

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

BOE Technology Group Co., Ltd.

(Petitioner)

v.

Optronic Sciences LLC

(Patent Owner)

Inter Partes Review

No. IPR2024-01133 | U.S. Patent No. 9,263,509

Petitioner's Demonstratives

Claim Construction

PO's sole arguments of validity for claims 1-5, 9, 12-13 are based on its overly narrow claim constructions for "auxiliary" and "electrode"

Construction of “auxiliary” electrode Limitation (Claims 1-2, 5-6, 10-11, 13)

“auxiliary” [electrode]

Patent Owner’s Proposed Construction	Petitioner’s Proposed Construction
Plain and ordinary meaning: [electrode] “which does not include primary and essential” POR at 25	“supplemental [electrode]” or “supplemental [electrode] to reduce the total resistance of the pixel structure” Pet., 5-8

“auxiliary” electrode = “supplemental” electrode

- Claims do not recite what “auxiliary electrode” is “auxiliary” to
 - No function or characteristic recited in claims
- Plain and ordinary meaning of “auxiliary” is “supplemental”
 - Each definition of “auxiliary anode,” “auxiliary channel,” “auxiliary circuit,” “auxiliary contacts,” “auxiliary device,” “auxiliary equipment,” “auxiliary function,” “auxiliary power,” “auxiliary relay” includes **“supplementary” or “supplemental”**

Pet. at 6; Wiley Electrical and Electronics Engineering Dictionary, EX1013, p. 51

“auxiliary” electrode = “supplemental” electrode

- PO conceded in district court case Petitioner’s construction is correct:

There is no dispute that the plain meaning of “auxiliary” is “supplemental.”

Reply at 8; Op. Br. at 22

- District Court’s preliminary and final construction consistent with Petitioner’s

M	“auxiliary electrode” (’509 Patent, Claims 1, 5, 10)	“electrode that works in unison with another electrode”
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*Reply at 16; EX1021, p. 3, July 23, 2025;
EX2030, p. 32-35*

“auxiliary” ≠ “which does not include primary and essential”

✗ No support for PO’s negative limitation

- Neither “primary” or “essential” found anywhere in 509 patent

Reply at 9

✗ PO relies on function of reducing total resistance to enhance function/characteristic of first electrode layer – by parallel connection.

- Specification twice disclaims the invention is limited to this function
Reply at 9; EX1001 6:4-10, 7:52-57
- PO’s expert admitted there is nothing in claim 1 that requires the auxiliary electrode to reduce resistance or a parallel connection. *Reply at 9; EX1016, 45:15-18, 53:19-21*
- PO’s construction does not mention the first electrode layer or any function

“auxiliary” ≠ “which does not include primary and essential”

✗ PO’s construction is indefinite

- Nothing in 509 patent tells a POSITA what functionalities/characteristics rise to the level of being primary/essential Reply at 10

✗ PO argues auxiliary electrode “*is not simply an additional electrode*” POR at 23

- PO’s own dictionary definitions say the opposite

aux·ilia·ry (ôg zil’yə rē; -zil’ē ə rē, -ē er’ē; often, -zil’ə rē) *adj.* [*auxiliaris*, helpful < *auxilium*, aid < pp. of *augere*, to increase: see WAX²] **1** giving help or aid; assisting or supporting **2** acting in a subsidiary, or subordinate, capacity **3** additional; supplementary; reserve **4** having an engine that can be used for supplementary

Reply at 10; EX2015, p. 94

sup·ple·men·tary (sup’lə men’tər ē) *adj.* supplying what is lacking; additional —*n., pl. -ries* a supplementary person or thing

Reply at 10; EX1018, p. 1345

Alternative: “auxiliary” electrode = “supplemental [electrode] to reduce the total resistance of the pixel structure”

- Petitioner anticipated PO’s litigation driven strategy and provided an alternate construction
 - Grounds 6-10
 - POR and Sur-Reply do not rebut invalidity based on this alternate construction

Reply, p. 11

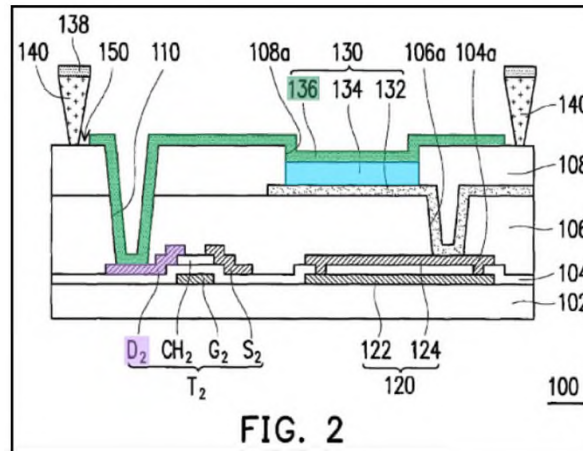
Construction of “electrode” Limitation (Claims 1-11, 13)

“electrode”

Patent Owner’s Proposed Construction	Petitioner’s Proposed Construction
Plain and ordinary meaning: “end structure of a conductor for making electrical contact” POR at 25	Plain and ordinary meaning: “a conductor” Reply, p. 15

“electrode” = “a conductor”

- 509 patent uses term “electrode” to refer to an entire conductor
 - Entirety of **layer 136** is referred to as “second electrode layer”
 - No reference to any end structures making electrical contact with **drain D2** or **light emitting layer 134**



Reply, p. 12; EX1001, 5:25-36; Fig. 2

- Same is true for first electrode layer 132 (making contact with layers 134 and 124).

Reply, p. 13; EX1001, 4:35-42; Fig. 2

“electrode” = “a conductor”

- PO’s extrinsic evidence supports Petitioner’s plain and ordinary meaning

electrode A conductor which serves to deliver, receive, collect, emit, deflect, or control electric charge carriers. An

Reply, p. 15; EX2012, p. 237

“electrode” ≠ “end structure of a conductor for making electrical contact”

✗ PO: “is used as an end point, but not the road to get to an end point”

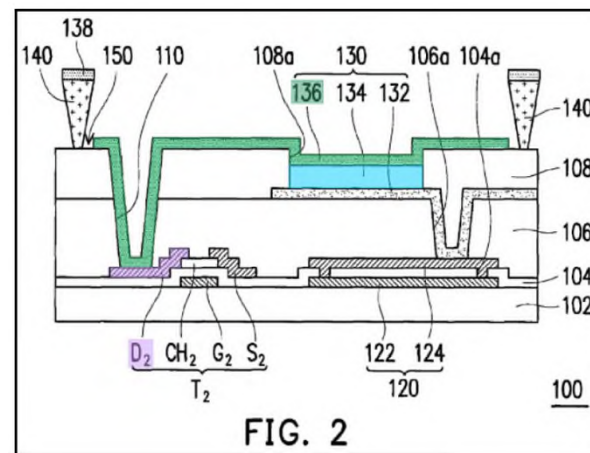
POR, p. 26

- PO fails to identify a single conductor of the 509 patent for which any of the electrodes or electrode layers are an end structure *Reply, p. 14*

✗ PO’s expert not credible

- Had “no opinion” on how many electrodes are shown as part of **layer 136** in Fig. 2.

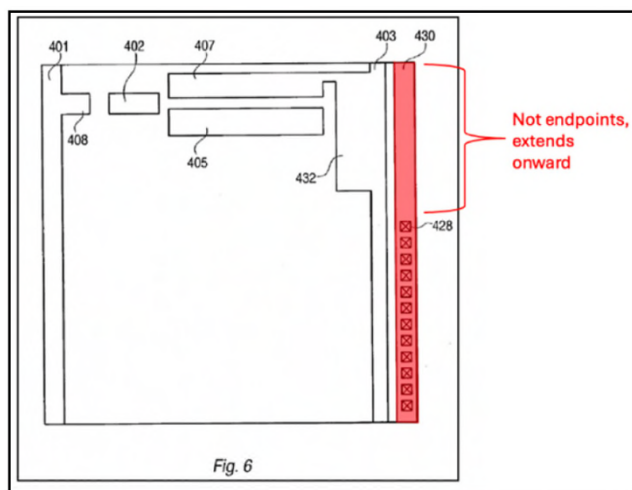
Reply, p. 14; EX1017, 127:19-128:12



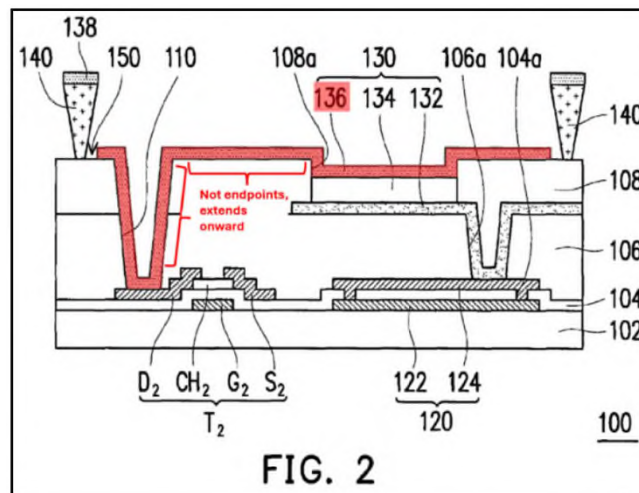
- Had “no opinion” on whether any of the electrode terms of claims 1 and 10 meet his definition of electrode.
 - Admitted he never even considered it! *Reply, p. 15; EX1017, 124:17-125:22; 126:7-11; 127:6-10; 128:13-129:18*

“electrode” ≠ “end structure of a conductor for making electrical contact”

✗ PO arguments under Ground 1 directly contradict its construction: second electrode layer 136 would not be an electrode



PO arguments on Weaver



PO arguments applied to Fig. 2

Reply, pp. 13-14

✗ PO dropped its construction in its opening Markman brief in the district court case *Reply, p. 12; EX1015, p. 22*

Ground 1

Claims 1-5, 9, 12-13 anticipated by Weaver

Ground 1: Claims 1-5, 9, 12-13 anticipated by Weaver

- ✗ PO arguments under Ground 1 rest entirely on its erroneous constructions for “auxiliary” and “electrode”
 - No arguments of validity under the proper constructions of these terms Reply, pp. 15-16; POR 27-33; Pet. 11-29
 - PO’s expert admitted he did not apply Petitioner’s construction of “auxiliary.” Reply, p. 15; EX1017, 141:4-14
- ✓ Should the Board reject PO’s constructions of “auxiliary” and “electrode”, then it is undisputed that claims 1-5, 9, 12-13 are anticipated by Weaver.

Ground 1: Claims 1-5, 9, 12-13 anticipated by Weaver

1. A pixel structure, comprising:
a **data line** and a **scan line**;
at least one active device electrically connected with the data line and the scan line, and each active device comprising a gate, a channel layer, a source, and a drain;
a first auxiliary electrode electrically insulated from the active device; and
a light emitting device disposed above the first auxiliary electrode, wherein the light emitting device comprises:
a first electrode layer electrically connected with the first auxiliary electrode;
a light emitting layer disposed on the first electrode layer; and
a second electrode layer disposed on the light emitting layer, wherein the second electrode layer is electrically connected with the active device.

UNDISPUTED

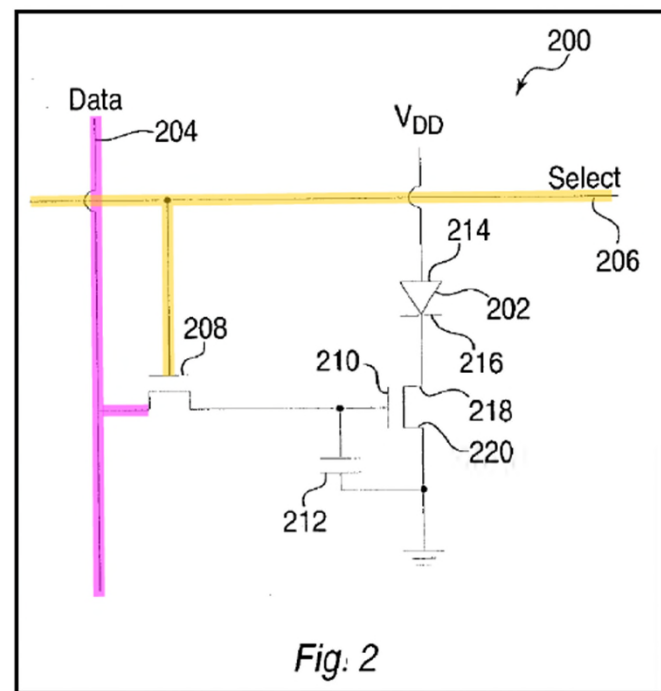


Fig. 2

Weaver

Pet., pp. 11-12

Ground 1: Claims 1-5, 9, 12-13 anticipated by Weaver

1. A pixel structure, comprising:
a data line and a scan line;
at least one **active device** electrically
connected with the data line and the scan
line, and each active device comprising a
gate, a channel layer, a source, and a drain;
a first auxiliary electrode electrically
insulated from the active device; and
a light emitting device disposed above the
first auxiliary electrode, wherein the light
emitting device comprises:
a first electrode layer electrically connected
with the first auxiliary electrode;
a light emitting layer disposed on the first
electrode layer; and
a second electrode layer disposed on the
light emitting layer, wherein the second
electrode layer is electrically connected
with the active device.

UNDISPUTED

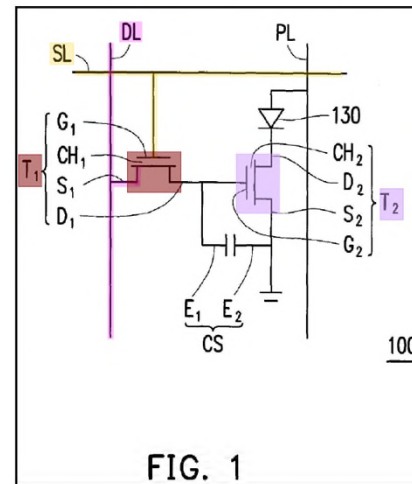


FIG. 1

509 Patent

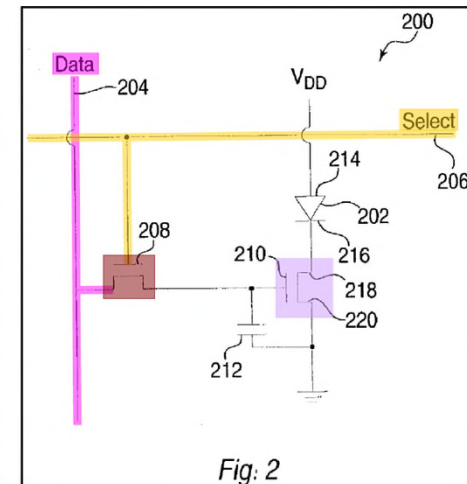


Fig: 2

Weaver

- Weaver discloses transistors 208/308 and 210/310/410 having the same electrical connections as transistors T1 and T2 of the 509 patent.

Pet., pp. 12-16

Ground 1: Claims 1-5, 9, 12-13 anticipated by Weaver

1. A pixel structure, comprising:
a data line and a scan line;
at least one active device electrically connected with the data line and the scan line, and each active device comprising a gate, a channel layer, a source, and a drain;
a first auxiliary electrode electrically insulated from the active device; and
a light emitting device disposed above the first auxiliary electrode, wherein the light emitting device comprises:
a first electrode layer electrically connected with the first auxiliary electrode;
a light emitting layer disposed on the first electrode layer; and
a second electrode layer disposed on the light emitting layer, wherein the second electrode layer is electrically connected with the active device.

UNDISPUTED

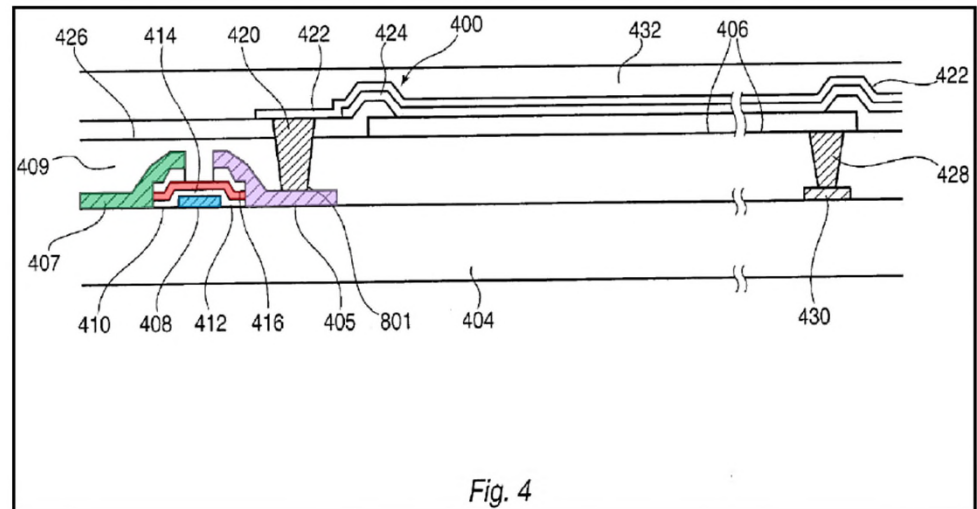


Fig. 4

Weaver

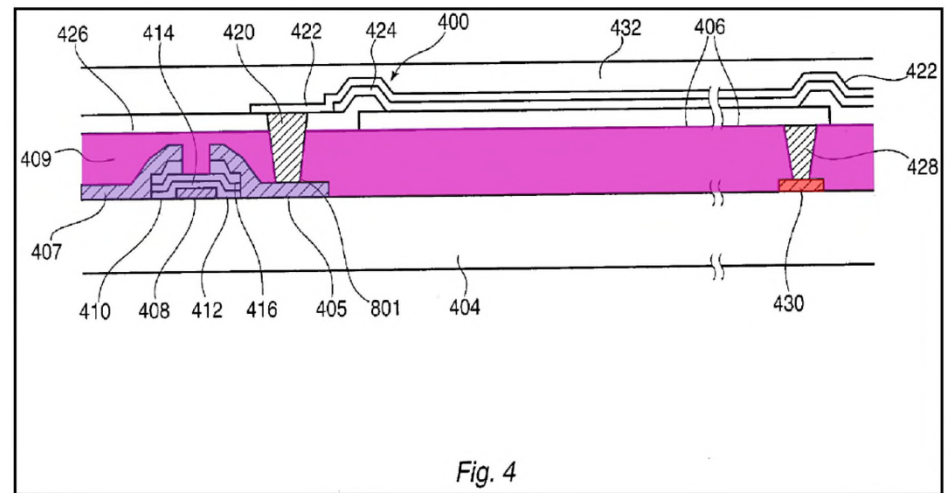
- Weaver discloses gate 408, an a-Si layer 414, source 220, 405, and drain 218, 407.

Pet., pp. 12-16

Ground 1: Claims 1-5, 9, 12-13 anticipated by Weaver

1. A pixel structure, comprising:
a data line and a scan line;
at least one active device electrically connected with the data line and the scan line, and each active device comprising a gate, a channel layer, a source, and a drain;
a **first auxiliary electrode electrically insulated from the active device**; and
a light emitting device disposed above the first auxiliary electrode, wherein the light emitting device comprises:
a first electrode layer electrically connected with the first auxiliary electrode;
a light emitting layer disposed on the first electrode layer; and
a second electrode layer disposed on the light emitting layer, wherein the second electrode layer is electrically connected with the active device.

UNDISPUTED (under proper construction of auxiliary & electrode)



Weaver

- Weaver discloses **bus line 430** electrically insulated from **transistor 405** by **passivation layer 409**.

Pet., pp. 16-19

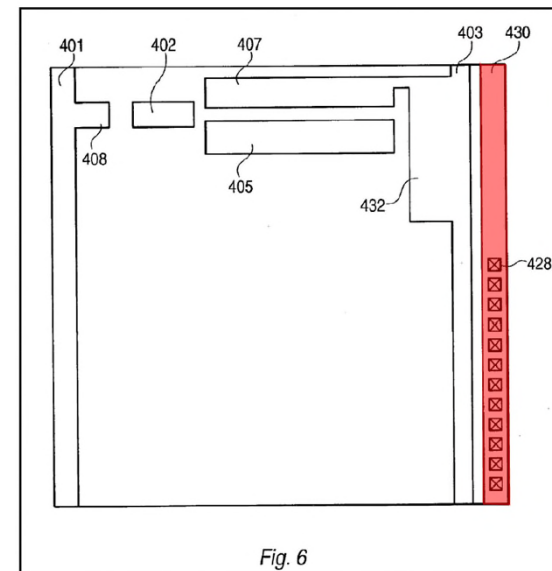
Ground 1: Claims 1-5, 9, 12-13 anticipated by Weaver

1. A pixel structure, comprising:
a data line and a scan line;
at least one active device electrically connected with the data line and the scan line, and each active device comprising a gate, a channel layer, a source, and a drain;
a **first auxiliary electrode electrically insulated** from the **active device**; and
a light emitting device disposed above the first auxiliary electrode, wherein the light emitting device comprises:
a first electrode layer electrically connected with the first auxiliary electrode;
a light emitting layer disposed on the first electrode layer; and
a second electrode layer disposed on the light emitting layer, wherein the second electrode layer is electrically connected with the active device.

UNDISPUTED

(under proper construction of auxiliary & electrode)

- **Bus line 430** is an electrode supplemental to other electrodes in the structure (**broad construction**)
- **Bus line 430** is electrically connected to anode 406 by multiple vias 428 (parallel connection), so **bus line 430** is a supplemental electrode that reduces the total resistance of the pixel structure (**narrow construction**)



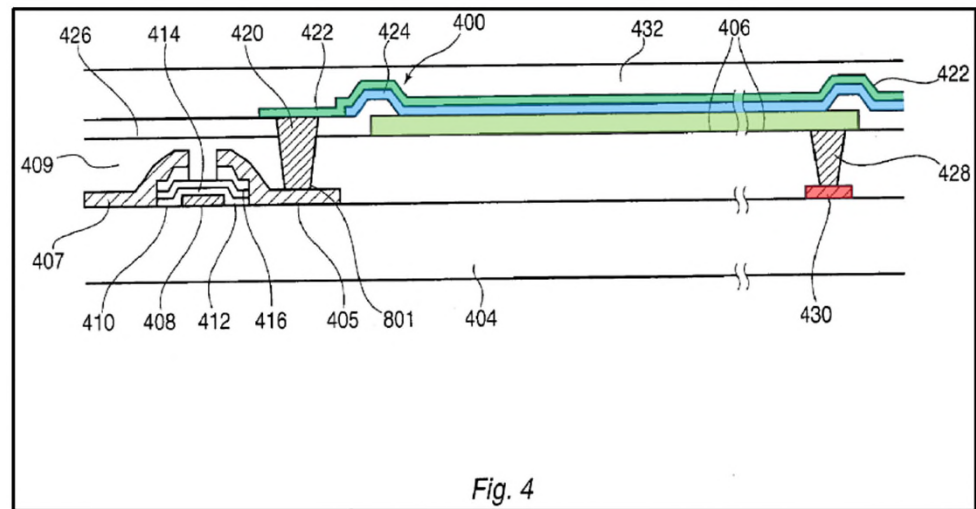
Pet., pp. 16-19

Ground 1: Claims 1-5, 9, 12-13 anticipated by Weaver

1. A pixel structure, comprising:
a data line and a scan line;
at least one active device electrically connected with the data line and the scan line, and each active device comprising a gate, a channel layer, a source, and a drain;
a first auxiliary electrode electrically insulated from the active device; and
a light emitting device disposed above the first auxiliary electrode, wherein the light emitting device comprises:
a **first electrode layer** electrically connected with the first auxiliary electrode;
a **light emitting layer** disposed on the first electrode layer; and
a **second electrode layer** disposed on the light emitting layer, wherein the second electrode layer is electrically connected with the active device.

UNDISPUTED

(under proper construction of auxiliary & electrode)



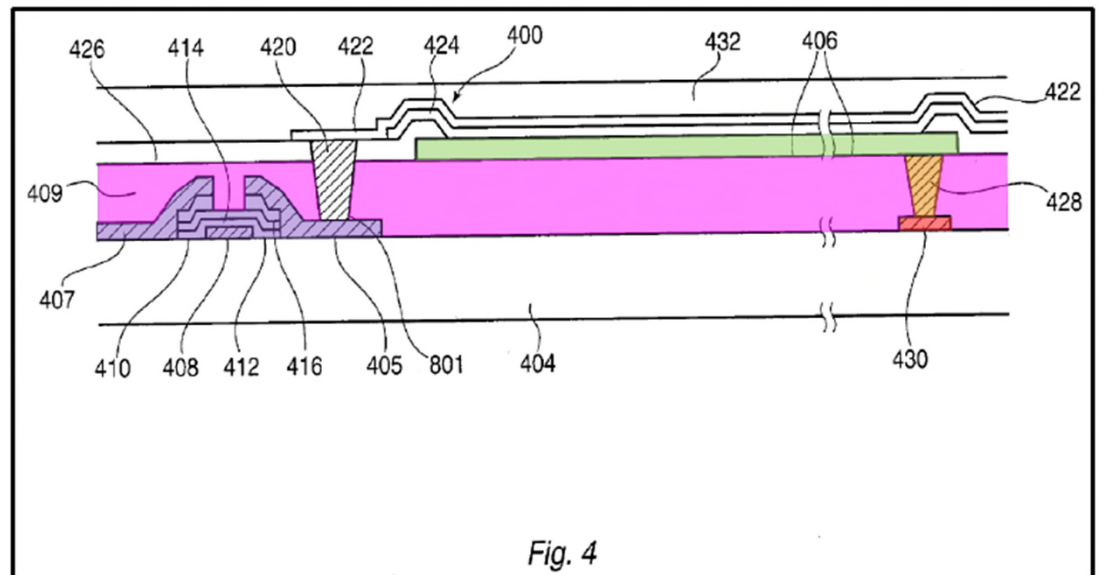
- Weaver discloses OLED 400 above **bus line 430** that includes **anode 406** (electrically connected to **bus line 430**), **organic layer 424**, and **cathode 422** (electrically connected to transistor 410).

Pet., pp. 19-22

Ground 1: Claims 1-5, 9, 12-13 anticipated by Weaver

2. The pixel structure according to claim 1, further comprising a **first insulating layer (409)** covering the **active device (410)** and the **first auxiliary electrode (430)**, and the **first electrode layer (406)** of the light emitting device being disposed on the **first insulating layer**, wherein the **first insulating layer** has a **first contact window opening (428)** that exposes the **first auxiliary electrode**, and the **first electrode layer** is electrically connected with the **first auxiliary electrode** via the **first contact window opening**.

UNDISPUTED (under proper construction of auxiliary & electrode)



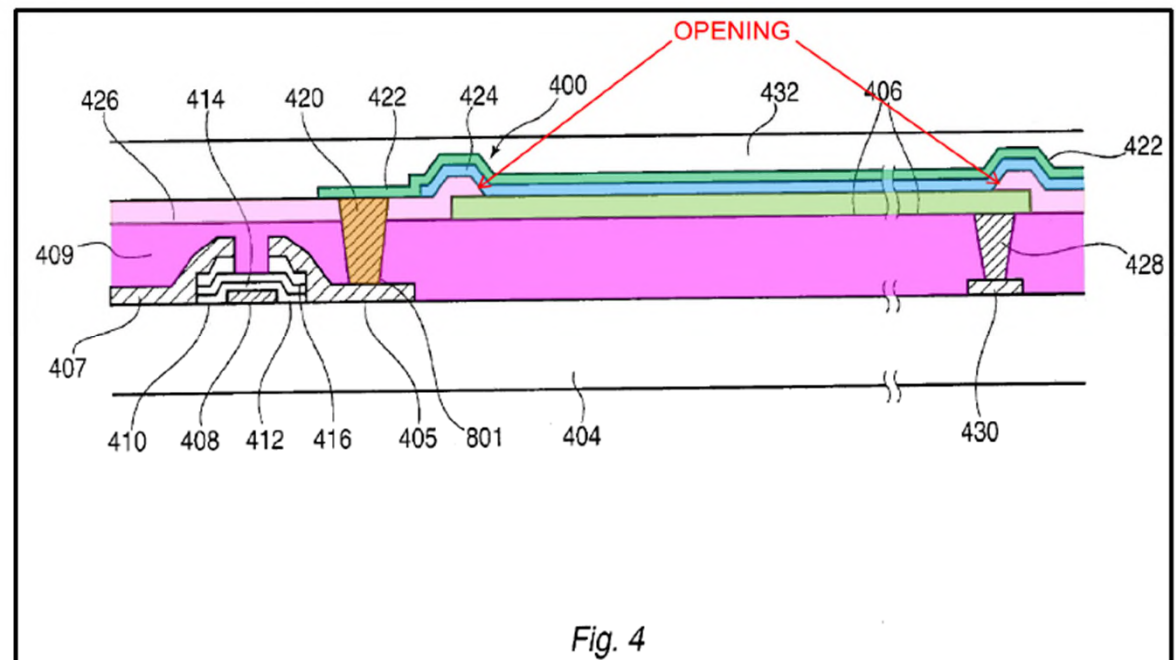
- POSITA would have understood that “the active device” refers to the “at least one active device” of claim 1.

Pet., pp. 22-23

Ground 1: Claims 1-5, 9, 12-13 anticipated by Weaver

3. The pixel structure according to claim 2, further comprising a **second insulating layer (426)** covering the **first insulating layer (409)** and the **first electrode layer (406)** of the light emitting device (**400**), and the **second electrode layer (422)** of the light emitting device being disposed on the **second insulating layer**, wherein the **second insulating layer** has an **opening (OPENING)** that exposes the **first electrode layer**, and the **light emitting layer (424)** of the light emitting device is disposed in the **opening**.

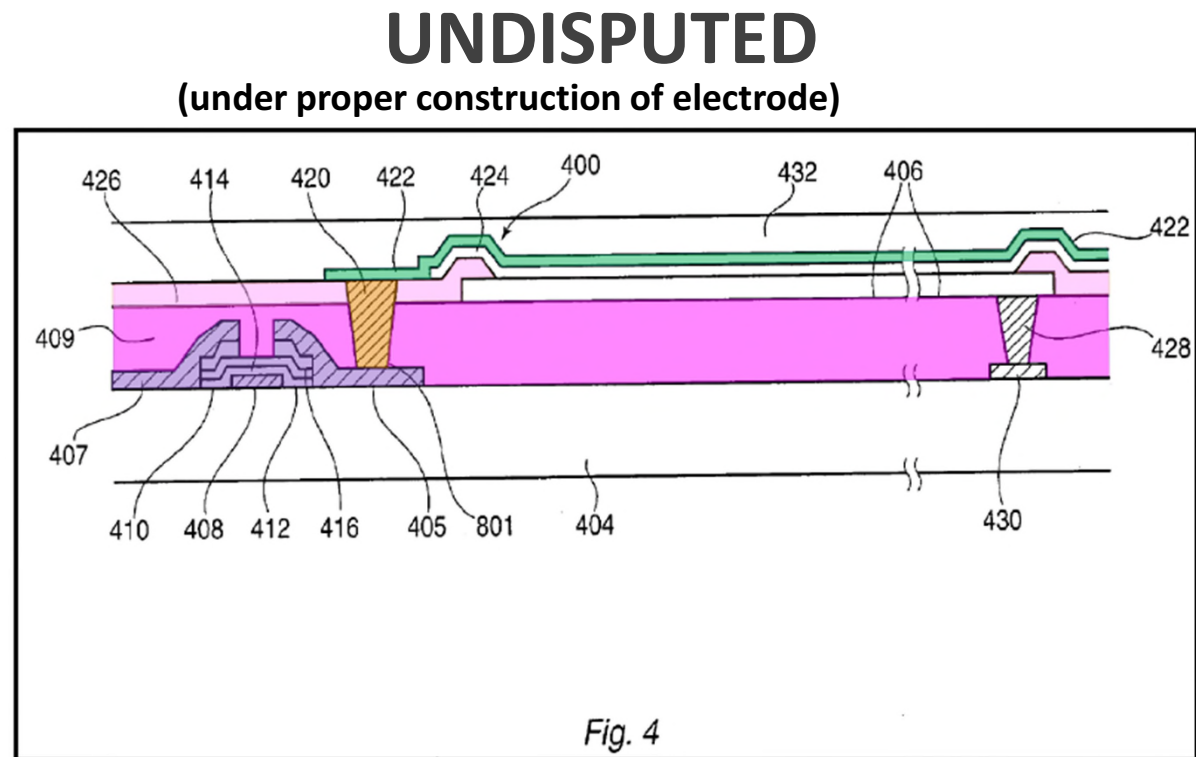
UNDISPUTED (under proper construction of electrode)



Pet., p. 24

Ground 1: Claims 1-5, 9, 12-13 anticipated by Weaver

4. The pixel structure according to claim 3, wherein the **first insulating layer (409)** and the **second insulating layer (426)** further comprise a **second contact window opening (420)** that exposes a portion of the **active device (405 of 410)**, and the **second electrode layer (422)** of the light emitting device is electrically connected with the **active device (410)** via the **second contact window opening**.



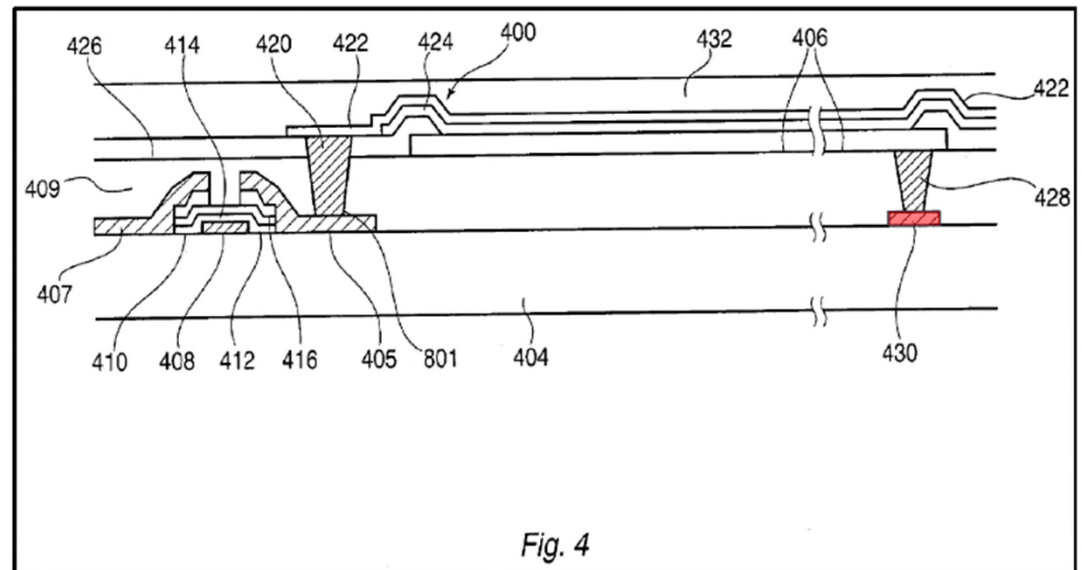
- POSITA would have understood that “the active device” refers to the “at least one active device” of claim 1.

Pet., pp. 25-26

Ground 1: Claims 1-5, 9, 12-13 anticipated by Weaver

5. The pixel structure according to claim 1, wherein the **first auxiliary electrode (430)** is a single electrode layer.

UNDISPUTED
(under proper construction of auxiliary & electrode)

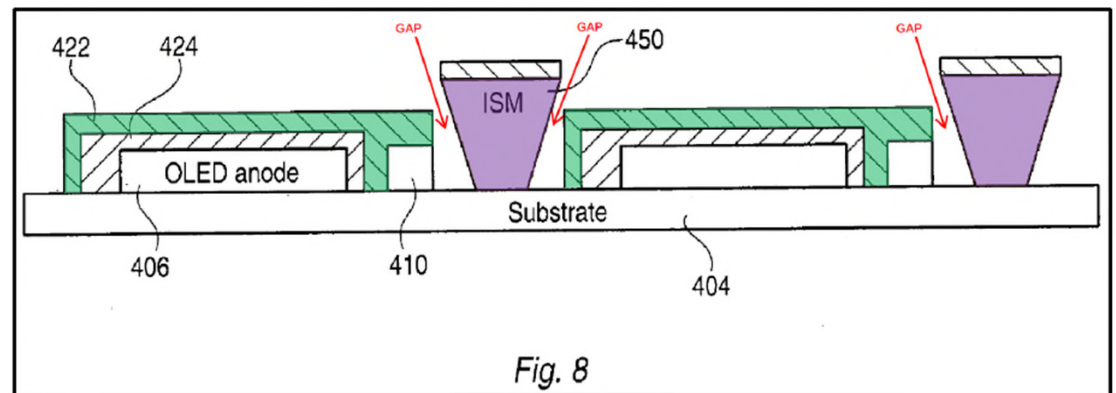


Pet., pp. 26-27

Ground 1: Claims 1-5, 9, 12-13 anticipated by Weaver

9. The pixel structure according to claim 1, further comprising an **isolating structure (ISM)** disposed around the **second electrode layer (422)** of the light emitting device, wherein a **gap (GAP)** exists between the **second electrode layer** and the **isolating structure**.

UNDISPUTED (under proper construction of electrode)



Pet., p. 27

12. The pixel structure according to claim 1, wherein the light emitting device is a top-emission organic electroluminescent device.

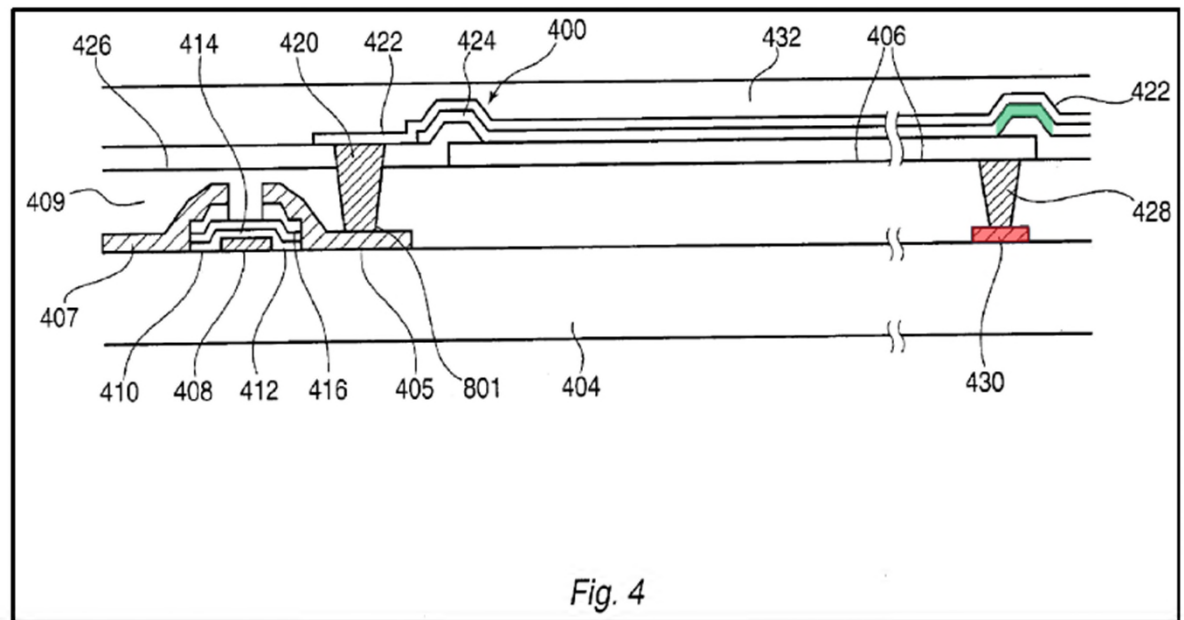
- Weaver discloses that cathode 422 may be sufficiently transparent to create a top emitting device.

Pet., p. 28; EX1004, [0029]

Ground 1: Claims 1-5, 9, 12-13 anticipated by Weaver

13. The pixel structure according to claim 1, wherein a **vertical projection** of the light emitting layer (**424**) of the light emitting device at least partially overlaps the **first auxiliary electrode (430)**.

UNDISPUTED
(under proper construction of auxiliary & electrode)



Pet., pp. 28-29

Ground 2

Claims 6-8 Obvious over Weaver & Lee053

Ground 2: Claims 6-8 Obvious over Weaver & Lee053

6. The pixel structure according to claim 1, wherein the **first auxiliary electrode** comprises:

- a **bottom electrode layer**; and
- a **top electrode layer (430)** electrically connected with the bottom electrode layer, wherein the **first electrode layer (406)** of the light emitting device is electrically connected with the **top electrode layer (430)** of the first auxiliary electrode.

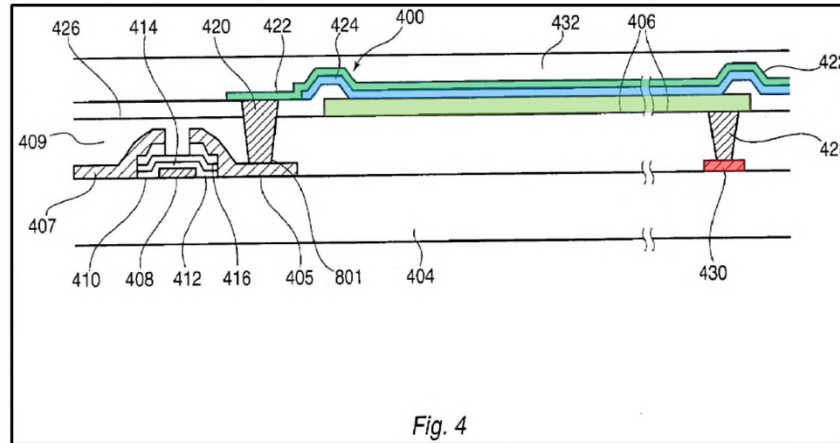
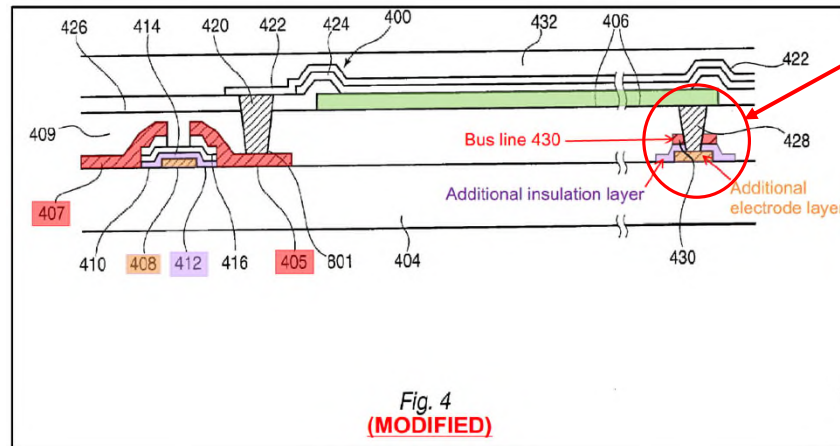
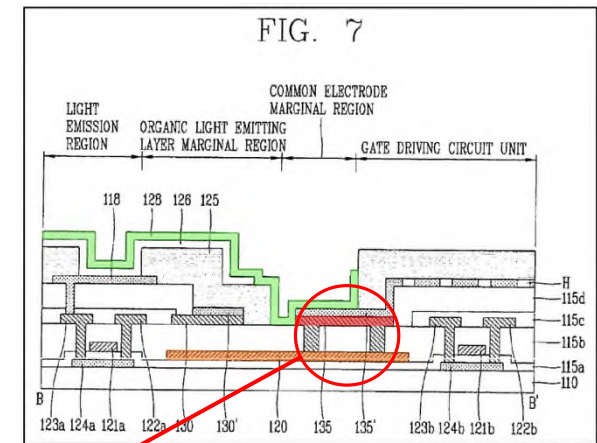


Fig. 4
Weaver



Modified Weaver



Lee053

- Lee053: dummy wiring 120 reduces wiring resistance and allows for reduced wiring widths. *EX1005, [0093], [0085]*
- POSITA would have been motivated to implement the solution of Lee053 in Weaver to lower resistance between anode and voltage source.

Pet., pp. 29-34

Ground 2: Claims 6-8 Obvious over Weaver & Lee053

7. The pixel structure according to claim 6, wherein the **bottom electrode layer** and the **gate (408)** of the active device (410) belong to the same layer.

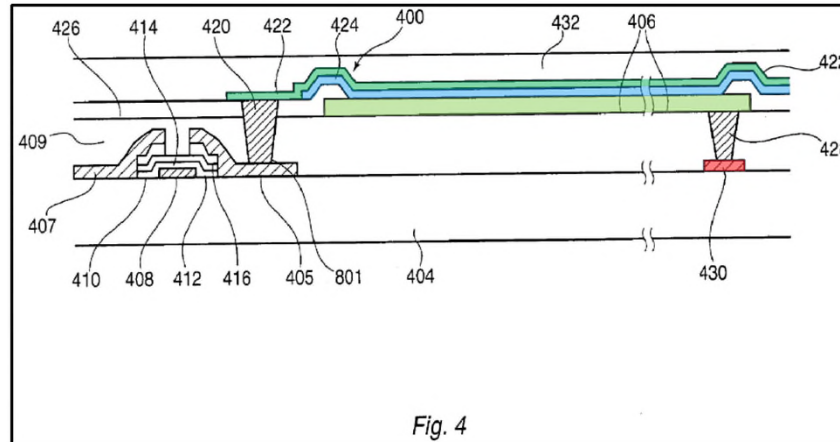
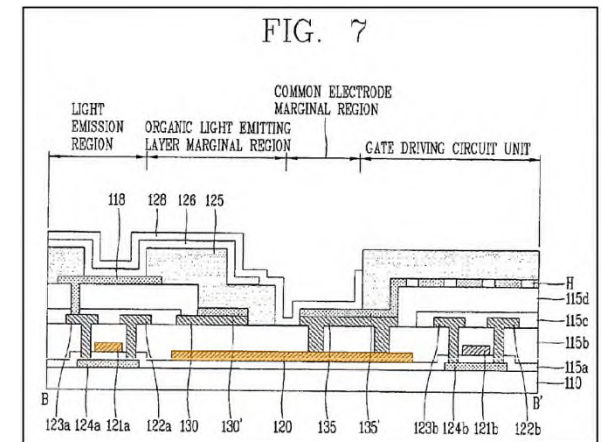
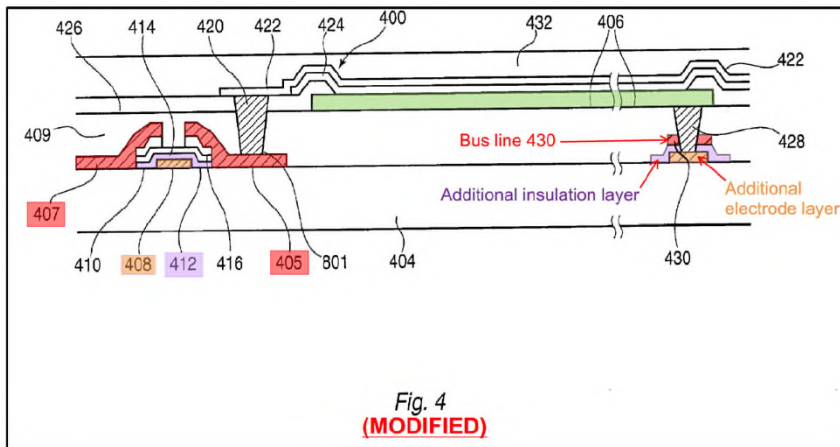


Fig. 4
Weaver



Lee053



Modified Weaver

- Lee053: discloses or renders obvious gate 121a and dummy wiring 120 belong to the same layer.
 - Both made of “gate wiring”, both formed on layer 115a
EX1005, [0071], [0073]
- POSITA would have been motivated to implement the solution of Lee053 in Weaver to simplify manufacturing steps and efficiently form the device.

Pet., pp. 35-38

Ground 2: Claims 6-8 Obvious over Weaver & Lee053

8. The pixel structure according to claim 6, wherein the **top electrode layer** and the **source** and the **drain** of the active device belong to the same layer.

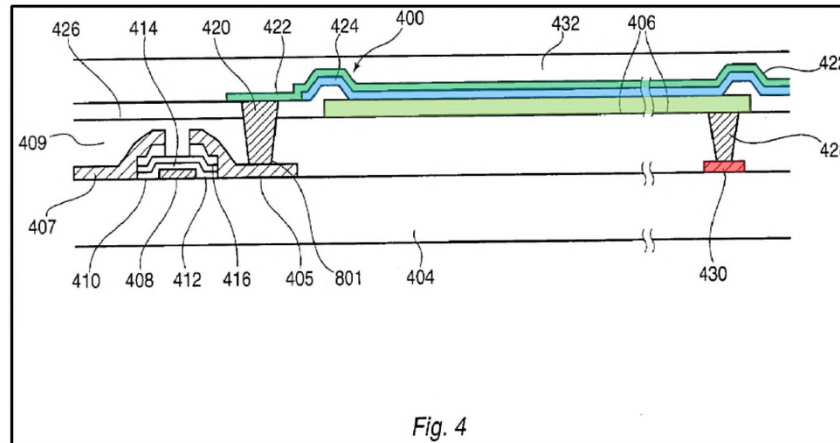
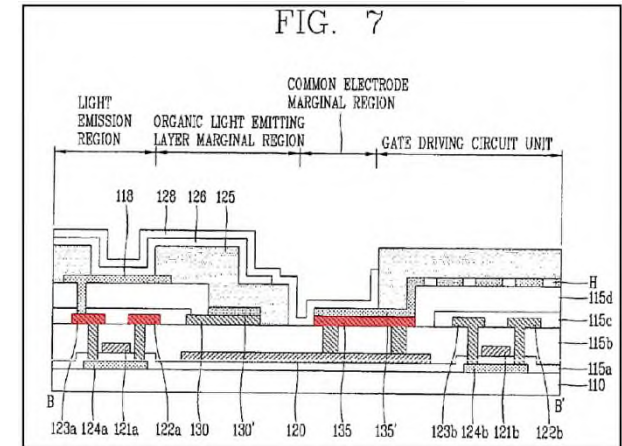


Fig. 4
Weaver



Lee053

- Lee053: discloses or renders obvious **source/drain electrodes 122a/123a** and **power wiring 135** belong to the same layer.
 - All three are part of “data wiring, and formed on layer 115b
EX1005, [0074], [0077]
- POSITA would have been motivated to implement the solution of Lee053 in Weaver to simplify manufacturing steps and reduce processing steps.

Pet., pp. 38-42

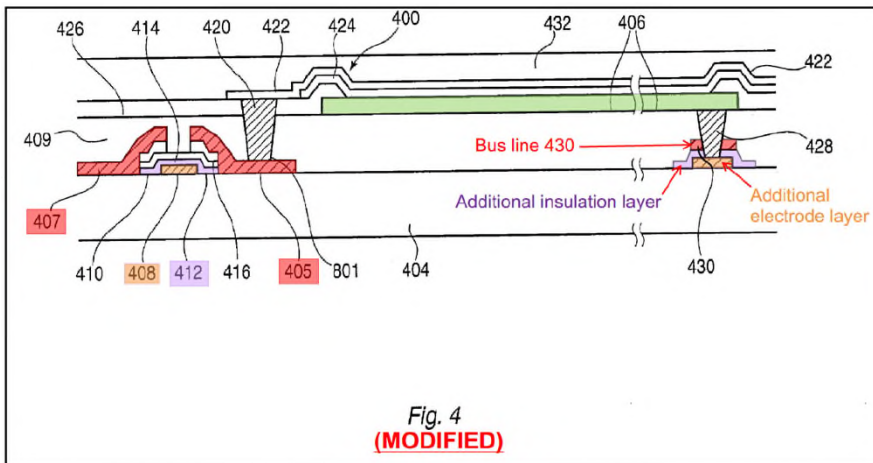


Fig. 4
(MODIFIED)
Modified Weaver

Ground 3

Claims 6-8 Obvious over Weaver & Song

Ground 3: Claims 6-8 Obvious over Weaver & Song

6. The pixel structure according to claim 1, wherein the **first auxiliary electrode** comprises:

- a **bottom electrode layer**; and
- a **top electrode layer (430)** electrically connected with the bottom electrode layer, wherein the **first electrode layer (406)** of the light emitting device is electrically connected with the **top electrode layer (430)** of the first auxiliary electrode.

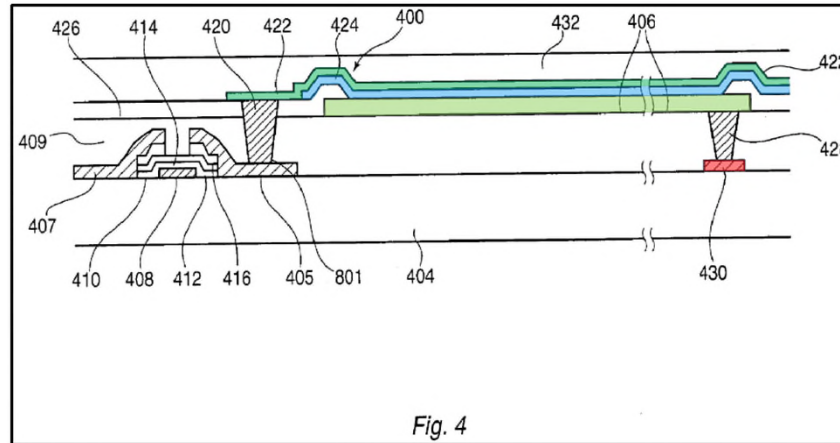
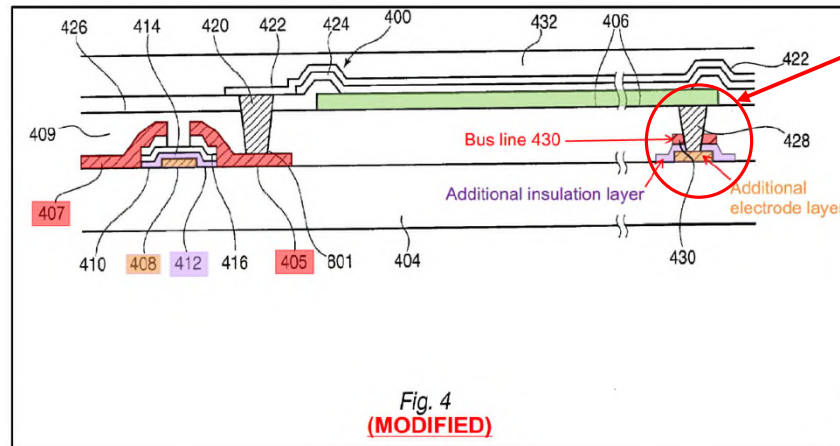
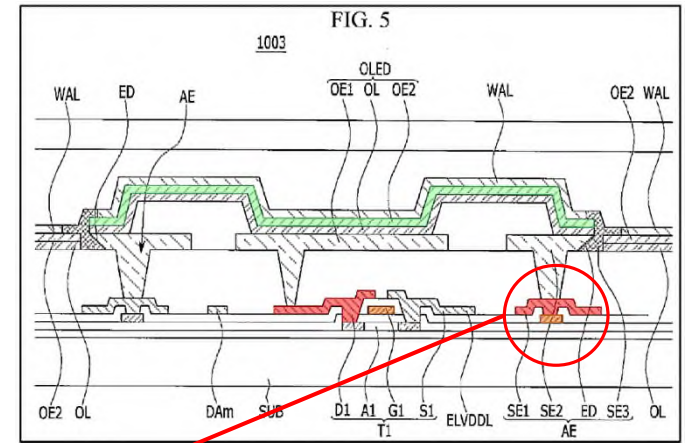


Fig. 4
Weaver



Modified Weaver



Song

- Song: auxiliary electrode AE includes **bottom electrode layer** under **first auxiliary electrode portion SE1**, to lower sheet resistance and voltage drop. *EX1006, [0098]*
- POSITA would have been motivated to implement the solution of Song in Weaver to lower resistance and voltage drop between anode and voltage source.

Pet., pp. 42-49

Ground 3: Claims 6-8 Obvious over Weaver & Song

7. The pixel structure according to claim 6, wherein the **bottom electrode layer** and the **gate (408)** of the active device (410) belong to the same layer.

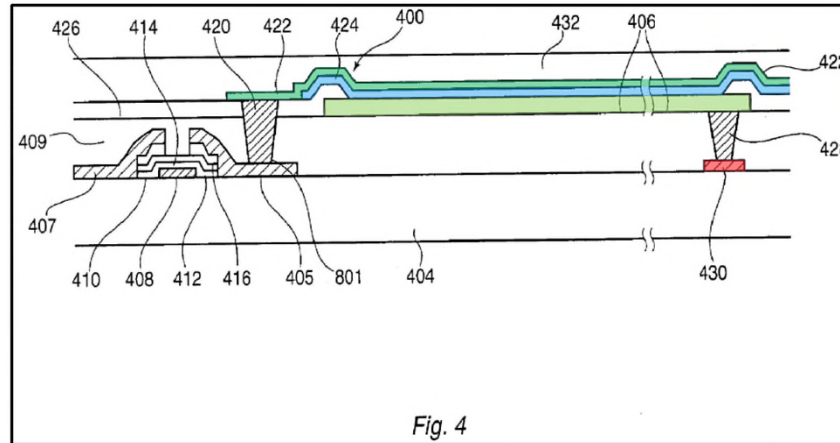
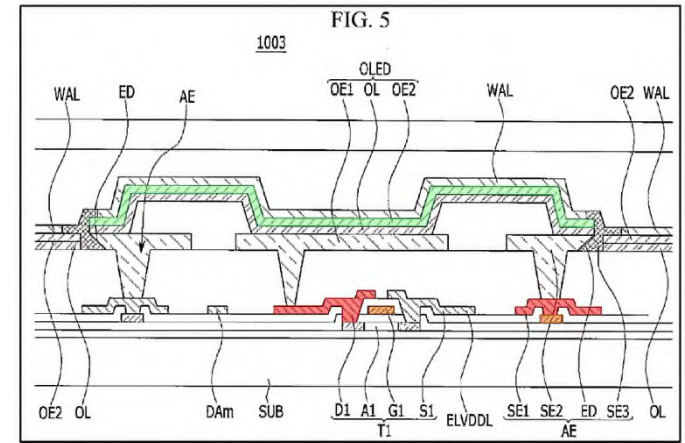


Fig. 4
Weaver



Song

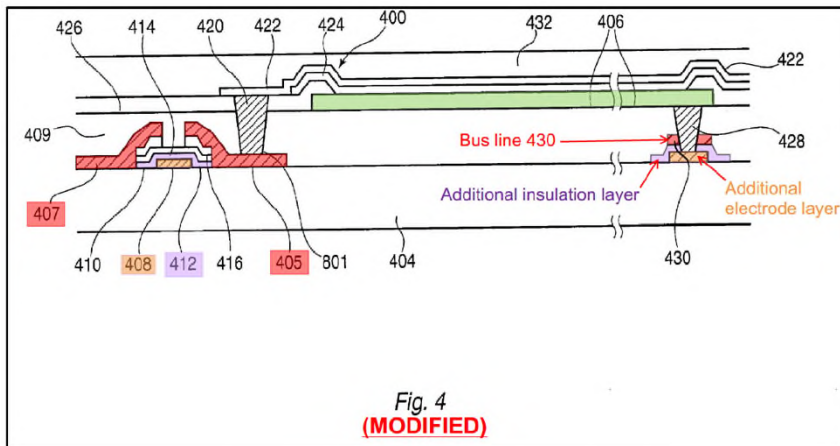


Fig. 4
(MODIFIED)
Modified Weaver

- Song: discloses **first gate electrode G1** and **bottom electrode layer** belong to the same sublayer. *Pet., pp. 44-45; EX1006, [0091]-[0091]*
- POSITA would have been motivated to implement the solution of Song in Weaver to simplify manufacturing steps and reduce the number of processing steps.

Pet., pp. 49-52

Ground 3: Claims 6-8 Obvious over Weaver & Song

8. The pixel structure according to claim 6, wherein the **top electrode layer** and the **source and the drain** of the active device belong to the same layer.

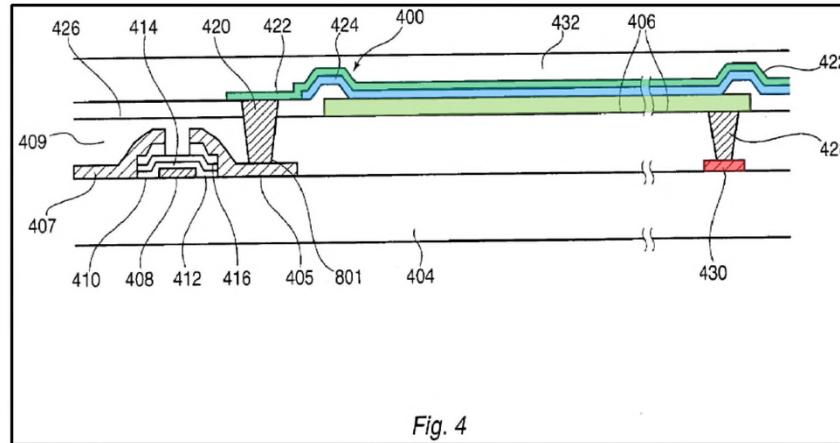
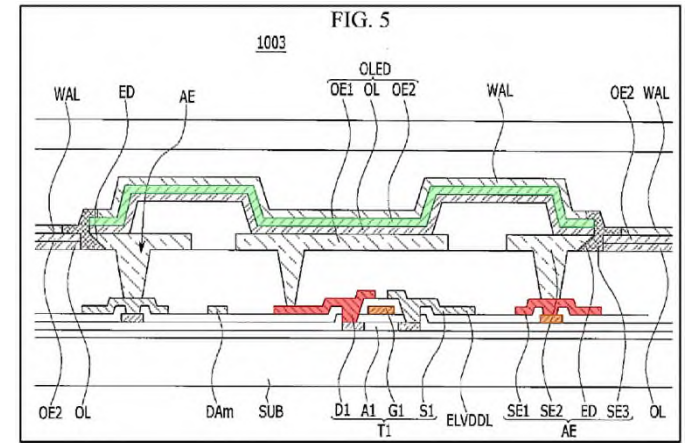
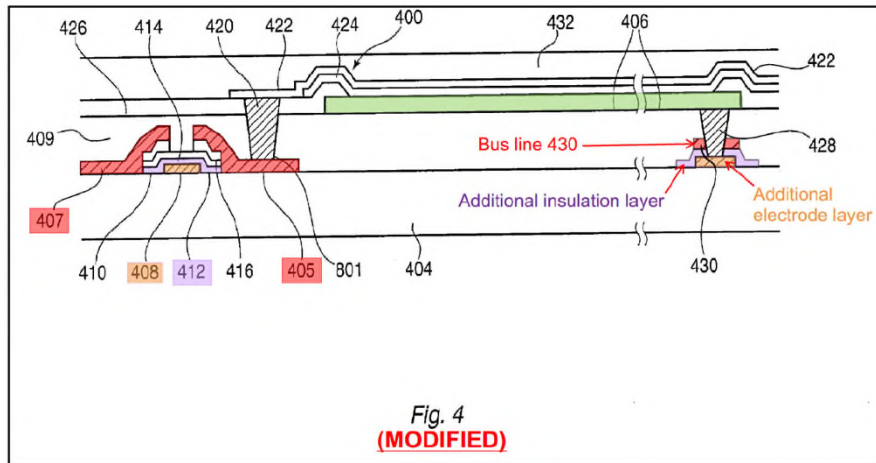


Fig. 4
Weaver



Song



Modified Weaver

- Song: discloses **first drain electrode D1** and **p top electrode layer SE1** belong to the same layer. *Pet., pp. 44-45; EX1006, [0091]-[0091]*
- POSITA would have been motivated to implement the solution of Lee053 in Weaver to simplify manufacturing steps and reduce processing steps.

Pet., pp. 52-55

Ground 4

Claims 10-11 Obvious over Weaver & Lee149

Ground 4: Claims 10-11 Obvious over Weaver & Lee149

10. The pixel structure according to claim 1, further comprising a **second auxiliary electrode** electrically insulated from the active device and disposed at a side of the light emitting device, wherein the **second auxiliary electrode** is electrically connected with the **first electrode layer (406)** of the light emitting device.

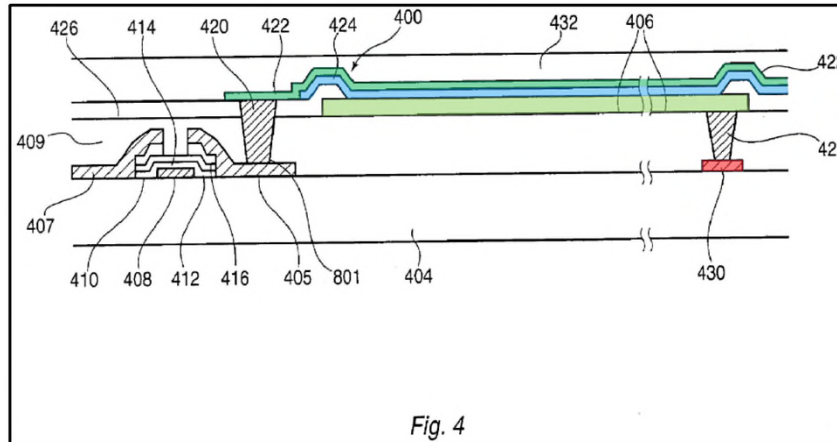


Fig. 4

Weaver

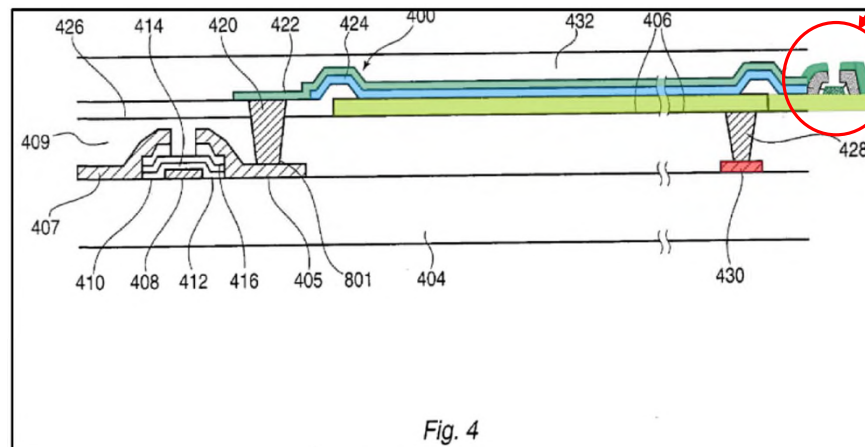


Fig. 4

Modified Weaver

Reply., pp. 19-21

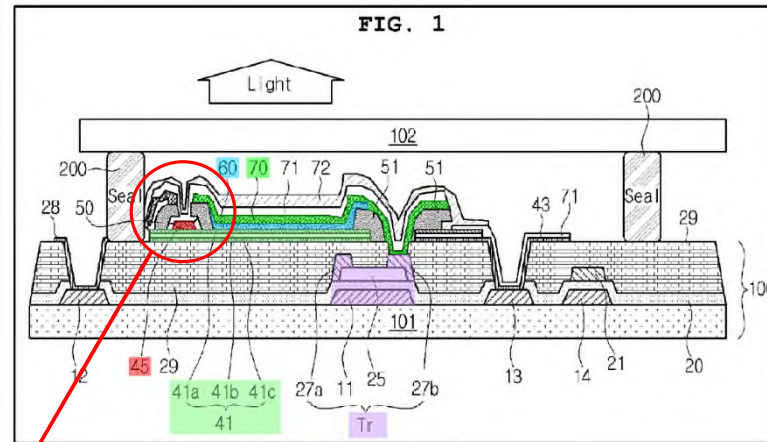


FIG. 1

Lee149

- Lee149: **Electrode pattern 45** formed on **first electrode 41** to lower resistance, at left side of light emitting device.
EX1011, [0027]-[0038]; Fig. 1
- POSITA would have been motivated to implement the solution of Lee149 in Weaver to lower resistance and voltage drop between anode and voltage source.

Pet., pp. 55-59

Ground 4: Claims 10-11 Obvious over Weaver & Lee149

11. The pixel structure according to claim 10, wherein the **second auxiliary electrode** and the **second electrode layer (422)** of the light emitting device belong to the same layer, and the **second auxiliary electrode** and the **second electrode layer** of the light emitting device are electrically insulated from each other.

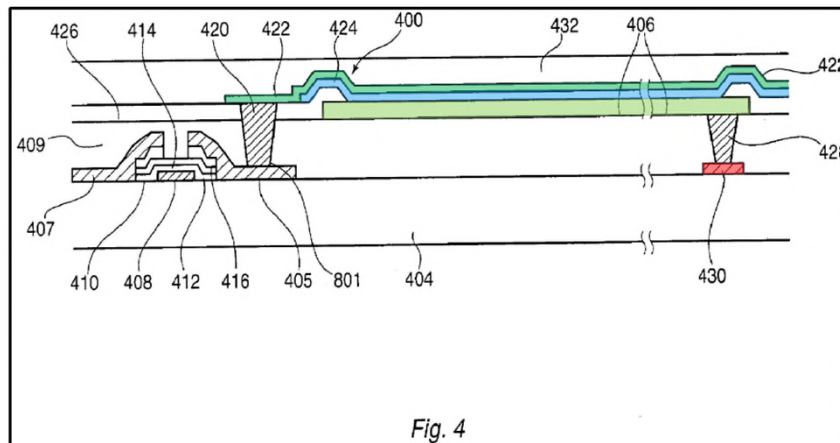
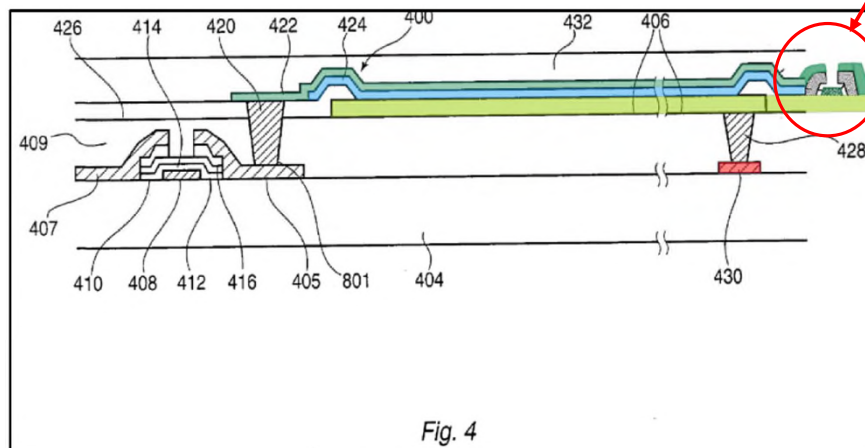
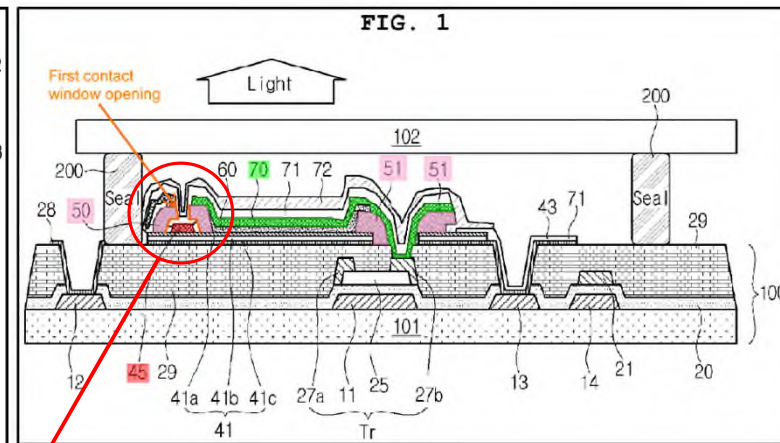


Fig. 4
Weaver



Modified Weaver

Reply., pp. 19-21



Lee149

- Lee149: form **electrode pattern 45** through **first contact window opening** using same layer as **second electrode 70**, where they are separate from each other.
Pet., pp. 59-61; EX1011, [0038]
- POSITA would have been motivated to implement the solution of Lee149 in Weaver to simplify manufacturing.

Pet., pp. 59-63

Ground 5

Claims 10-11 Obvious over Weaver & Bae

Ground 5: Claims 10-11 Obvious over Weaver & Bae

10. The pixel structure according to claim 1, further comprising a **second auxiliary electrode** electrically insulated from the active device and disposed at a side of the light emitting device, wherein the **second auxiliary electrode** is electrically connected with the **first electrode layer (406)** of the light emitting device.

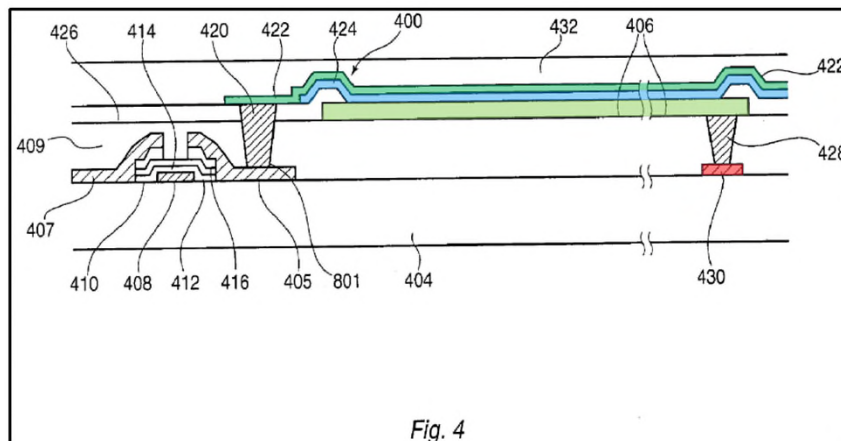
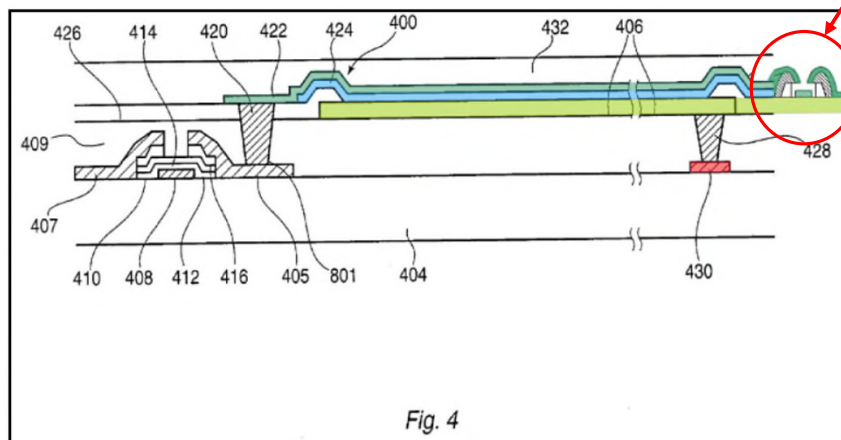
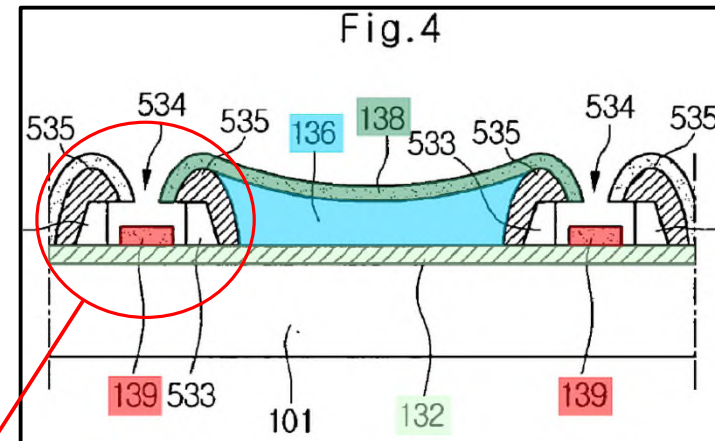


Fig. 4
Weaver



Modified Weaver

Reply., pp. 21-24



Bae

- Bae: **auxiliary electrodes 139** formed on **first electrode 132** to lower resistance, at a side of light emitting device.
EX1012, [0037]-[0059]; Fig. 4
- POSITA would have been motivated to implement the solution of Bae in Weaver to lower resistance and voltage drop between anode and voltage source.

Pet., pp. 63-68

Ground 5: Claims 10-11 Obvious over Weaver & Bae

11. The pixel structure according to claim 10, wherein the **second auxiliary electrode** and the **second electrode layer (422)** of the light emitting device belong to the same layer, and the **second auxiliary electrode** and the **second electrode layer** of the light emitting device are electrically insulated from each other.

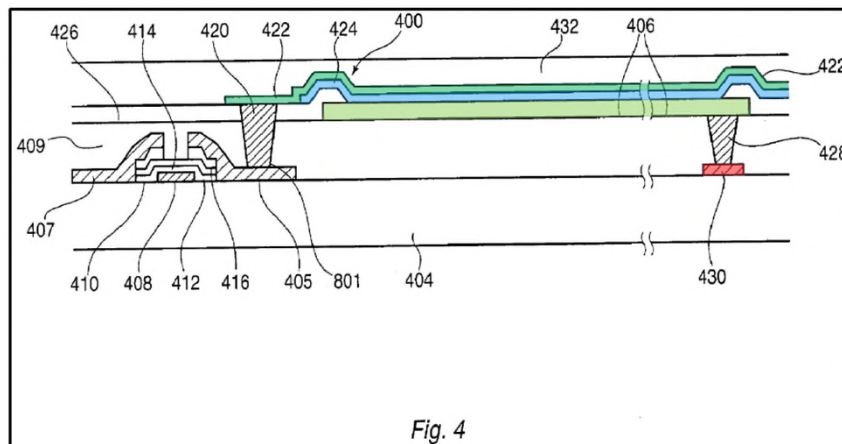
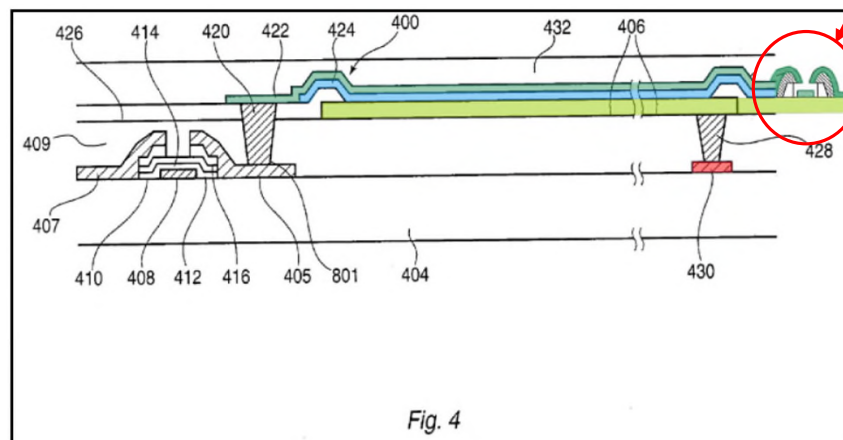
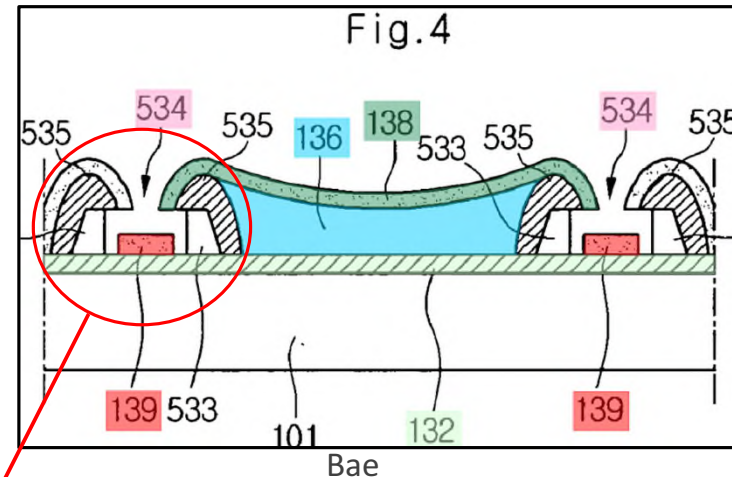


Fig. 4
Weaver



Modified Weaver

Reply., pp. 21-24



Bae

- Bae: form **auxiliary electrodes 139** through **space 534** using same layer as **second electrode 138**, where they are separate from each other.
Pet., pp. 69-70; EX1012, [0039]
- POSITA would have been motivated to implement the solution of Bae in Weaver to more efficiently form the OLED.

Pet., pp. 68-71

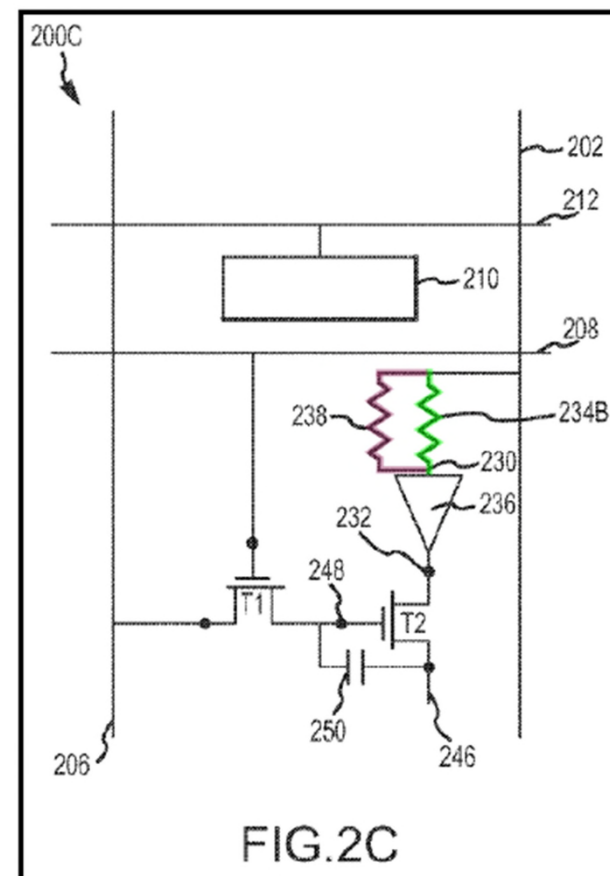
Grounds 6-10

Grounds 6-10

- Grounds 6-10 are the same as grounds 1-5, but additionally that it would have been obvious to connect the **anode 406** and **bus line 430** of Weaver in parallel to the voltage supply VDD line, as taught by Han or Gupta, where the bus line 430 is a “supplemental electrode to reduce the total resistance of the pixel structure” *Pet., pp. 71-81*
- Under Grounds 6-10, the claims are obvious even if the Board:
 - (1) adopts Petitioner’s narrow construction of “auxiliary electrode” and finds that Weaver fails to disclose a supplemental electrode that reduces total resistance of the pixel structure, or
 - (2) adopts PO’s narrow construction of “auxiliary” to mean “which does not include primary and essential”

Grounds 6-10

- Gupta discloses OLED device with anode 230 (with sheet resistance 234B) and resistor 238 (with sheet resistance 234B) connected in parallel to power supply VDD “to reduce the total resistance between anode 230 and VDD 202.”
Pet., pp. 72-74; EX1009, 8:3-14, Fig. 2C.
 - Resistor 238 is formed of a conductive mesh or strip.
EX1009, 7:42-43, Fig. 2C.
 - Resistor 238 is a supplemental electrode to reduce the total resistance of the pixel structure
Pet., pp. 72-73



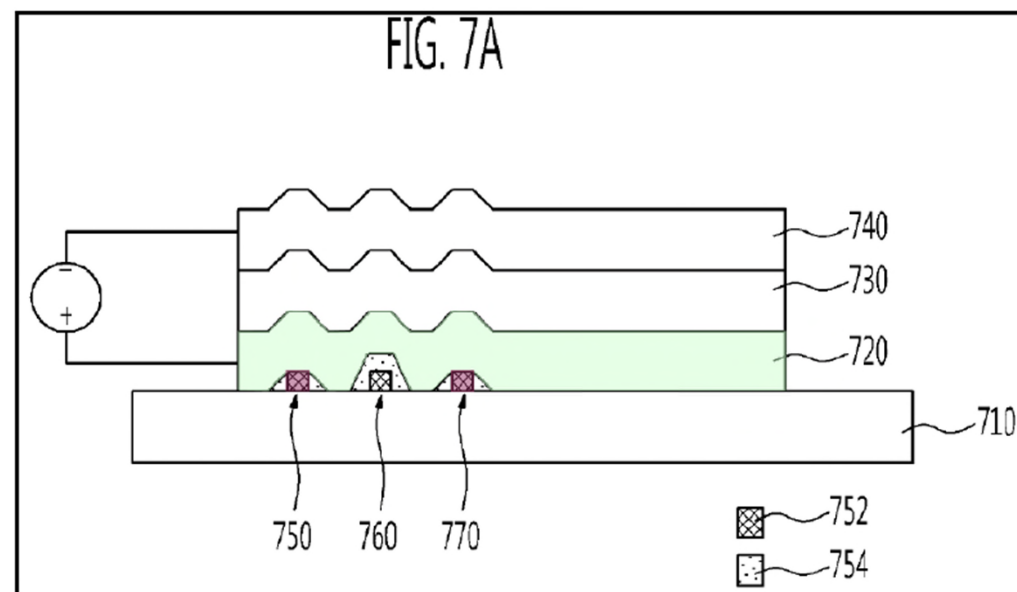
Grounds 6-10

- Han discloses OLED device with subsidiary electrodes 750/770 connected in parallel to anode 720 “to reduce the influence of IR-drop due to a driving current.”

Pet., pp. 74-75; EX1010, [0008]-[0009], [0032]-[0033], Fig. 7A

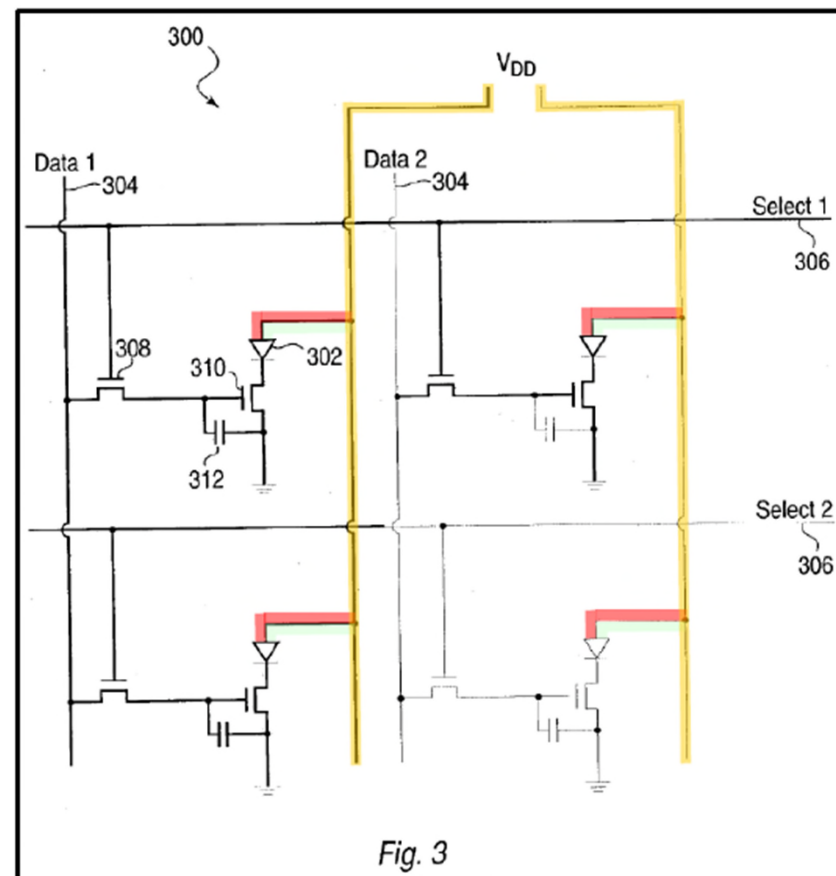
- Subsidiary electrodes 750/770 are supplemental electrodes to reduce the total resistance of the pixel structure

Pet., pp. 72-73



Grounds 6-10

- It would have been obvious to a POSITA to combine the teachings of Weaver and either Gupta or Han so that **bus line 430** of Weaver is connected in parallel with **anode 406** to voltage supply line VDD in order to reduce the overall resistance of the pixel structure. *Pet., pp. 75-77*



Modified Weaver

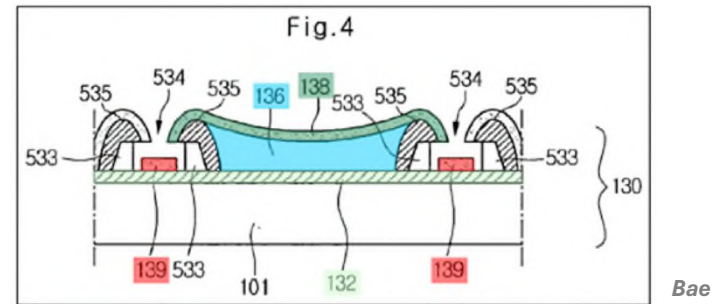
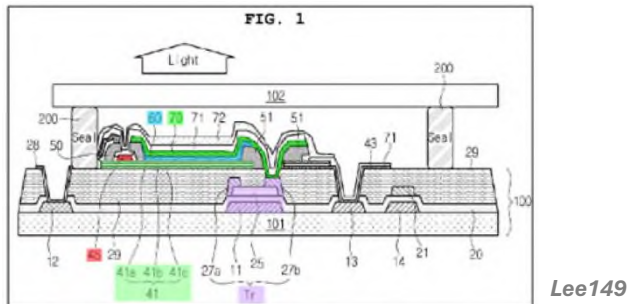
Grounds 6-10: PO's Arguments Fail

- ❌ Han is not analogous prior art because of its size.
 - Problem of high resistance, and solution of adding an electrode in parallel to lower resistance, exist at any size, and are specifically identified in Han. *Reply, p. 26; EX1010, [0033]*
- ❌ Gupta's element 238 is a resistor, not an electrode. *POR, pp. 52-53*
 - An electrode is a conductor [end structure or not].
 - Gupta's element 238 may be “a conductive strip” *EX1009, 7:42-43, 4:55-60*
 - PO's expert admitted Gupta's conductive strip is a conductor. *Reply, p. 27; EX1017, 184:15-186:2*

Grounds 6-10: PO's Arguments Fail

✗ No reason to modify Weaver to reduce resistance other than simply change width of the bus line (make is “a little wider”) *POR, pp. 52-53*

- Making lines wider would reduce pixel density and resolution
- PO's argument refuted by prior art technique of stacking wires with parallel connections **to lower resistance** without reducing pixel density and resolution



- If true, there would be no need for the '509 patent auxiliary electrode.
 - PO's expert had "no opinion" if simply changing width of the 509 patent's first electrode layer would reduce resistance. *EX1017, 194:10-195:6; 197:20-198:7, 190:2-11*

POSITA

POSITA

Patent Owner's POSITA	Petitioner's POSITA
“Would have at least a Bachelors’ degree in a field of engineering or physics and at least two years of professional experience related to the design and manufacture of LED or OLED pixels for flat panel displays.” POR at 10	“Would have had a Bachelors’ degree in electrical engineering or a comparable field of study, plus approximately one or more years of professional experience with electronic and optoelectronic system design.” Pet. at 4



Petitioner’s POSITA is more appropriate given the electrical problem/solution (pixel resistance) of the ’509 patent, irrespective of the unclaimed light emitting mechanism.

PO's POSITA FLAWED

Patent Owner's POSITA	Petitioner's POSITA
"Would have at least a Bachelors' degree <i>in a field of engineering or physics</i> and at least two years of professional experience related to the design and manufacture of LED or OLED pixels for flat panel displays."	"Would have had a Bachelors' degree <i>in electrical engineering or a comparable field of study</i> , plus approximately one or more years of professional experience with electronic and optoelectronic system design."

 Bachelor's degree in any unspecified engineering is too broad for '509 patent.

POR, pp. 52-53

- Problem/solution (resistance reduction) are common to electrical circuits, irrespective of light emitting mechanism.
- POSITA would have system level knowledge for electrical components and circuits, from an electrical engineering or comparable degree.

 Biomedical, civil, chemical or environmental engineering encompasses fields clearly having nothing to do with circuits or displays.

PO's POSITA FLAWED

Patent Owner's POSITA	Petitioner's POSITA
"Would have at least a Bachelors' degree in a field of engineering or physics and at least two years of professional experience related to the <i>design and manufacture of LED or OLED pixels for flat panel displays.</i> "	"Would have had a Bachelors' degree in electrical engineering or a comparable field of study, plus approximately one or more years of professional experience <i>with electronic and optoelectronic system design.</i> "

 "LED" and "OLED" are not disclosed nor claimed in the '509 patent

- Problem/solution (resistance reduction) are common to electrical circuits, irrespective of light emitting mechanism.
- Electronic and optoelectronic system design more appropriate.
- Both experts admit their opinions would not change under either definition.

PO's POSITA FLAWED

Patent Owner's POSITA	Petitioner's POSITA
"Would have at least a Bachelors' degree in a field of engineering or physics and at least two years of professional experience related to the design and manufacture of LED or OLED pixels for flat panel displays."	"Would have had a Bachelors' degree in electrical engineering or a comparable field of study, plus approximately one or more years of professional experience with electronic and optoelectronic system design."

PO's expert Dr. Bretschneider is not a POSITA

- Degrees in chemical engineering, not electrical engineering EX2026, at paras. 25-26
- Knowing chemical properties insufficient to understand pixel circuit design and layout

Petitioner's expert Dr. Baker is a POSITA

- Degrees in electrical engineering EX1003, at para. 7
- Extensive experience in flat panel display design including at the pixel level EX1003, at paras. 9-13; EX1020, paras. 11-17