

Patent Owner's Oral Hearing Demonstratives

Canon U.S.A., Inc. and Canon Inc.,
Petitioners

v.

Slingshot Printing LLC,
Patent Owner

Case No. IPR2023-00309
Patent No. 7,290,864

'864 Patent, Claim 1

1. A heater chip for use in a printing device, comprising:

an ink via;

a **first heater array** adjacent at least a portion of one side of the ink via;

a **second heater array** adjacent at least a portion of **another side of the ink via**;
and

a bondpad, wherein the **bondpad supplies power to at least a portion of the first heater array and to at least a portion of the second heater array.**

'864 Patent Claims Dependent On Claim 1

2. The heater chip of claim 1, further comprising a second bondpad, wherein the **second bondpad supplies power to another portion of the first heater array and to another portion of the second heater array.**
3. The heater chip of claim 1, wherein the bondpad supplies power to the first heater array and the second heater array portions by **power traces physically separated proximal to the bondpad.**
4. The heater chip of claim 1, wherein each of the first and second heater arrays comprise **at least 320 heaters.**
5. The heater chip of claim 1, wherein the bondpad supplies power to the first heater array and the second heater array by **at least one power trace.**
6. The heater chip of claim 1, wherein the first heater array and the second heater array **each include a plurality of thin film resistors.**

'864 Patent, Claim 8

8. A heater chip for use in a printing device, comprising

an ink via;

a **first heater array** and a **second heater array** adjacent at least a portion of the ink via, wherein the **ink via is positioned between the first heater array and the second heater array**; and

a **bondpad having at least two traces stemming from the bondpad**, wherein at least **one of the traces is operatively connected to the first heater array** and at least **another one of the traces is operatively connected to the second heater array**.

'864 Patent Claims Dependent On Claim 8

9. The heater chip of claim 8, wherein the at least **two traces are physically separated proximal to the bondpad**.
10. The heater chip of claim 8, wherein the first and second heater arrays include a plurality of thin film resistors formed, at least in part, from a material selected from the group of materials consisting of **platinum, gold, silver, copper, aluminum, tantalum, titanium tungsten, silicon-nitrogen, silicon carbide, and diamond-like carbon**.
11. The heater chip of claim 8, wherein each of the first and second heater arrays contain **at least 320 heaters**.
12. The heater chip of claim 11, wherein the **bondpad and the at least two traces are capable of supplying eight simultaneous fires per heater array**.
13. The heater chip of claim 8, wherein the first and second heater arrays each comprise a top portion and a bottom portion, and wherein the bondpad is **operatively connected to the top portion of the first heater array and the top portion of the second heater array**.
14. The heater chip of claim 13, further comprising a **second bondpad operatively connected to the bottom portion of the first heater array and the bottom portion of the second heater array**.

'864 Patent Claims Dependent On Claim 8 (Cont'd)

15. The heater chip of claim 8, further comprising:

another ink via disposed between a third heater array and a fourth heater array; and

a **second bondpad** coupled to a trace that is operatively connected to the third heater array and to a trace that is operatively connected to the fourth heater array,

wherein the traces coupled to the second bondpad are **physically separated proximal to the second bondpad**.

'864 Patent, Claim 16

16. A heater chip comprising:

at least **eight heater arrays**, wherein the at least eight heater arrays comprise **four heater array pairs**, and wherein the arrays in each of the heater array pairs are disposed substantially adjacent opposing sides of at least a portion of an ink via; and

a **plurality of bondpads** operatively connected to the at least eight heater arrays, wherein **at least one of the plurality of bondpads is operatively connected to both heater arrays within one of the heater array pairs**.

'864 Patent Claims Dependent On Claim 16

- 17. The chip of claim 16, wherein each of the at least eight heater arrays comprises a plurality of **thin film resistors**.
- 18. The chip of claim 16, wherein each of the at least eight heater arrays comprises **at least 320 heaters**.
- 19. The chip of claim 16, wherein **each of the at least eight heater arrays comprises a top portion and a bottom portion**, and wherein **some of the plurality of bondpads are operatively connected to the top portion of one of the at least eight heater arrays and the top portion of another one of the at least eight heater arrays**.
- 20. The chip claim 19, wherein **some of the plurality of bondpads are operatively connected to the bottom portion of one of the at least eight heater arrays and to the bottom portion of another one of the at least eight heater arrays**.

'864 Patent Disclosure

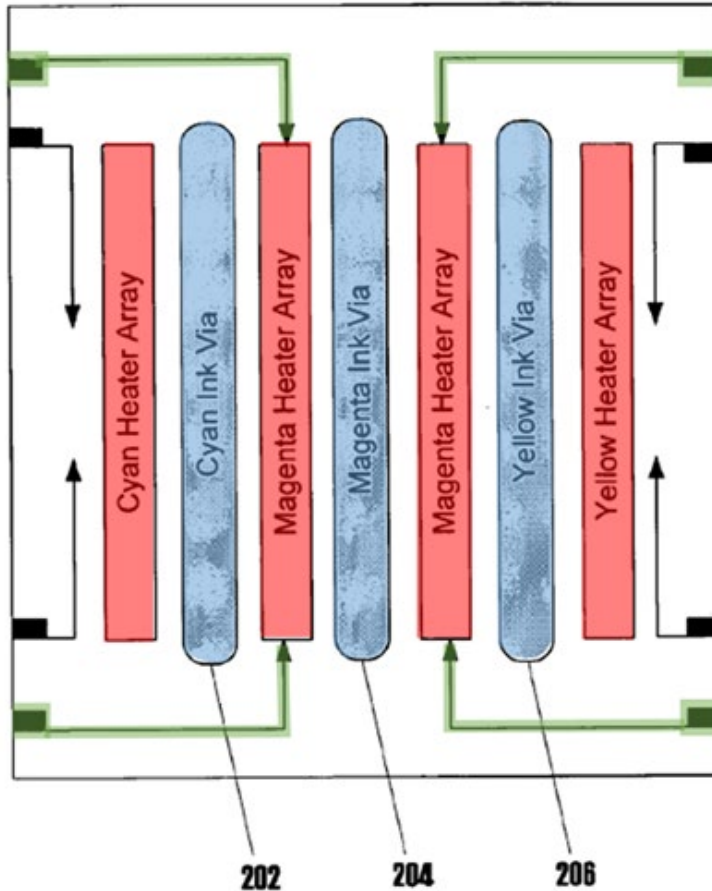


FIG. 2 [Prior Art]

Prior Art –

Heater arrays on each side of magenta **ink via** connected to **power traces** that lead to different **bondpad**

(POR p. 6)

'864 Patent Disclosure

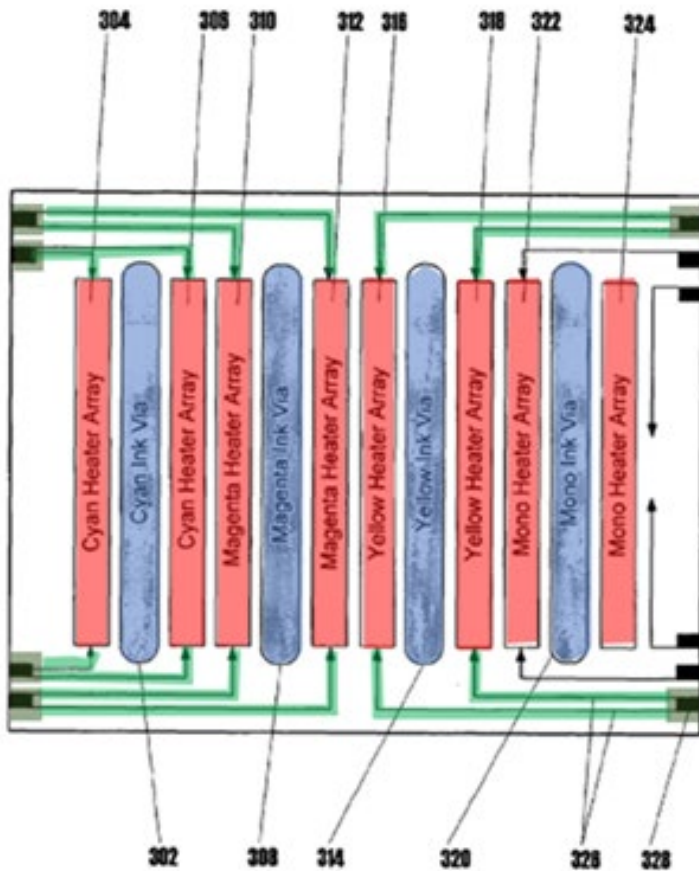


FIG. 3

Claim 1 – “the bondpad supplies power to at least a portion of the first heater array and to at least a portion of the second heater array”

Heater arrays on each side of a given color **ink via** are connected by **power traces** to a common **bondpad**

(POR p. 10)

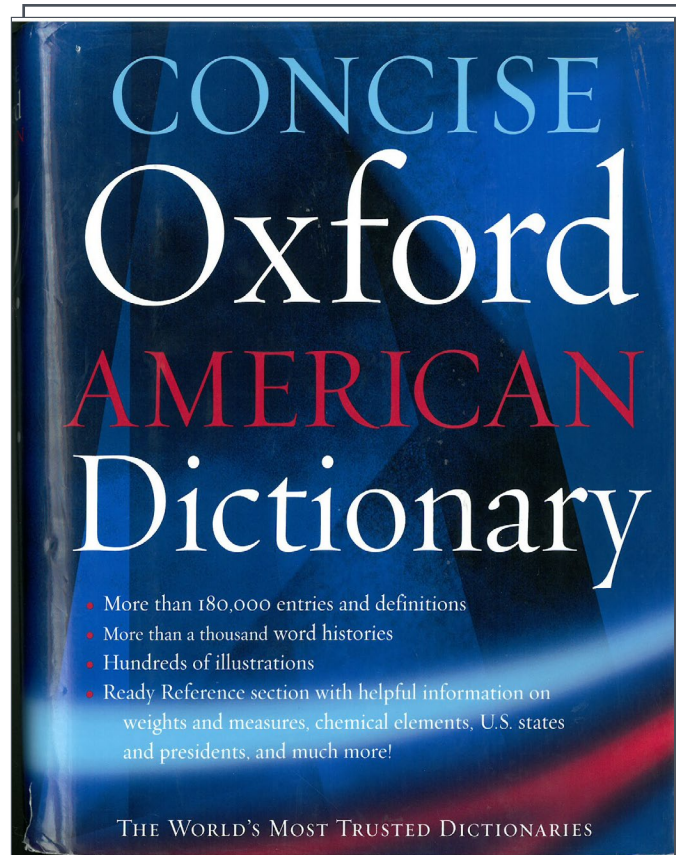
Claim Construction

“Bond Pad” - structure that assists in connecting external structures to power traces or other structures on the printhead without requiring a high degree of precision

“Physically Separated Proximal to the Bondpad” - separated at a location nearer to the bond pad than the heater arrays.

(POR pp. 18-19)

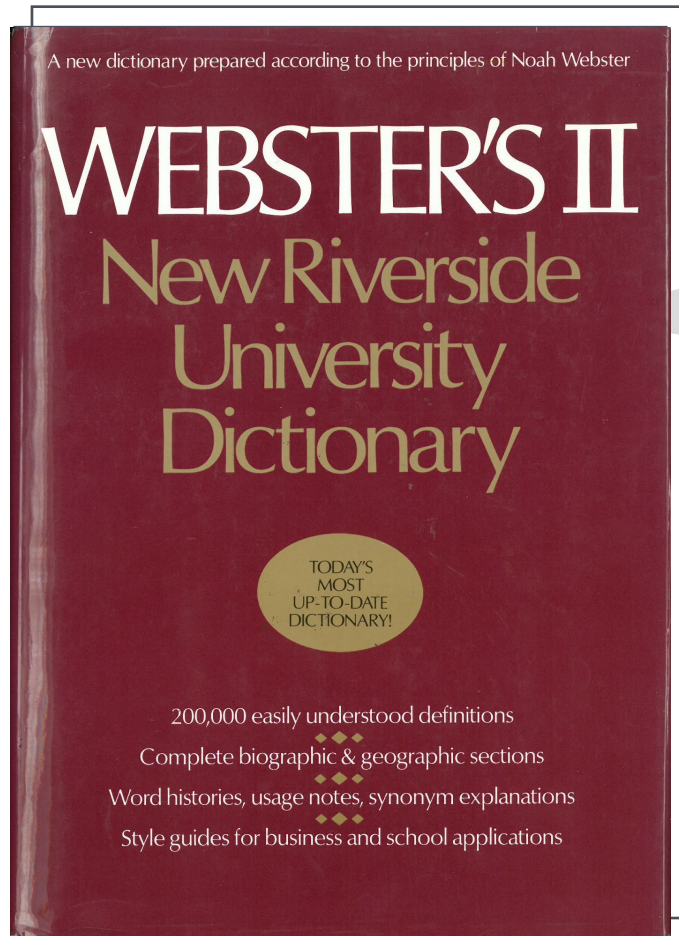
Meaning of “Physically Separated Proximal to the Bondpad”



Proximal /'prāksəməl/ *adj.* Anat. situated nearer to the center of a body or the point of attachment. The opposite of Distal.

(POR pp. 19-20 and 34)

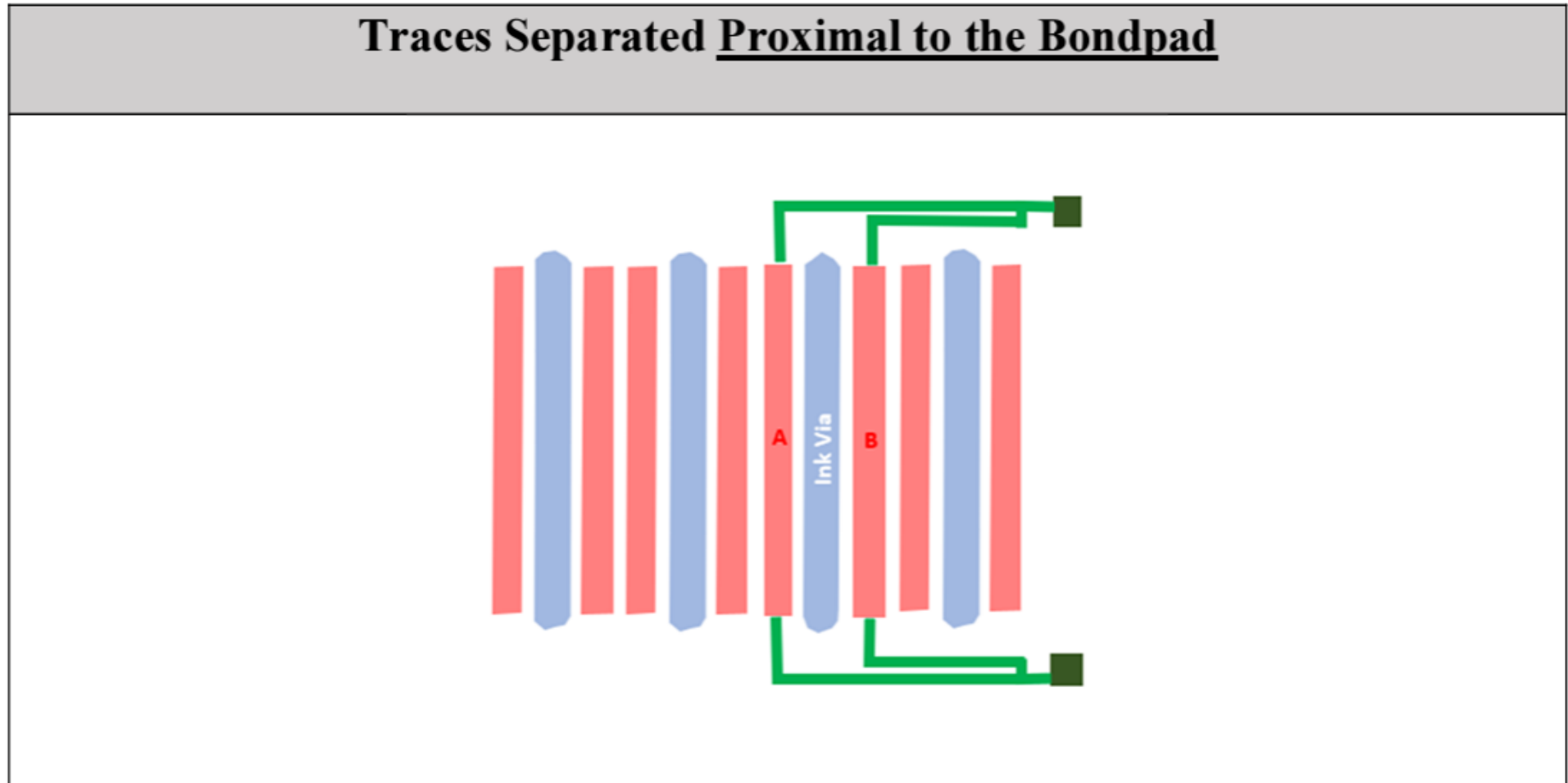
Meaning of “Physically Separated Proximal to the Bondpad”



Proximal /'prok'sə-məl/ adj. 1. Nearest : proximate. 2. Biol. Situated nearer to the center part of a body or the point of attachment or origin.

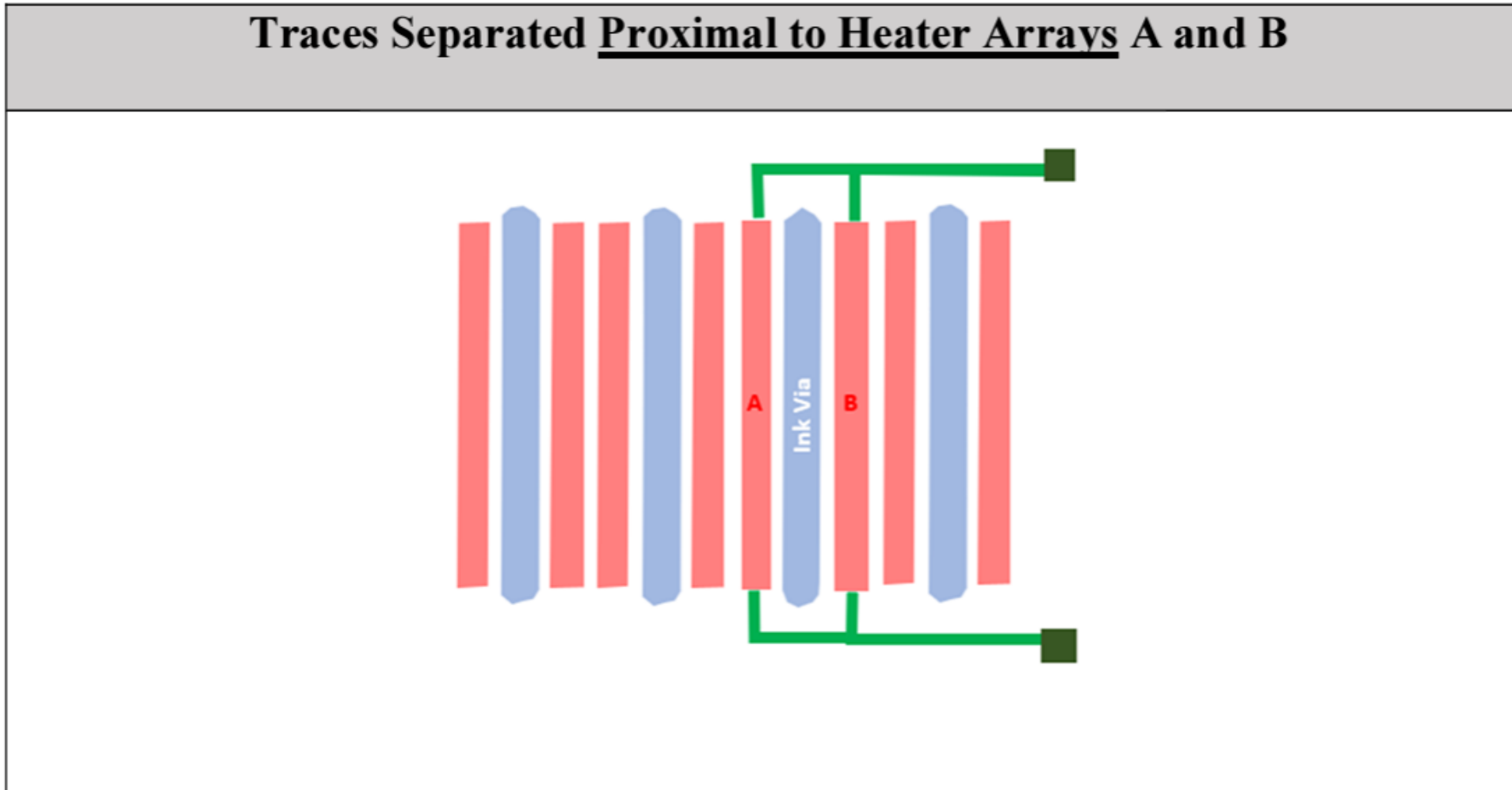
(POR pp. 19-20 and 34)

Meaning of "Physically Separated Proximal to the Bondpad"



(POSR p. 4)

Meaning of “Physically Separated Proximal to the Bondpad”



(POSR p. 5)

Meaning of "Physically Separated Proximal to the Bondpad"

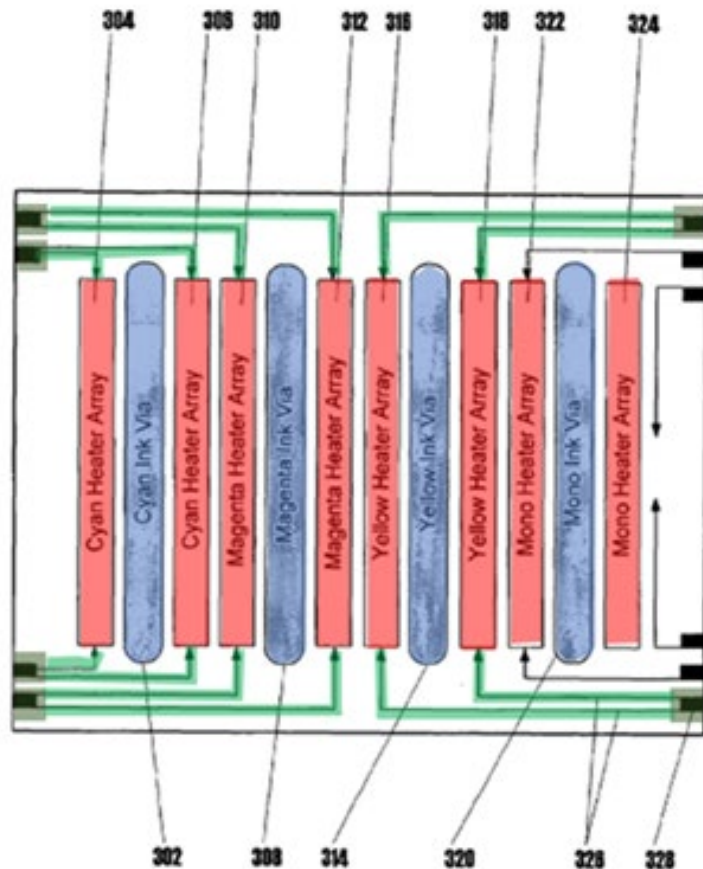


FIG. 3

1. A heater chip for use in a printing device, comprising:
 - an ink via;
 - a first heater array adjacent at least a portion of one side of the ink via;
 - a second heater array adjacent at least a portion of another side of the ink via; and
 - a bondpad, wherein the bondpad supplies power to at least a portion of the first heater array and to at least a portion of the second heater array.
3. The heater chip of claim 1, wherein the bondpad supplies power to the first heater array and the second heater array portions by power traces physically separated proximal to the bondpad.

(POSR p. 3)

Petitioners cite to “interface pads” language that references Figs. 25A and 25B:



However, Figs. 25A and 25B only show external circuitry:

(POR pp. 26-27; Ex. 1005 col. 11 lns 9-12, col. 77 lns 41-46 and Figs. 25A-B)

Benjamin '144

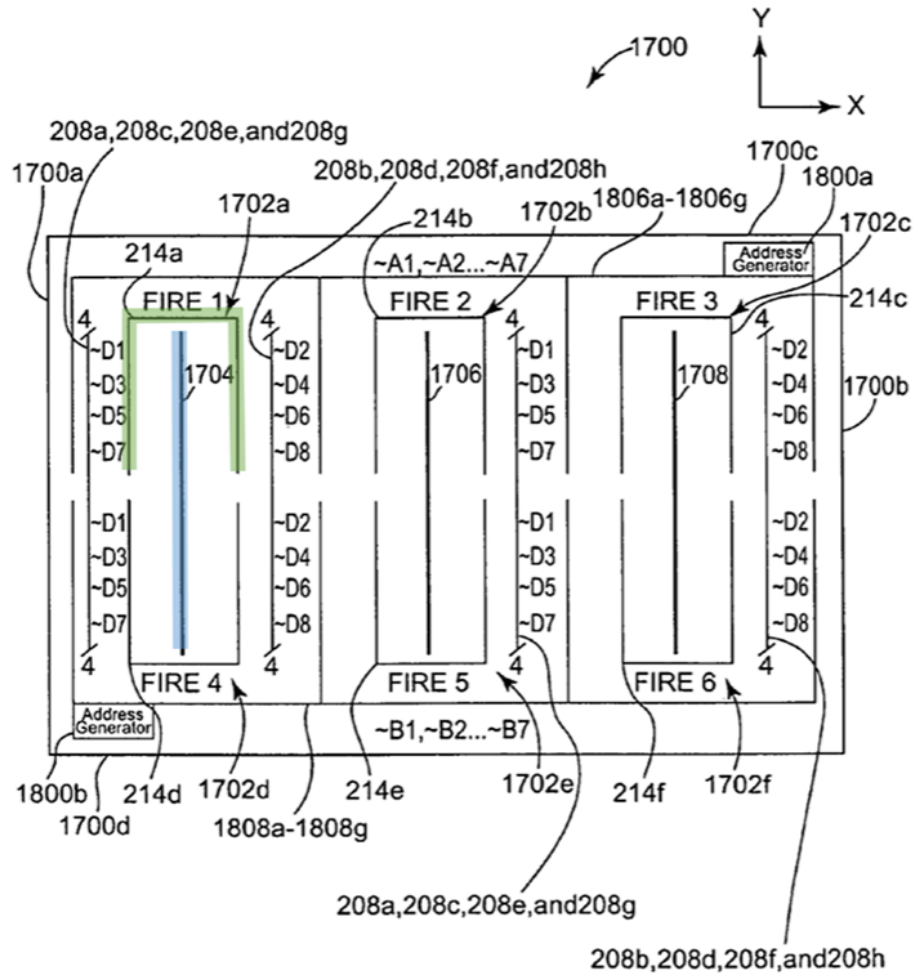
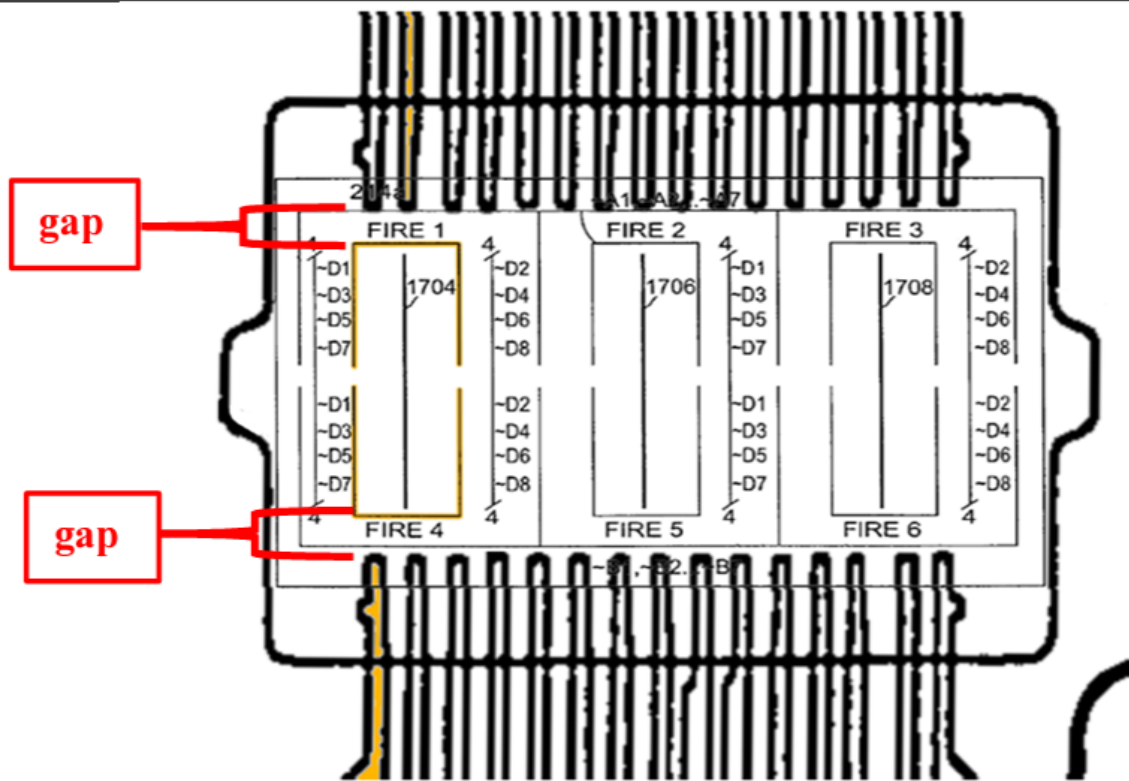


Fig. 22

- Electrical schematic not intended to show scale
- Does not show bondpad
- Does not show connection from external source to fire line

(POR pp. 27-35; POSR pp. 9-12)

Petitioners' Argument re: Benjamin '144



Annotation to Dr. Pond's drawing from ¶95 of his declaration

- Image not shown in Benjamin '144
- Composite of figures created by Dr. Pond
- Electrical schematic not intended to show scale
- Still does not show connection from external source to fire line

(POR pp. 27-35; POSR pp. 9-12)

Benjamin '703

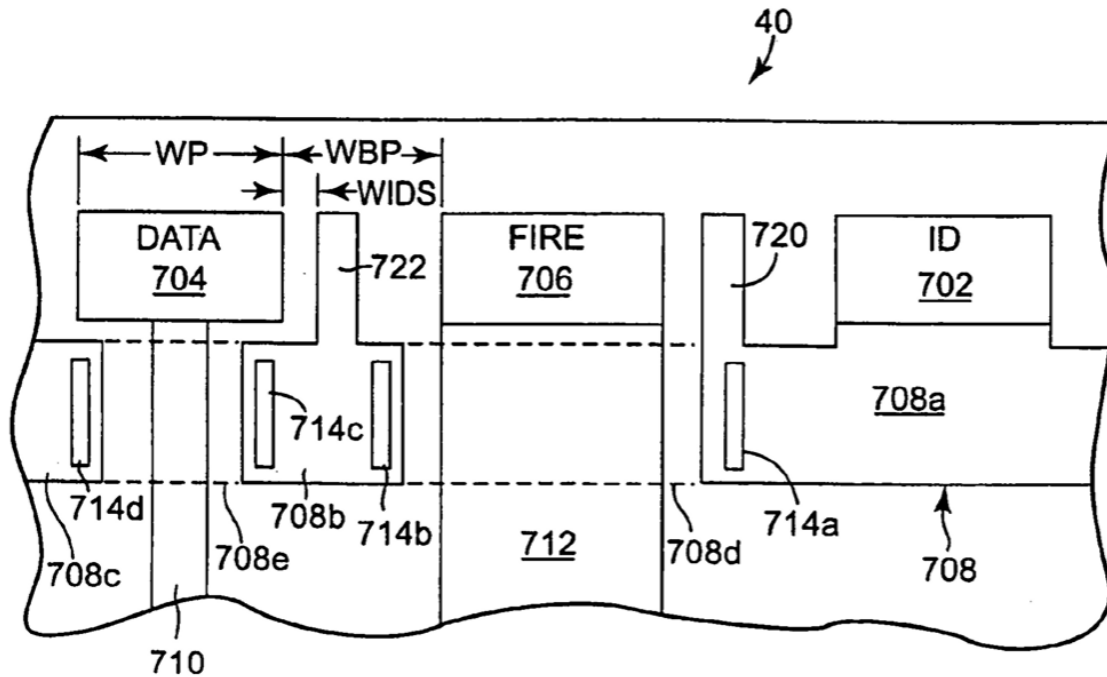


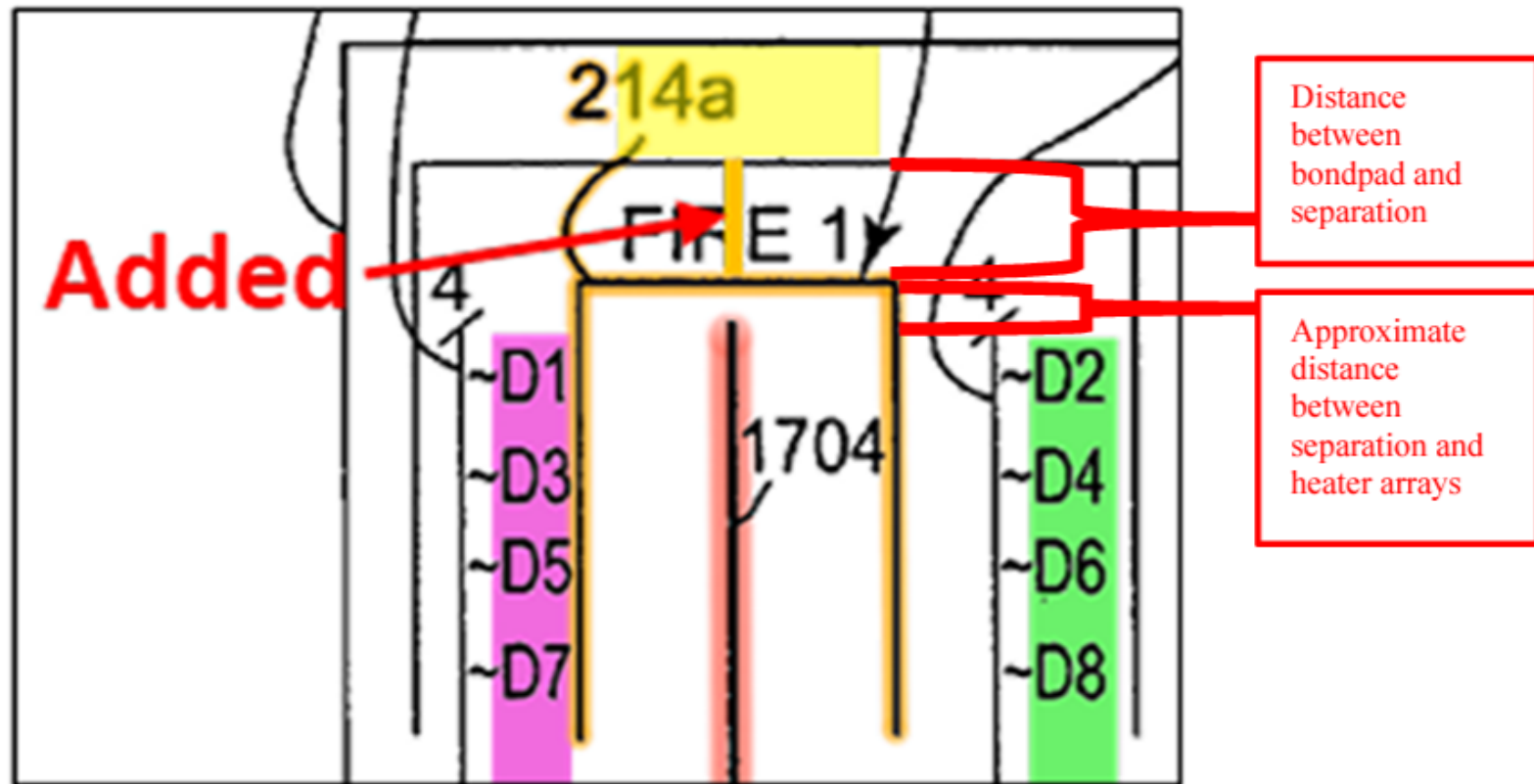
Fig. 10

- Does not show connection to fire line
- No indication that bond pad 706 connects to heater arrays on opposite sides of ink via
- Does not show separation of power traces

(POR p. 14)

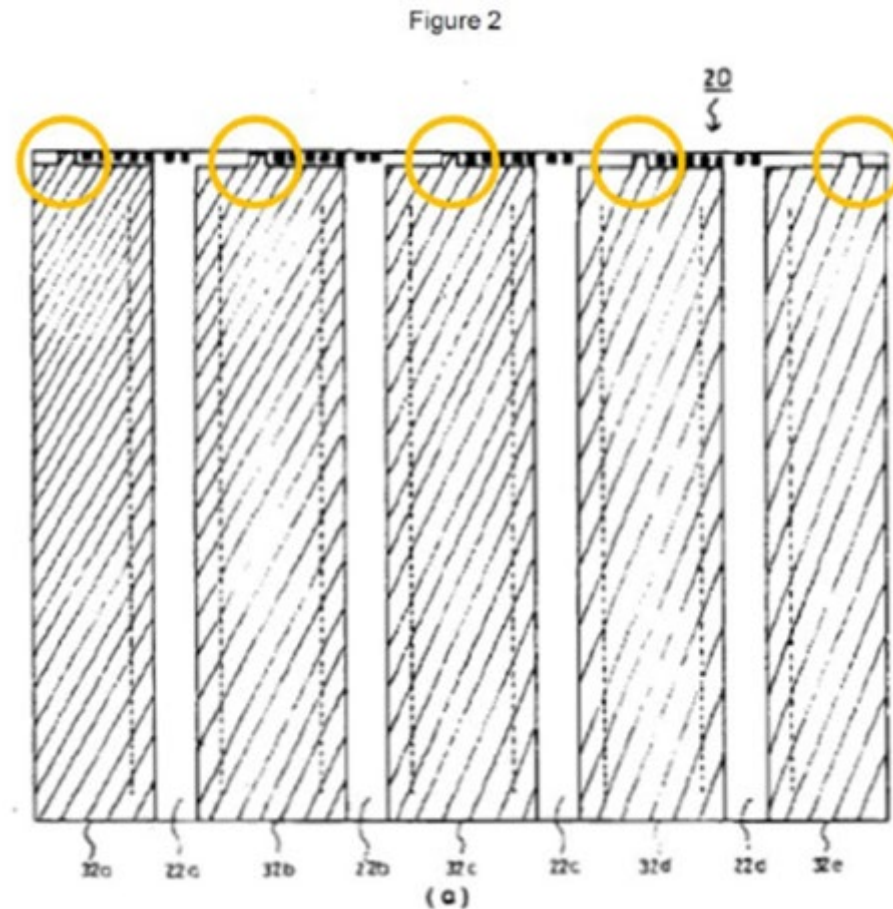
Even Petitioner's Speculative Argument Does Not Show Separation of Traces Proximal to Bondpad

Relative Distances on Petitioners' Mock-Up Alleging Relationship of Bondpad to Power Traces



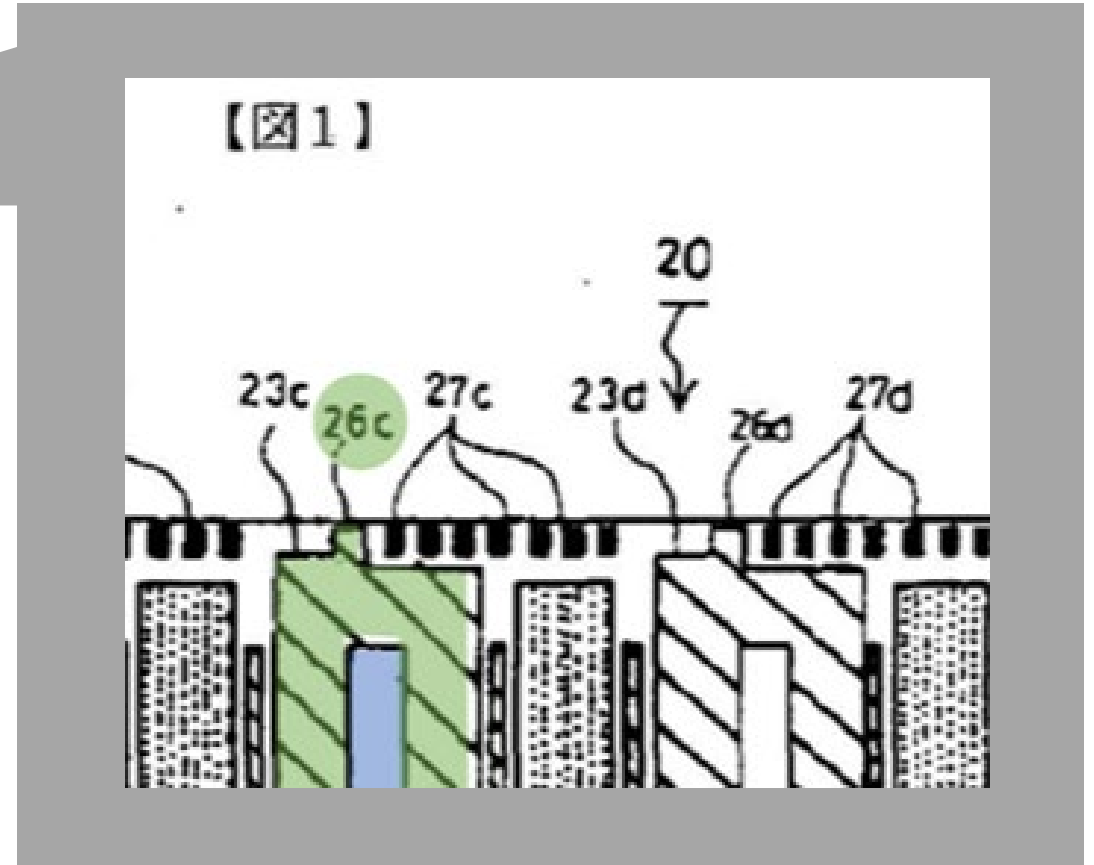
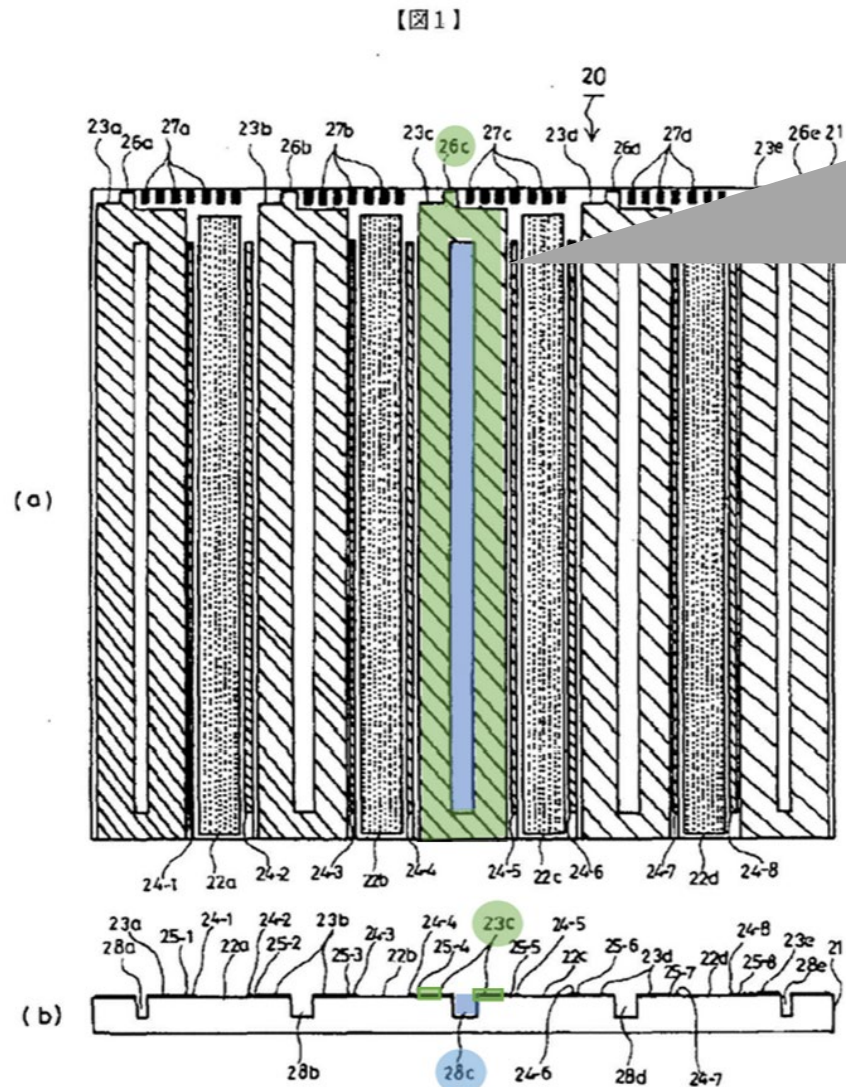
(POSR pp. 10-11)

Uenishi Shows Feed Terminals Covered by Orifice Plates



(POR p. 41)

Uenishi Does Not Show Power Traces That Separate Proximal To A Bondpad



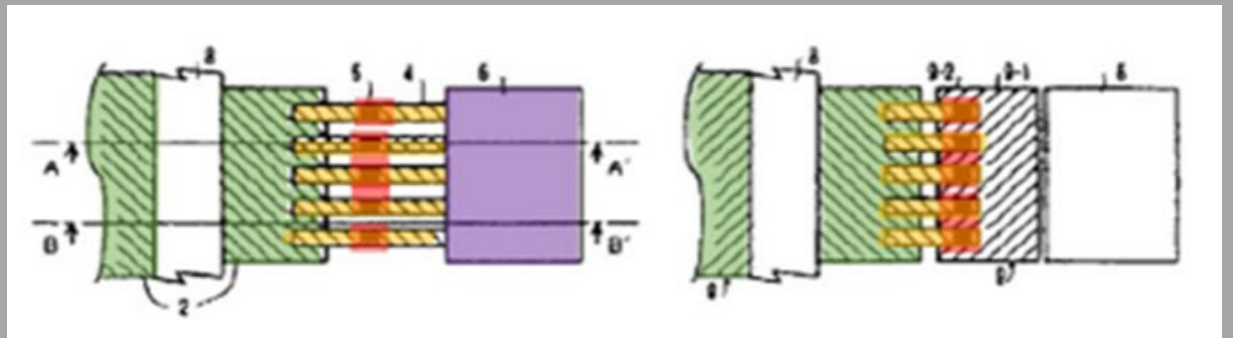
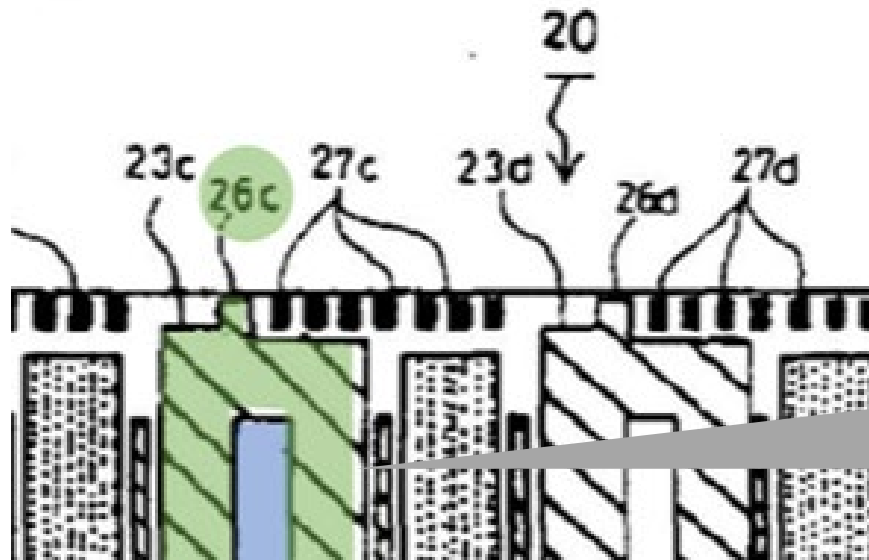
(POR p. 38)

Patent Owner Demonstratives - Not Evidence

Patent Owner's Demonstratives
Exhibit 2007, p. 23

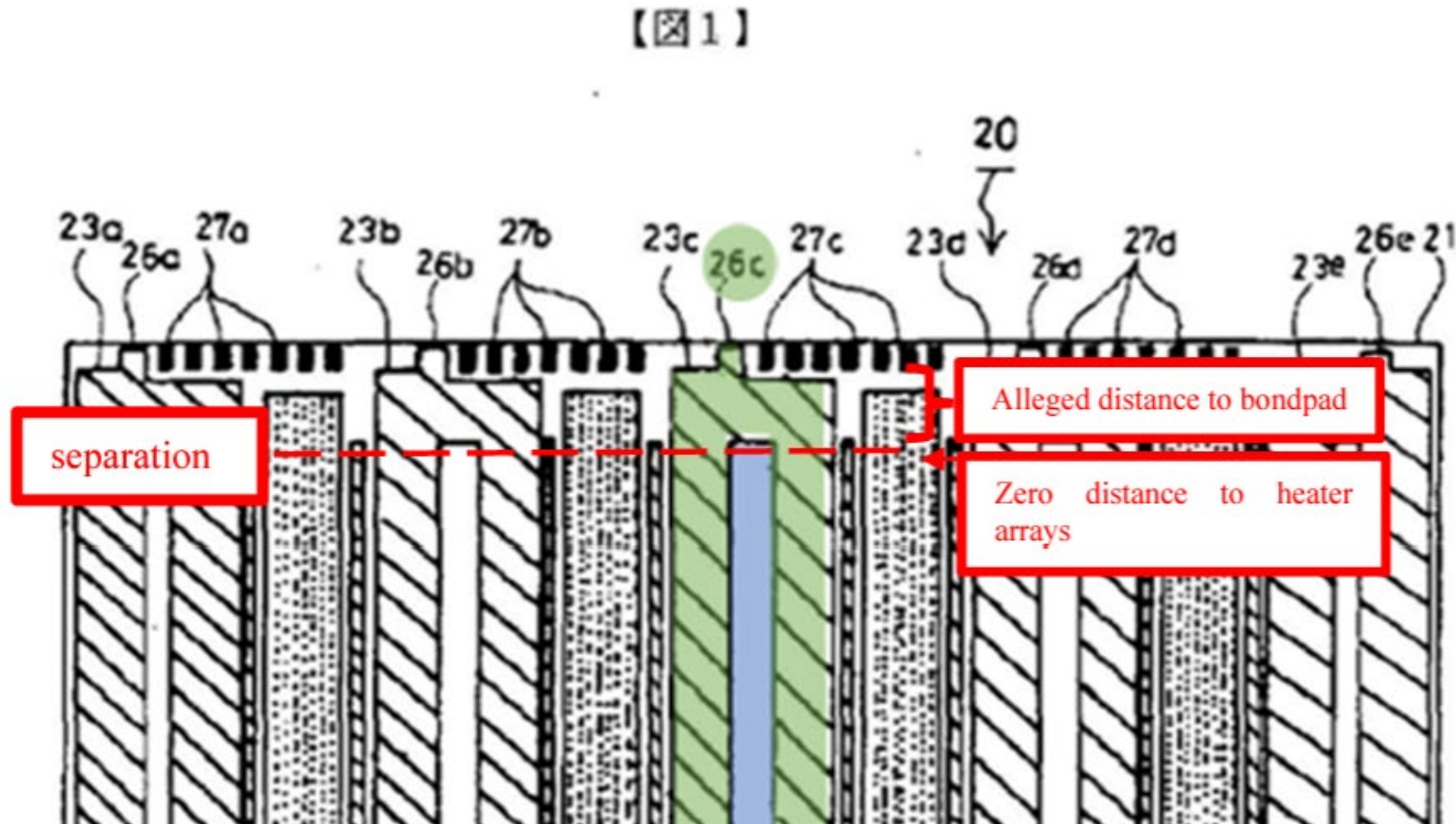
Uenishi Does Not Show Power Traces That Separate Proximal to a Bondpad

【図1】



(POR pp. 43-44)

Uenishi Does Not Disclose Separation of Traces Proximal to a Bondpad



(POSR pp. 13-14)