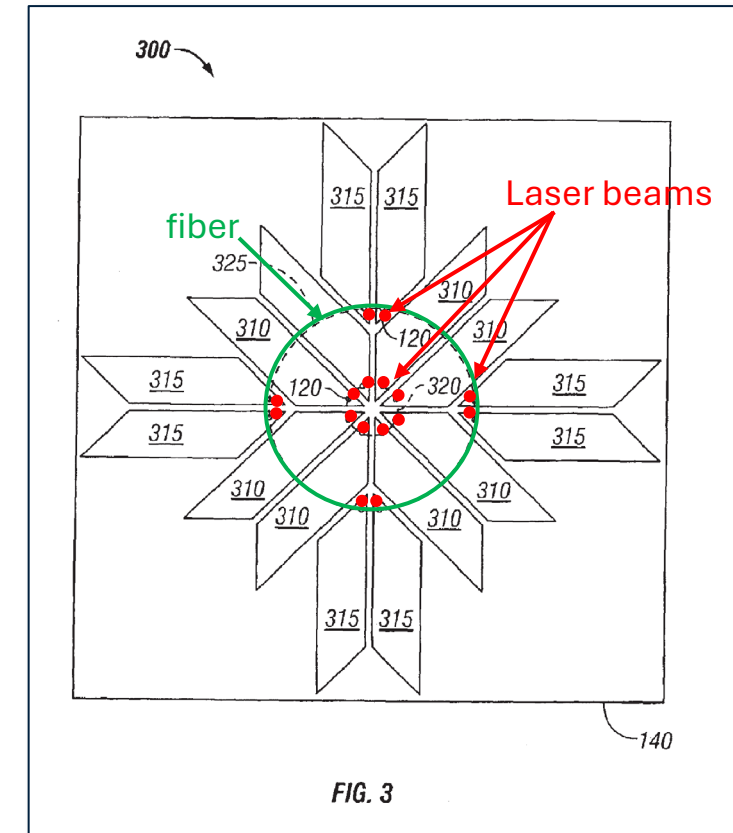
- Insufficient that fiber 250 is “(spatially) fixed”
- Ferrule 255 is not integrated or pre-aligned
- Receptacle 260 is not integrated with, and is removable from, ferrule 255



LEMOFF DOES NOT DISCLOSE OR SUGGEST THE FUNCTION OF THE FOCUSING MEANS

“focusing means for focusing said n collimated output beams onto a **single spot** at said **stopped single optical fiber**”

- Numerous “spots” (16 spots shown in Fig. 3)
- No “stopped single optical fiber”



(EX1006 at p.4)

LEMOFF (EX1006) DOES NOT RENDER THE CLAIMS OBVIOUS

#	Claim Language (EX1001 Col. 5:23-40; Paper 18 pp. 16-31)
[1.0]	An ~~optical combiner~~
[1.1]	usable in data communication systems for multiplexing the outputs of a plurality of n lasers wherein each of said n outputs has a different output wavelength,
[1.2]	for transmission into and through a ~~stopped single optical fiber~~ , comprising:
[1.3]	~~a plurality of n collimating lenses~~ ,
[1.4]	~~said lenses being spaced apart and positioned to receive and collimate the output of said n laser output beams~~ , said n laser output beams have n different output wavelengths, and
[1.5]	focusing means ~~for focusing said n collimated output beams onto a single spot~~ at said stopped single optical fiber,
[1.6]	said focusing means having n separate radial sectors on its surface, and each of said n ~~collimated beams~~ passes through a separate one of said n sectors of said focusing means whereby said n output beams having n different wavelengths are coupled into said single fiber.
[2]	The optical combiner of claim 1 wherein n=4 and wherein said four lasers and ~~four collimating lenses~~ are each formed in a two-dimensional, two by two array, wherein said focusing means is a single focusing lens, and wherein each radial sector is a pie-shaped quadrant.

GROUND 2: KURITA + (LEMOFF AND/OR LAMARCHE)

KURITA (EX1004) DOES NOT RENDER THE CLAIMS OBVIOUS

#	Claim Language (EX1001 Col. 5:23-40; Paper 18 pp. 16-31)
[1.0]	~~An optical combiner~~
[1.1]	usable in data communication systems for multiplexing the outputs of a plurality of n lasers wherein each of said n outputs has a different output wavelength,
[1.2]	~~for transmission into and through a stopped single optical fiber~~ , comprising:
[1.3]	a plurality of n collimating lenses,
[1.4]	said lenses being spaced apart and positioned to receive and collimate the output of said n laser output beams, said n laser output beams have n different output wavelengths, and
[1.5]	focusing means for focusing said n collimated output beams onto a single spot at ~~said stopped single optical fiber~~ ,
[1.6]	said focusing means having n separate ~~radial sectors~~ on its surface, and each of said n collimated beams passes through a separate one of said n sectors of said focusing means whereby said n output beams having n different wavelengths are coupled into said single fiber.
[2]	The optical combiner of claim 1 wherein n=4 and wherein said four lasers and four collimating lenses are each formed in a two-dimensional, two by two array, wherein said focusing means is a single focusing lens, and ~~wherein each radial sector is a pie-shaped quadrant~~ .

ADDING LEMOFF (BLUE TEXT) AND/OR LAMARCHE (RED TEXT) TO KURITA DOES NOT RENDER THE CLAIMS OBVIOUS

#	Claim Language (EX1001 Col. 5:23-40; Paper 18 pp. 16-31)
[1.0]	An optical combiner
[1.1]	usable in data communication systems for multiplexing the outputs of a plurality of n lasers wherein each of said n outputs has a different output wavelength,
[1.2]	for transmission into and through a stopped single optical fiber , comprising:
[1.3]	a plurality of n collimating lenses,
[1.4]	said lenses being spaced apart and positioned to receive and collimate the output of said n laser output beams, said n laser output beams have n different output wavelengths, and
[1.5]	focusing means for focusing said n collimated output beams onto a single spot at said stopped single optical fiber ,
[1.6]	said focusing means having n separate radial sectors on its surface, and each of said n collimated beams passes through a separate one of said n sectors of said focusing means whereby said n output beams having n different wavelengths are coupled into said single fiber.
[2]	The optical combiner of claim 1 wherein n=4 and wherein said four lasers and four collimating lenses are each formed in a two-dimensional, two by two array, wherein said focusing means is a single focusing lens, and wherein each radial sector is a pie-shaped quadrant.

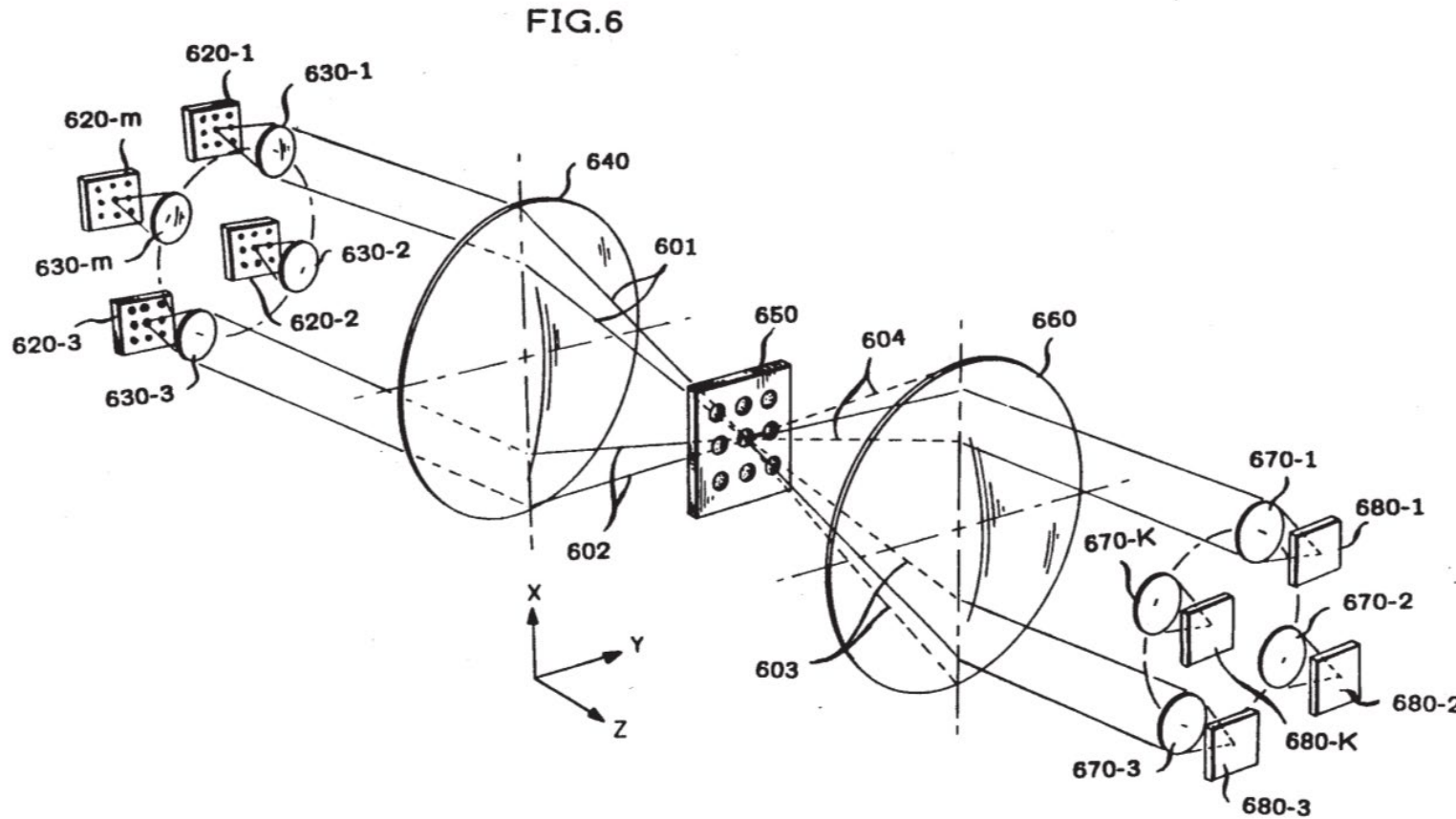
COMBINATION FAILS FOR AT LEAST FOUR REASONS

1. LaMarche Is Not Analogous Art (Paper 18 pp. 5-9, 44, 52)
2. LaMarche Is Not Combinable with Kurita (Paper 18 pp. 44-47)
3. Lemoff Is Not Combinable with Kurita (Paper 18 pp. 47-48)
4. Combination of Kurita + LaMarche and/or Lemoff does not render the '416 Patent obvious (Paper 18 pp. 48-49)
 1. LaMarche does not provide additional “radial arrangement of collimating lenses” (Paper 1 pp. 31-32; Paper 18 pp. 45, 48-49)
 2. Lemoff does not provide “receptacle and ferrule arrangement for securing an optical fiber” (Paper 1 p. 33; Paper 18 p. 49)

LAMARCHE IS NOT ANALOGOUS ART

- LaMarche is not --
 - an “optical combiner,” on either party’s construction
 - WDM technology

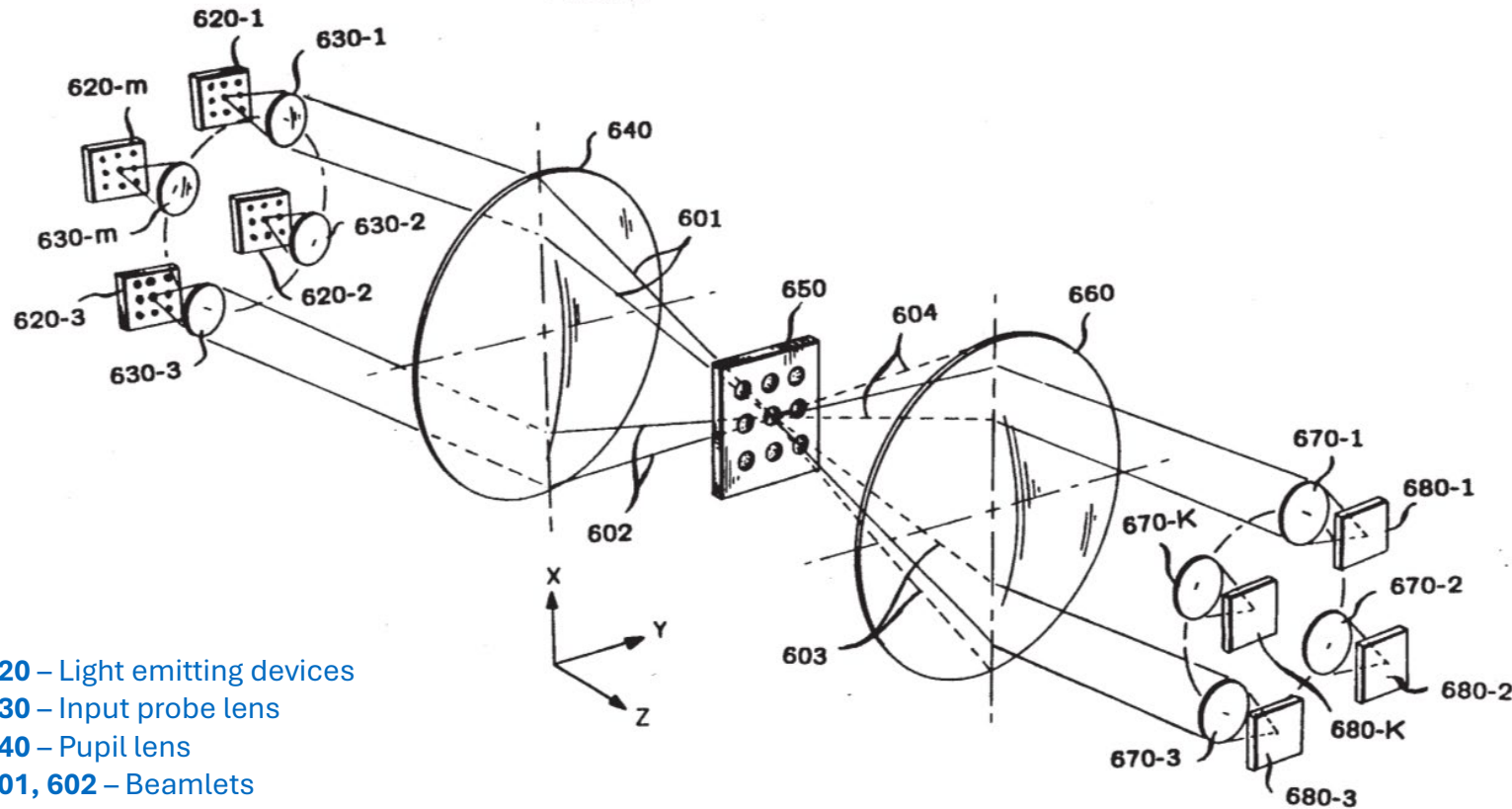
LAMARCHE IS NOT AN OPTICAL MULTIPLEXING DEVICE



- “In my opinion, a POSITA in the relevant field (i.e., **optical multiplexing devices**)” EX1003 ¶105
- “The relevant field is **optical multiplexing devices**” EX2048 13:18-14:2
- “this invention relates to an **optical multiplexing device**” EX1001 1:14-15

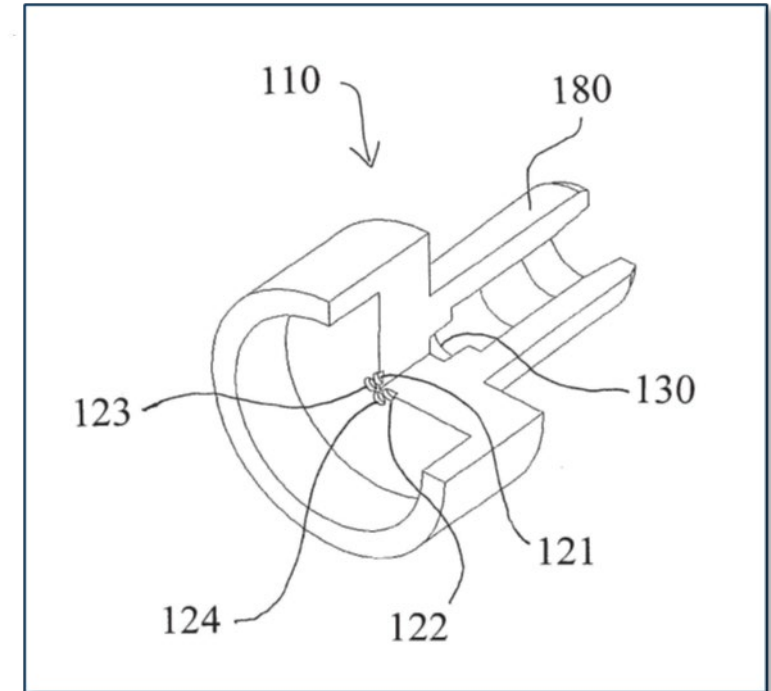
LAMARCHE IS AN OPTICAL ARRANGEMENT FOR MULTIPOINT-TO-MULTIPOINT BROADCASTING SIGNALS, NOT OPTICAL COMBINER

FIG. 6



- 620 – Light emitting devices
- 630 – Input probe lens
- 640 – Pupil lens
- 601, 602 – Beamlets
- 650 – Ball lens array
- 660 – Pupil lens
- 670 – Output probe lens
- 680 – Light detecting devices

Source: EX1005 Fig. 6; EX1001 Fig. 6; EX2003 pp. 55-69, 75-79;
Paper 18 pp. 2-3, 5-9



LAMARCHE TEACHES ONE COLLIMATING LENS PER ARRAY

【FIG. 2】

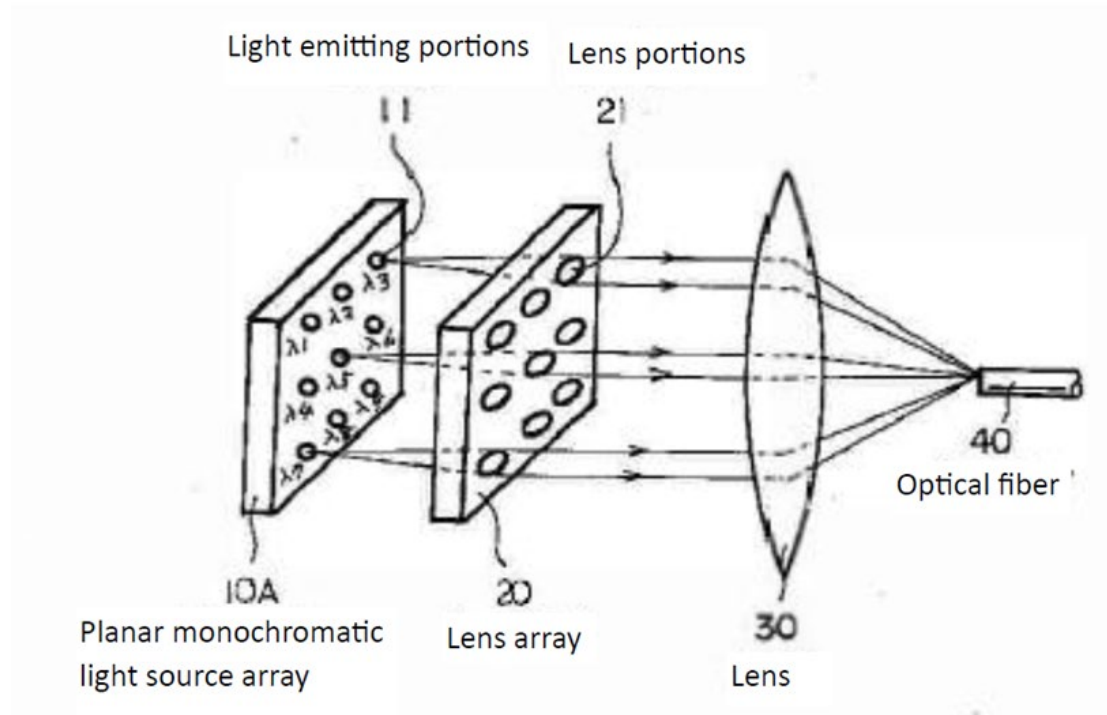
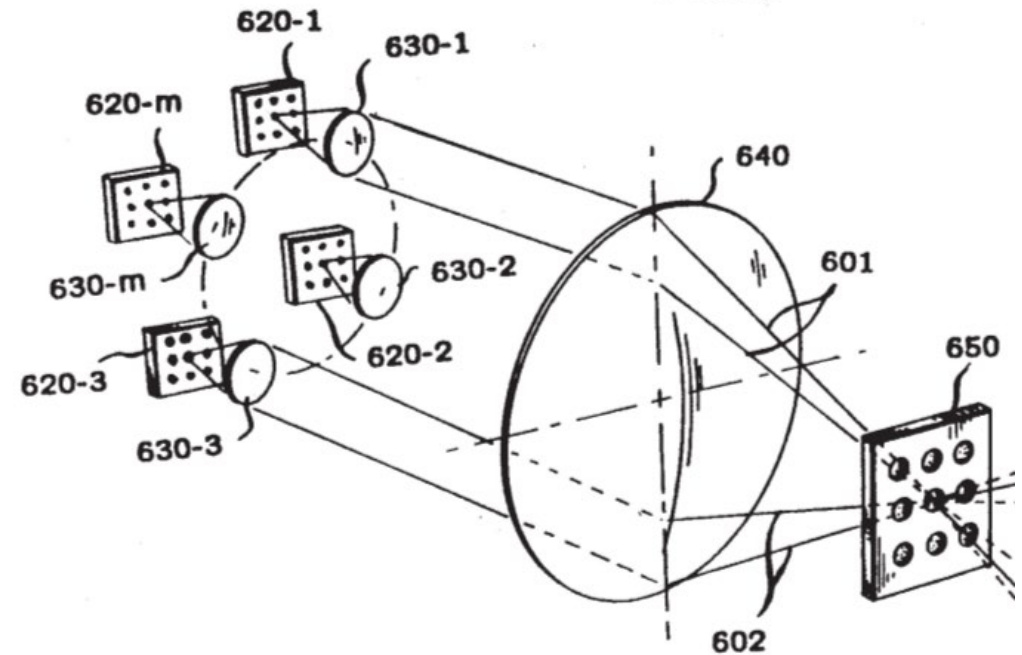


FIG. 6



LAMARCHE DOES NOT TEACH USING RADIAL SECTORS

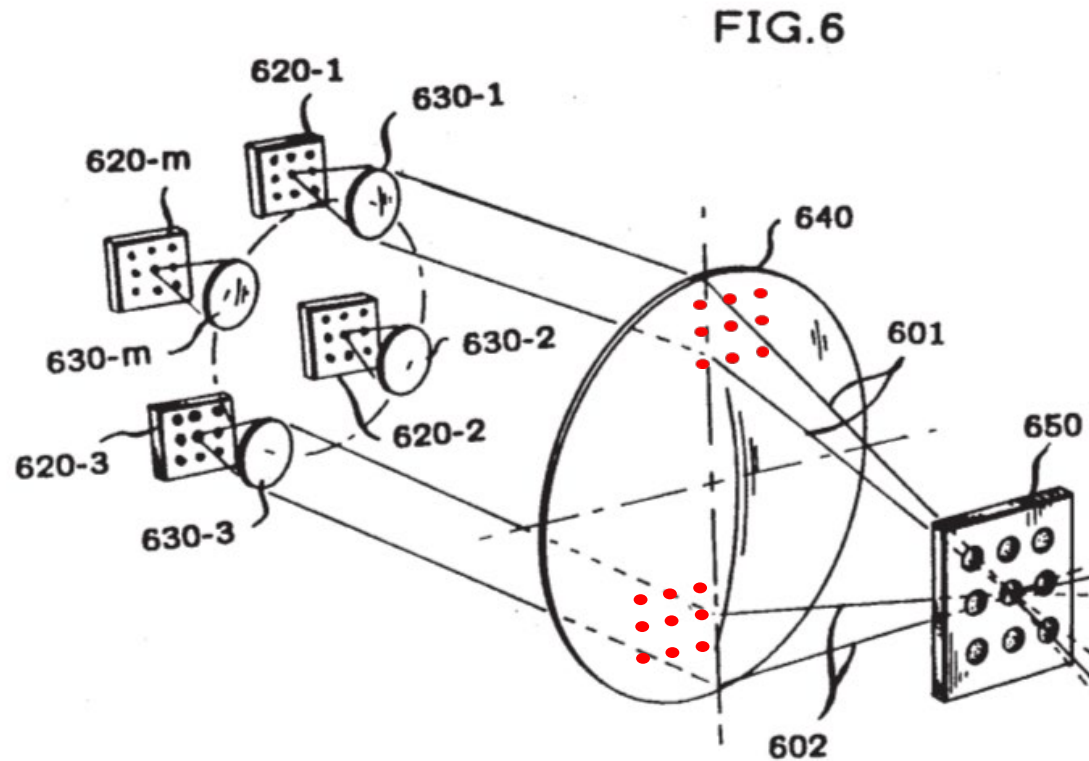
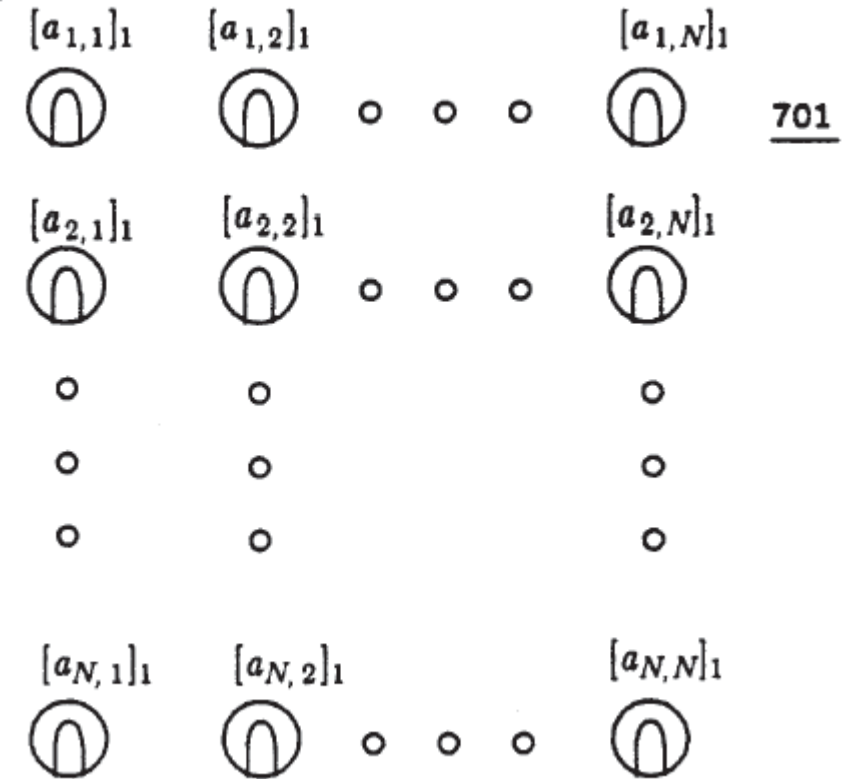
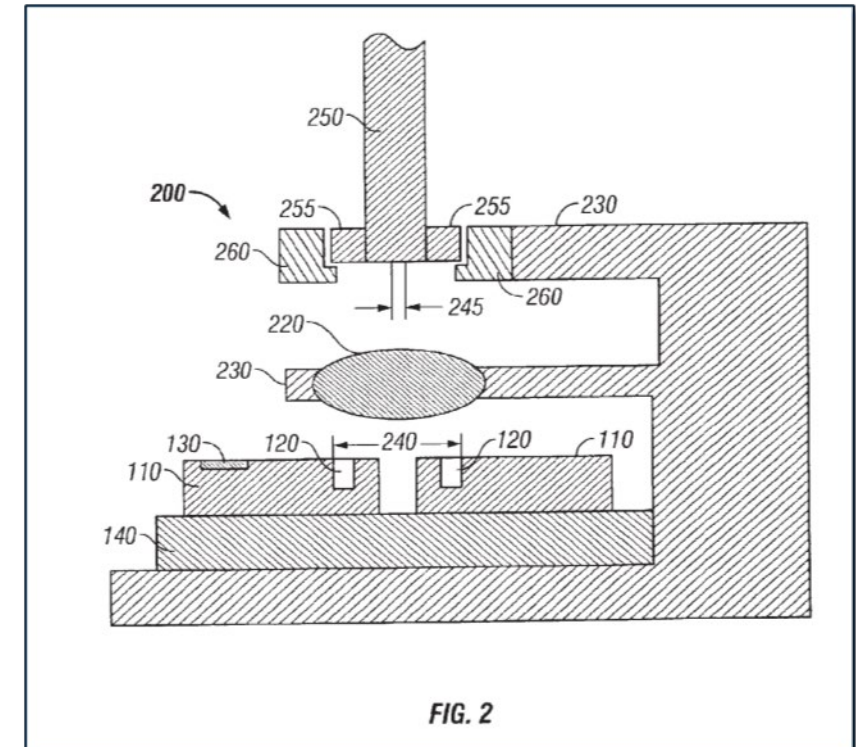
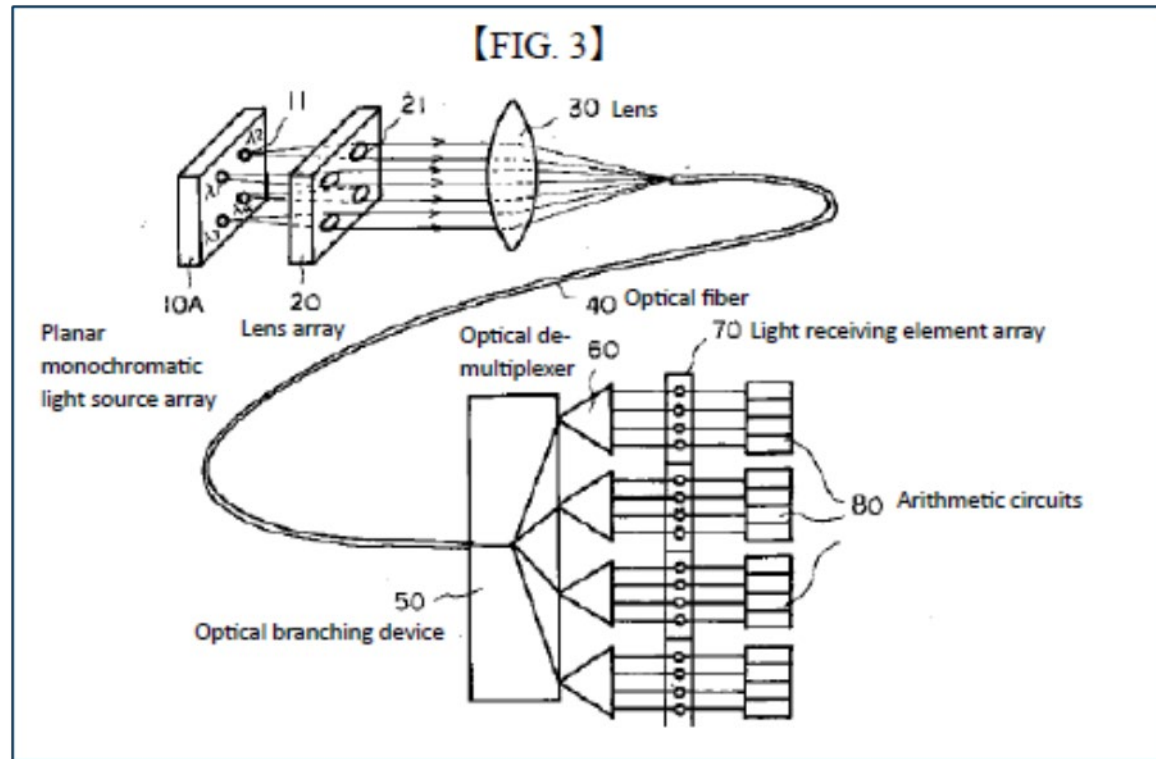


FIG. 7



LEMOFF TEACHES AGAINST EXTERNAL MULTIPLEXERS



NO BENEFIT OF COMBINING KURITA AND LEMOFF'S FERRULE AND RECEPTACLE

【FIG. 3】

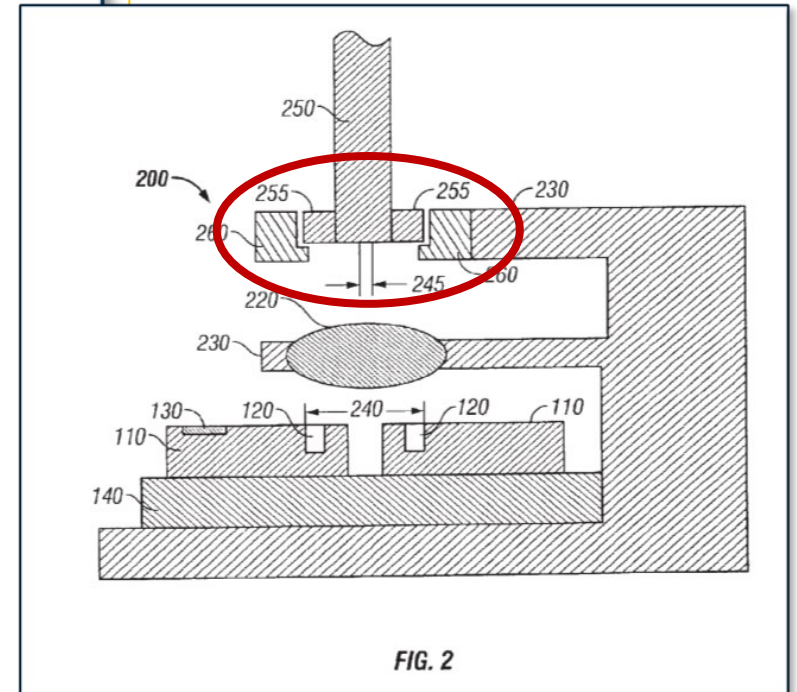
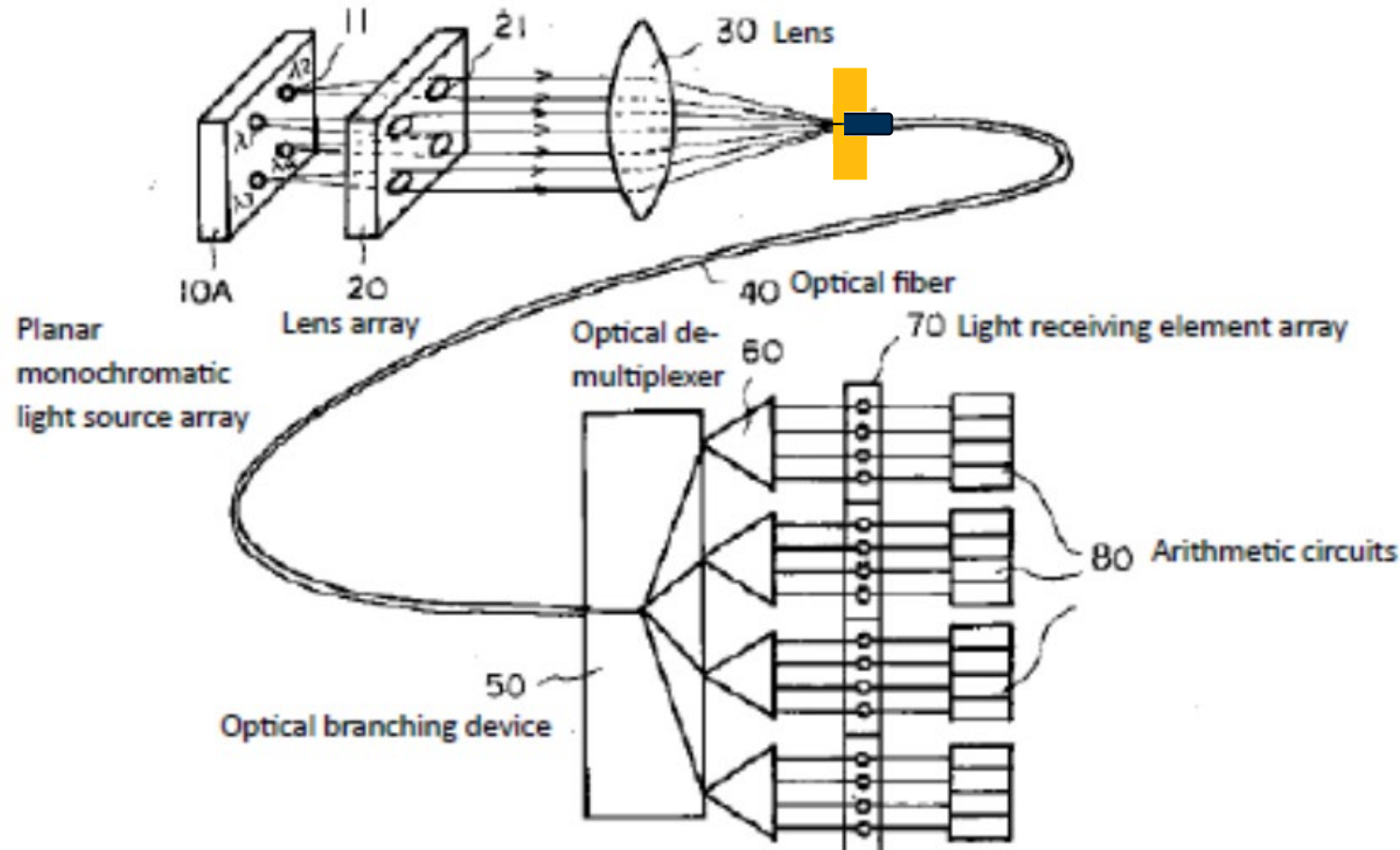


FIG. 2

Source: EX1004 Fig.3; EX1006 Fig. 2, Abstract; Paper 18 p. 48; Paper 26 p. 18-19

ADDING LEMOFF (BLUE TEXT) AND/OR LAMARCHE (RED TEXT) TO KURITA DOES NOT RENDER THE CLAIMS OBVIOUS

#	Claim Language (EX1001 Col. 5:23-40; Paper 18 pp. 16-31)
[1.0]	~~An optical combiner~~
[1.1]	usable in data communication systems for multiplexing the outputs of a plurality of n lasers wherein each of said n outputs has a different output wavelength,
[1.2]	~~for transmission into and through a stopped single optical fiber~~ , comprising:
[1.3]	a plurality of n collimating lenses,
[1.4]	said lenses being spaced apart and positioned to receive and collimate the output of said n laser output beams, said n laser output beams have n different output wavelengths, and
[1.5]	focusing means for focusing said n collimated output beams onto a single spot at ~~said stopped single optical fiber~~ ,
[1.6]	said focusing means having n separate ~~radial sectors~~ on its surface, and each of said n collimated beams passes through a separate one of said n sectors of said focusing means whereby said n output beams having n different wavelengths are coupled into said single fiber.
[2]	The optical combiner of claim 1 wherein n=4 and wherein said four lasers and four collimating lenses are each formed in a two-dimensional, two by two array, wherein said focusing means is a single focusing lens, and ~~wherein each radial sector is a pie-shaped quadrant.~~

GROUND 4: LEMOFF + LAMARCHE

LEMOFF (EX1006) DOES NOT RENDER THE CLAIMS OBVIOUS

#	Claim Language (EX1001 Col. 5:23-40; Paper 18 pp. 16-31)
[1.0]	An ~~optical combiner~~
[1.1]	usable in data communication systems for multiplexing the outputs of a plurality of n lasers wherein each of said n outputs has a different output wavelength,
[1.2]	for transmission into and through a ~~stopped single optical fiber~~ , comprising:
[1.3]	~~a plurality of n collimating lenses~~ ,
[1.4]	~~said lenses being spaced apart and positioned to receive and collimate the output of said n laser output beams~~ , said n laser output beams have n different output wavelengths, and
[1.5]	focusing means ~~for focusing said n collimated output beams onto a single spot~~ at said stopped single optical fiber,
[1.6]	said focusing means having n separate radial sectors on its surface, and each of said n ~~collimated beams~~ passes through a separate one of said n sectors of said focusing means whereby said n output beams having n different wavelengths are coupled into said single fiber.
[2]	The optical combiner of claim 1 wherein n=4 and wherein said four lasers and ~~four collimating lenses~~ are each formed in a two-dimensional, two by two array, wherein said focusing means is a single focusing lens, and wherein each radial sector is a pie-shaped quadrant.

COMBINING LEMOFF AND LAMARCHE (EX1005) DOES NOT RENDER THE CLAIMS OBVIOUS

#	Claim Language (EX1001 Col. 5:23-40; Paper 18 pp. 16-31)
[1.0]	An optical combiner
[1.1]	usable in data communication systems for multiplexing the outputs of a plurality of n lasers wherein each of said n outputs has a different output wavelength,
[1.2]	for transmission into and through a stopped single optical fiber , comprising:
[1.3]	a plurality of n collimating lenses,
[1.4]	said lenses being spaced apart and positioned to receive and collimate the output of said n laser output beams , said n laser output beams have n different output wavelengths, and
[1.5]	focusing means for focusing said n collimated output beams onto a single spot at said stopped single optical fiber,
[1.6]	said focusing means having n separate radial sectors on its surface, and each of said n collimated beams passes through a separate one of said n sectors of said focusing means whereby said n output beams having n different wavelengths are coupled into said single fiber.
[2]	The optical combiner of claim 1 wherein n=4 and wherein said four lasers and four collimating lenses are each formed in a two-dimensional, two by two array, wherein said focusing means is a single focusing lens, and wherein each radial sector is a pie-shaped quadrant.

COMBINATION FAILS FOR AT LEAST THREE REASONS

1. LaMarche Is Not Analogous Art (Paper 18 pp. 5-9, 44, 52; Paper 26 p. 22)
2. LaMarche Is Not Combinable with Lemoff (Paper 18 pp. 52-56; Paper 26 p. 22-23)
3. Combination of Lemoff + LaMarche does not render the '416 Patent obvious (Paper 18 pp. 56-66)

LEMOFF TEACHES NO IMAGING ELEMENT FOR CIRCULARLY ARRANGED APERTURES

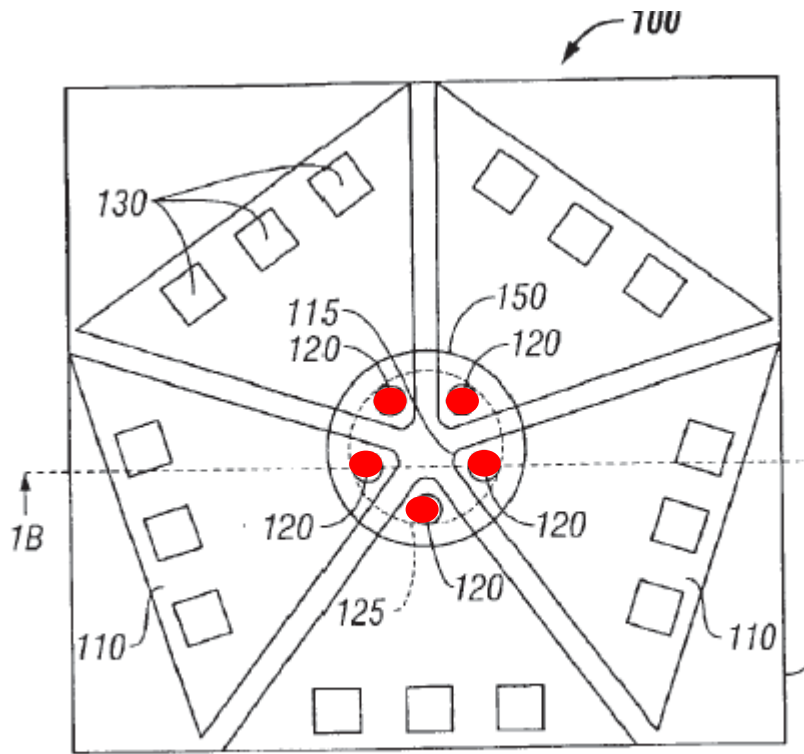


FIG. 1A

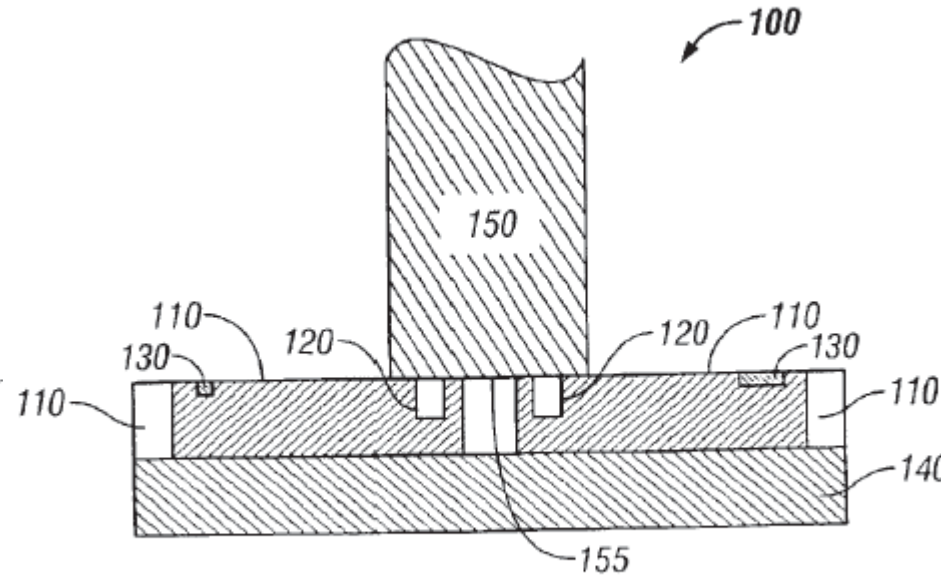
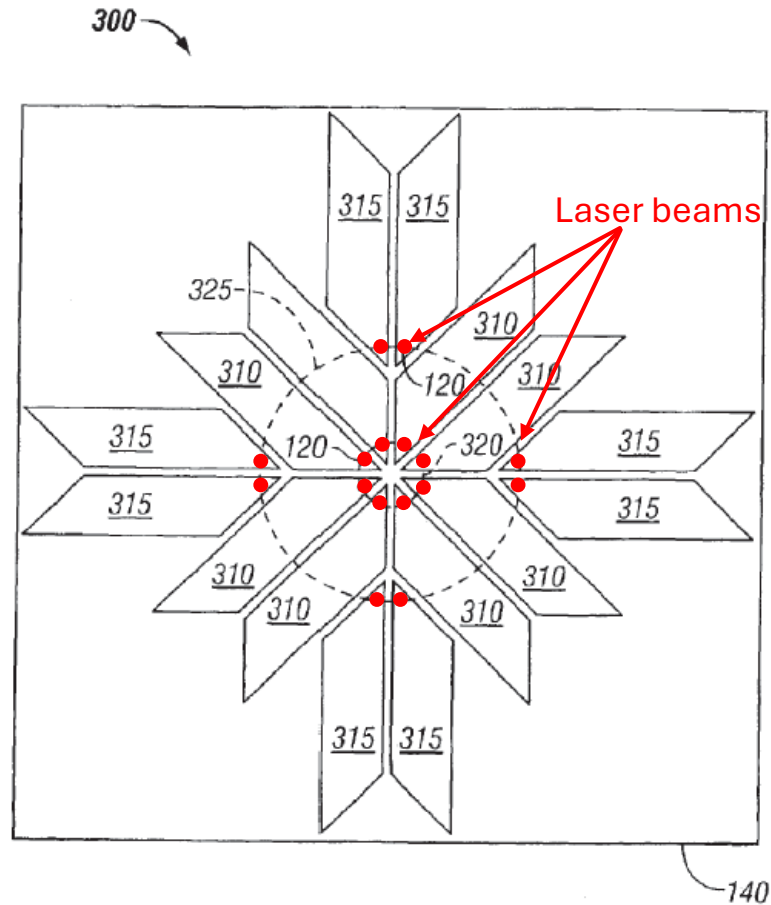


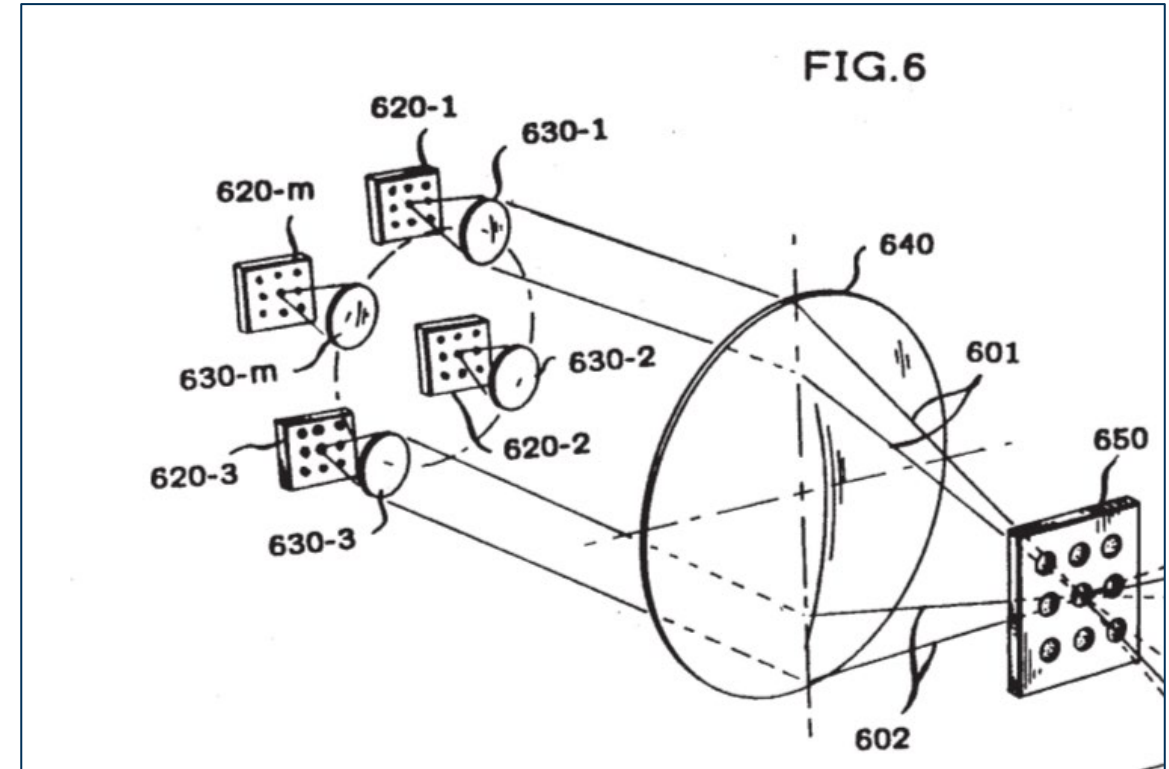
FIG. 1B

- Optical conduit 150 is cylindrical and has a circular cross section. ... Direct butt coupling is used between signal emitting area 125 and optical conduit 150. EX1006, 3:26-34
- Reducing the diameter of the signal-emitting area may advantageously allow use of an optical fiber with a smaller core diameter, eliminate the need for an optical imaging element, or both. EX1006, 3:54-65

LAMARCHE TEACHES ONE COLLIMATING LENS PER ARRAY

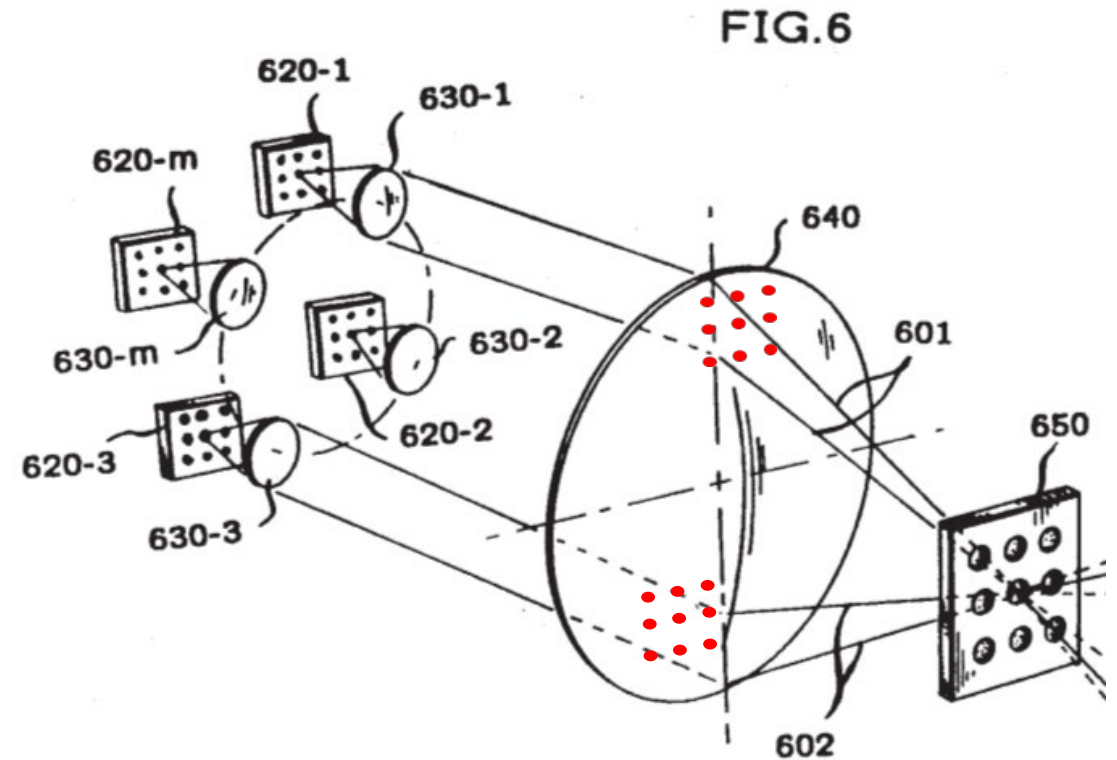
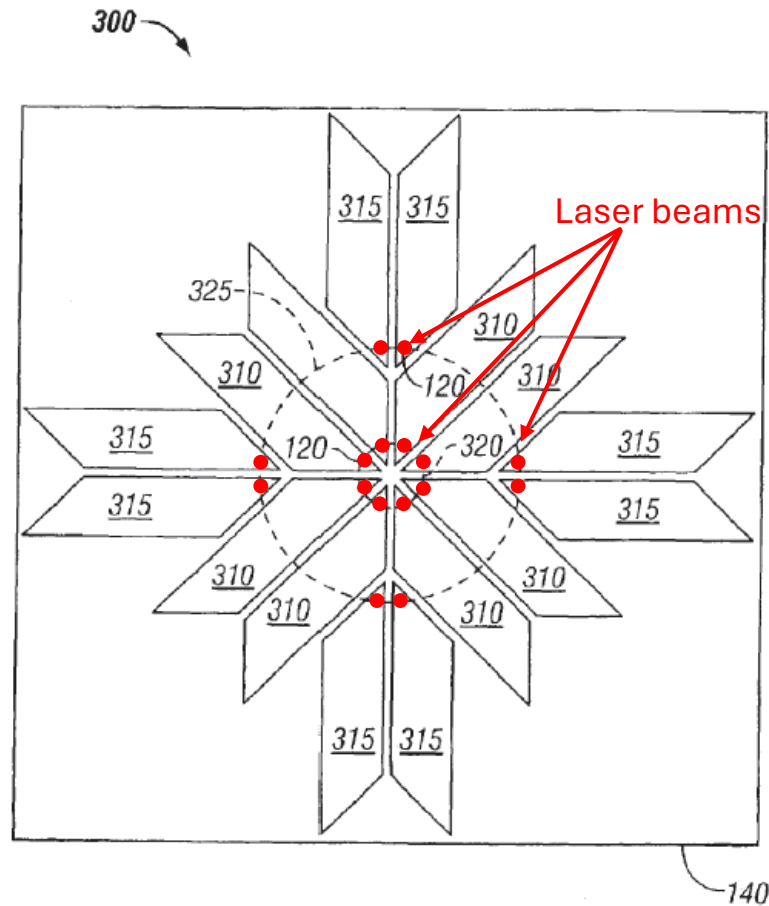


Source: EX1006, Fig. 3

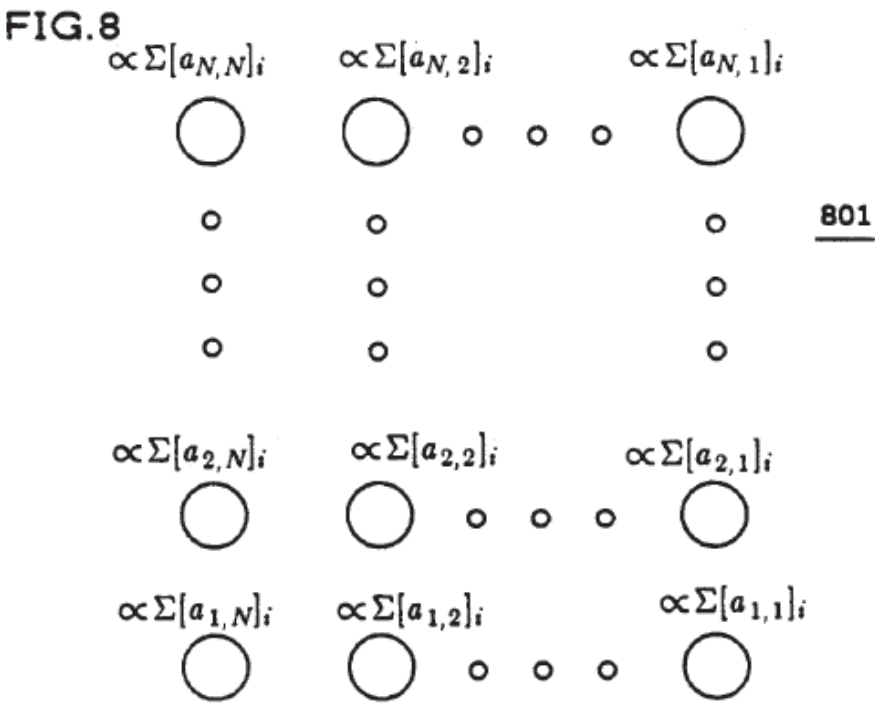
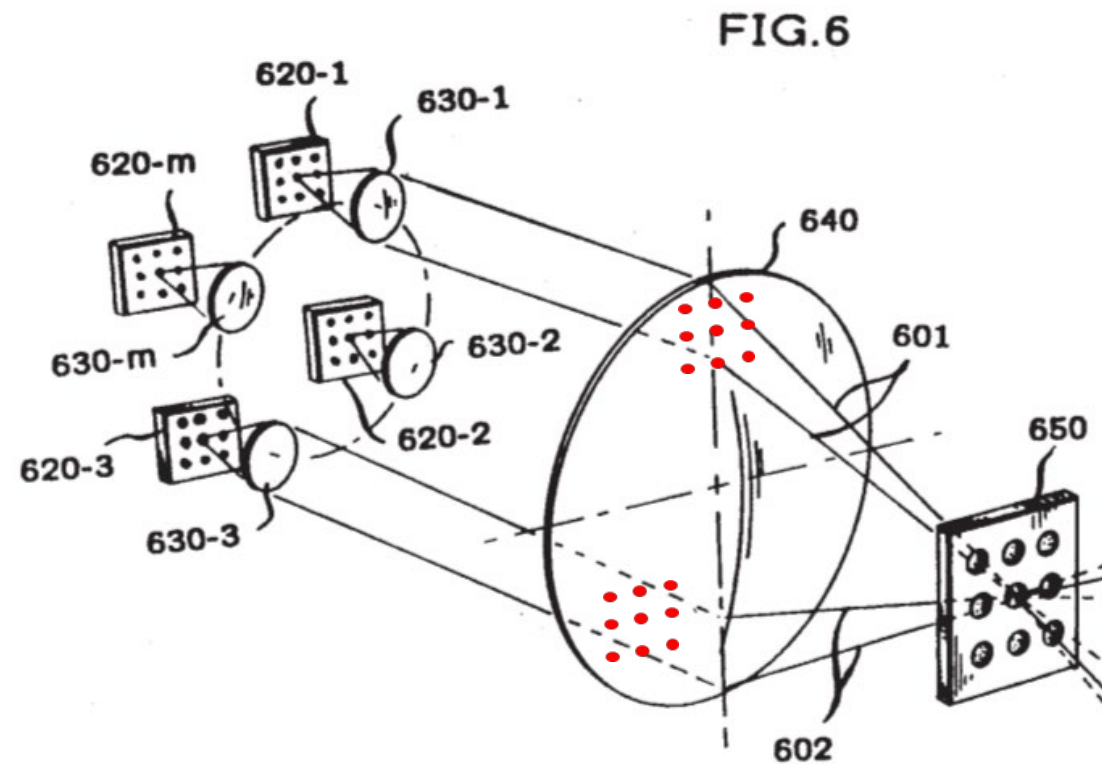


Source: EX1005, Fig. 6

LEMOFF + LAMARCHE DO NOT RESULT IN SEPARATE RADIAL SECTORS OF IMAGING LENS



LAMARCHE'S PUPIL LENS DOES NOT FOCUS LIGHT ONTO A SINGLE SPOT



Source: EX1005, Fig. 6, Fig. 8; Paper 18 pp. 64-66

COMBINING LEMOFF AND LAMARCHE (EX1005) DOES NOT RENDER THE CLAIMS OBVIOUS

#	Claim Language (EX1001 Col. 5:23-40; Paper 18 pp. 16-31)
[1.0]	An ~~optical combiner~~
[1.1]	usable in data communication systems for multiplexing the outputs of a plurality of n lasers wherein each of said n outputs has a different output wavelength,
[1.2]	for transmission into and through a ~~stopped single optical fiber~~ , comprising:
[1.3]	~~a plurality of n collimating lenses,~~
[1.4]	~~said lenses being spaced apart and positioned to receive and collimate the output of said n laser output beams~~ , said n laser output beams have n different output wavelengths, and
[1.5]	focusing means ~~for focusing said n collimated output beams onto a single spot~~ at said stopped single optical fiber,
[1.6]	said focusing means having n separate radial sectors on its surface, and each of said n ~~collimated beams~~ passes through a separate one of said n sectors of said focusing means whereby said n output beams having n different wavelengths are coupled into said single fiber.
[2]	The optical combiner of claim 1 wherein n=4 and wherein said four lasers and ~~four collimating lenses~~ are each formed in a two-dimensional, two by two array, wherein said focusing means is a single focusing lens, and wherein each radial sector is a pie-shaped quadrant.

GROUND 5: BHANDARKAR

BHANDARKAR IS NOT PRIOR ART BECAUSE THE '416 PATENT'S INVENTORS SWORE BEHIND IT

July 17, 2023

Sept. 29, 2003

Feb. 4, 2004

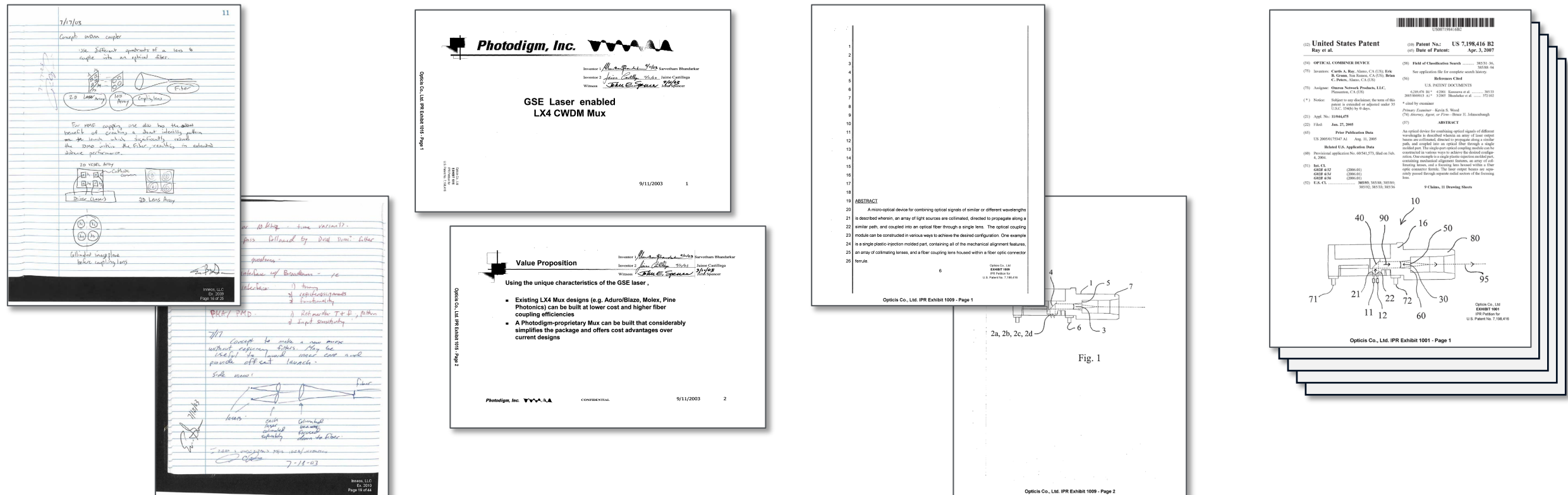
Jan. 27, 2005

'416 Patent Conception

Bhandarkar Provisional

'416 Patent Provisional

'416 Patent Utility Application



SAME ISSUE WAS PREVIOUSLY DECIDED BY EXAMINER

Response to Amendment

2. The Declarations filed on 5 December 2006 under 37 CFR 1.131 is sufficient to overcome the Bhandarkar et al reference (U.S. Patent Application Publication 2005/0069013).



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of)
CURTIS A. RAY ET AL) Art Unit : 2874
Serial No. 11/044,475) Examiner : Wood, Kevin S.
Filed: January 27, 2005)
For: OPTICAL COMBINER DEVICE)

Mail Stop Amendment (FEE)
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

SUPPLEMENTAL
DECLARATION OF CURTIS A. RAY



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of)
CURTIS A. RAY ET AL) Art Unit : 2874
Serial No. 11/044,475) Examiner : Wood, Kevin S.
Filed: January 27, 2005)
For: OPTICAL COMBINER DEVICE)

Mail Stop Amendment (FEE)
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION OF BRIAN C. PETERS



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of)
CURTIS A. RAY ET AL) Art Unit : 2874
Serial No. 11/044,475) Examiner : Wood, Kevin S.
Filed: January 27, 2005)
For: OPTICAL COMBINER DEVICE)

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

SUPPLEMENTAL
DECLARATION OF ERIC B. GRANN, Ph. D

EXAMINER'S DETERMINATION WAS LEGALLY CORRECT

- Legal correctness has been reinforced by subsequent Federal Circuit opinions
 - “diligence need not be perfectly continuous—only *reasonably* continuous.”
 - “periods of inactivity within the critical period do not automatically vanquish a patent owner’s claim of reasonable diligence.”
 - The point is not to “scour” the record for gaps in evidence of activity, but rather to determine whether, “in light of the evidence as a whole, the invention was not abandoned or unreasonably delayed.”

Perfect Surgical Techniques, Inc. v. Olympus America, Inc., 841 F.3d 1004 (Fed. Cir. 2016), *Arctic Cat v. GEP Power Products, Inc.*, 919 F.3d 1320 (Fed. Cir. 2019)

INVENTOR NOTEBOOKS ESTABLISH CONCEPTION

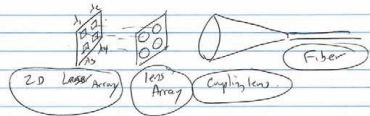
Non-inventor Corroboration Not Required

7/17/03

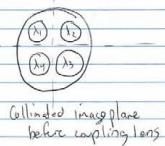
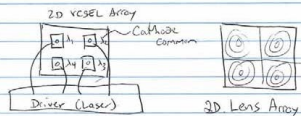
7/17/03

Concept: WDM coupler

Use different quadrants of a lens to couple into an optical fiber.



For MMF coupling one also has the added benefit of creating a donut intensity pattern in the lens which significantly reduces the DMD within the fiber, resulting in extended distance performance.



11

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Ex. 2009
Page 16 of 25

7-18-03

16

(1 kHz) or 10 kHz - time variant?

low pass followed by Dual Drive Filter

Rehner questions -

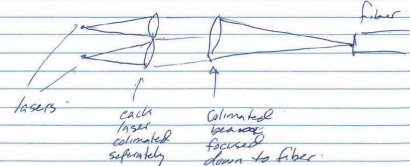
XUAI interface of Broadband - ie

MDIO interface: 1) timing
2) register assignments
3) functionality

QNA/ PMD: 1) Retransmitter T+F; pattern
2) input sensitivity

7/17 Concept to make a new mouse without requiring filters. May be useful to launch laser core and provide offset launch.

Side view:



2009 is UNDERSTANDING THE 100% INVENTION

7-18-03

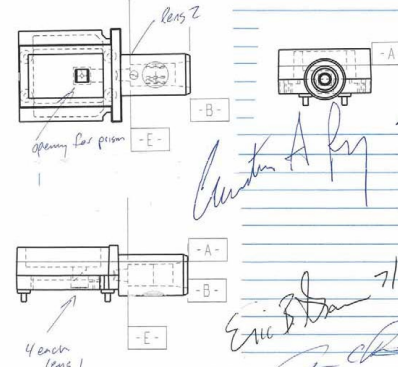
Inneos, LLC
Ex. 2010
Page 19 of 44

7/18/03

17

Any offset in lasers will be translated into offset on fiber and will have angular content as well. Both should help improve bandwidth of fiber.

4/17/03 Could also be used for single mode fiber without offset



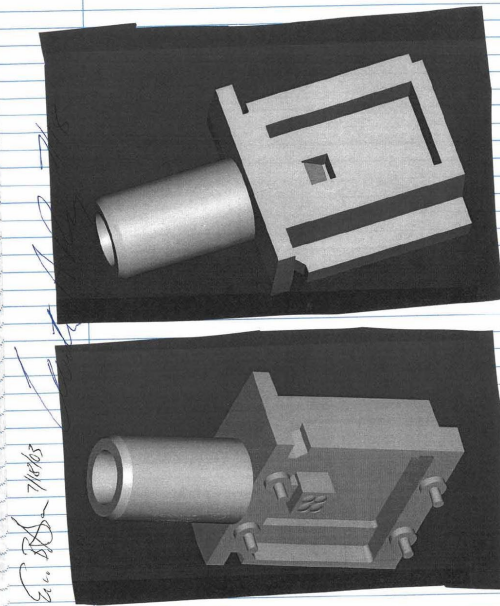
7/18

7/18/03

Inneos, LLC
Ex. 2010
Page 20 of 44

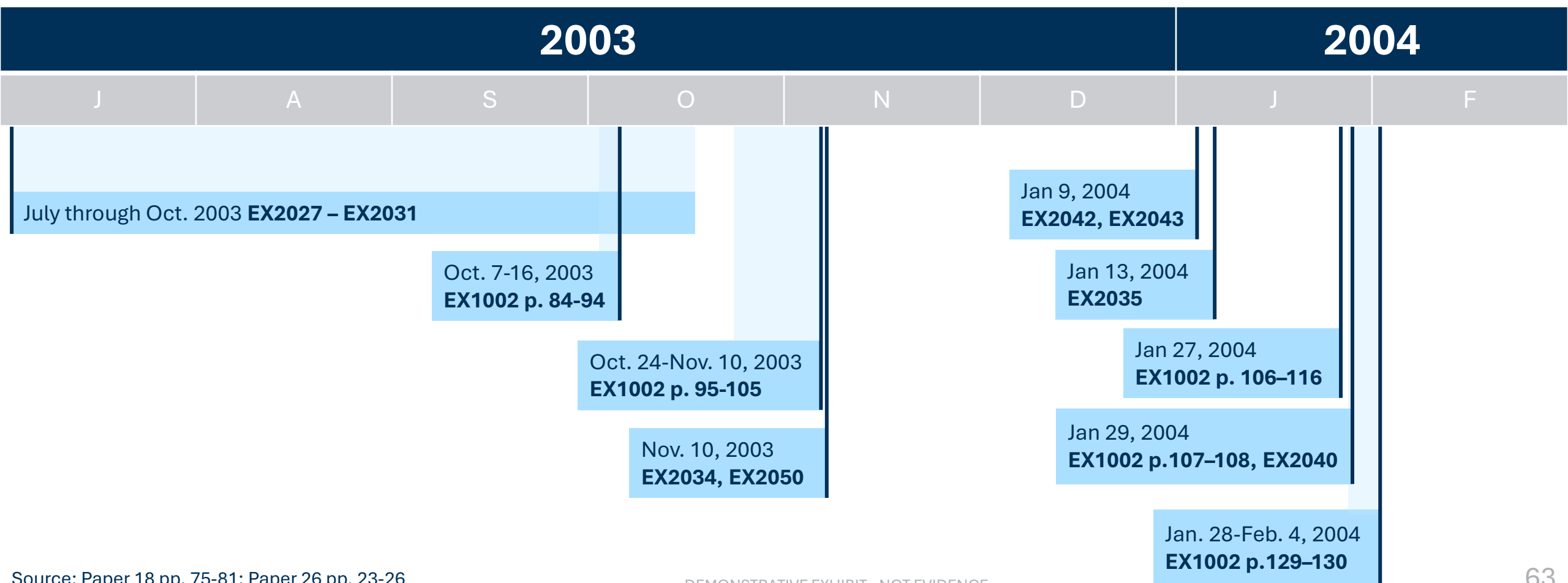
7-18-03

18

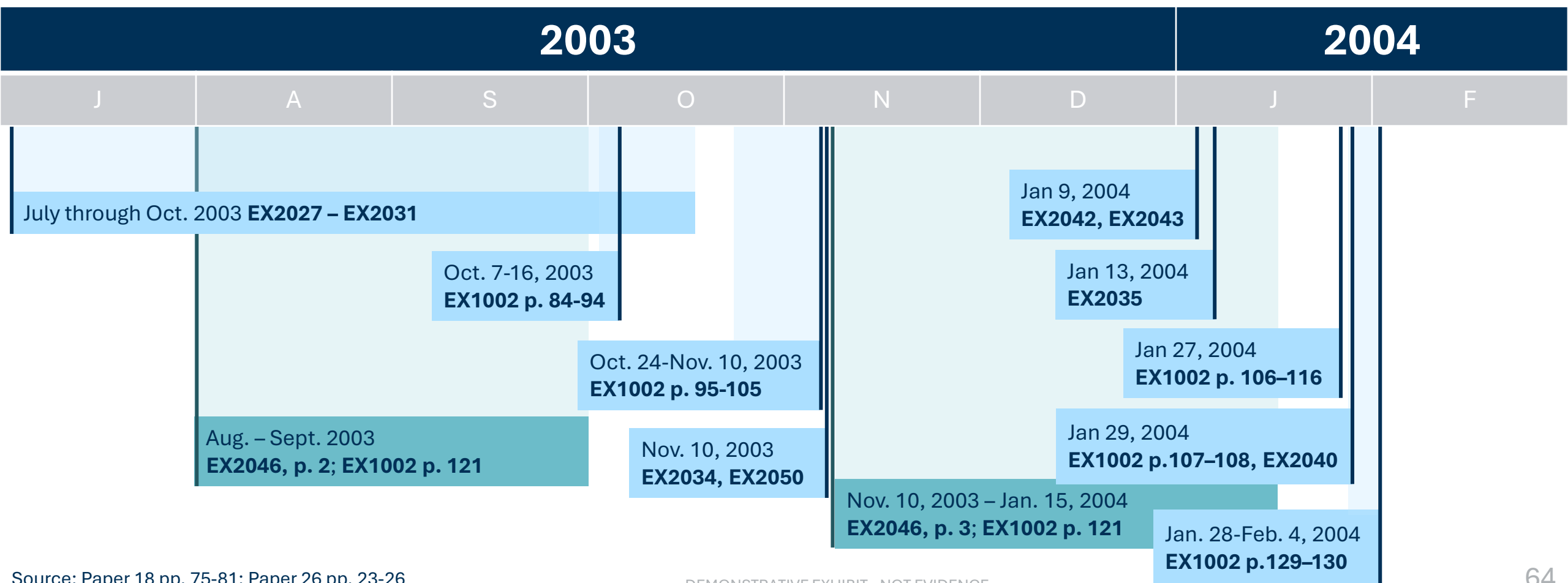


Inneos, LLC
Ex. 2010
Page 21 of 44

REASONABLE DILIGENCE THROUGH ENTIRE PERIOD



REASONABLE DILIGENCE THROUGH ENTIRE PERIOD



REASONABLE DILIGENCE THROUGH ENTIRE PERIOD

Source: Paper 18 pp. 75-81; Paper 26 pp. 23-26

November 22–30, 2003
Thanksgiving week

December 20, 2003 –
January 2, 2004
Christmas week

2003

2004

A

S

O

N

D

J

F

2003 EX2027 – EX2031

Oct. 7-16, 2003
EX1002 p. 84-94

Oct. 24-Nov. 10, 2003
EX1002 p. 95-105

Nov. 10, 2003
EX2034, EX2050

Aug. – Sept. 2003
EX2046, p. 2; EX1002 p. 121

Jan 9, 2004
EX2042, EX2043

Jan 13, 2004
EX2035

Jan 27, 2004
EX1002 p. 106–116

Jan 29, 2004
EX1002 p.107–108, EX2040

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

REASONABLE DILIGENCE THROUGH ENTIRE PERIOD

“periods of inactivity within the critical period do not automatically
vanquish a patent owner’s claim of reasonable diligence.”

Perfect Surgical Techniques, Inc. v. Olympus America, Inc., 841 F.3d 1004, 1009 (Fed. Cir. 2016)

November 22–30, 2003
Thanksgiving week

December 20, 2003 –
January 2, 2004
Christmas week

