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Oral Argument on Petitions for Post-Grant Review

PGR2024-00003

PGR2024-00004

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January 10, 2025

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

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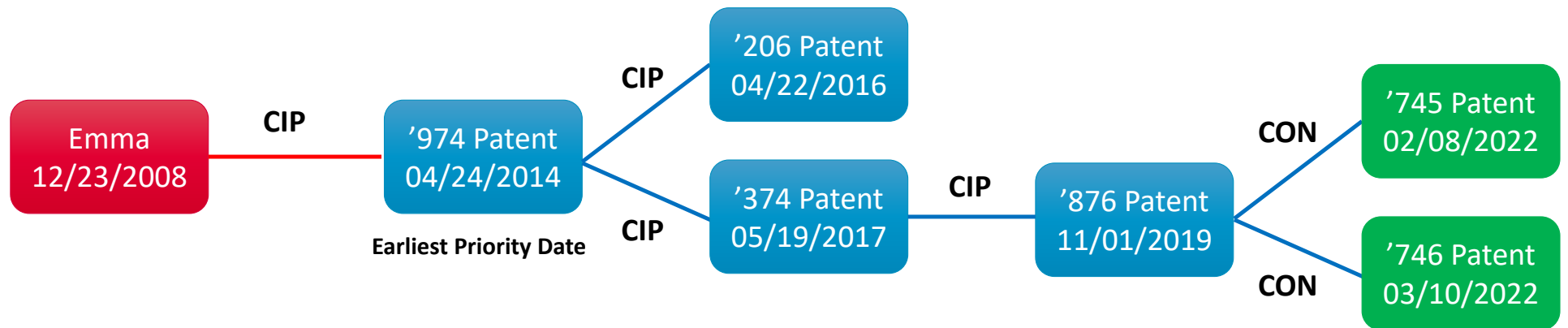
Overview of Arguments

- Emma Patent Family
- Technology Background – Emma
- The '745 and '746 Patents
- Ultimate invalidity questions
- Indefiniteness as determined in CJ Williams' *Markman* Order
- Claim Mapping Disputes
 - Emma
 - Smith
 - Butt
- Motivation to Combine Disputes
 - Ground 2: Emma + Smith
 - Ground 4: Emma + Smith + Butt
 - Ground 6: Emma + Smith + Knowledge
 - Ground 8: Emma + Smith + Quezada
- Secondary Considerations of Non-Obviousness

Emma Patent Family

PRIOR ART

CHALLENGED PATENTS

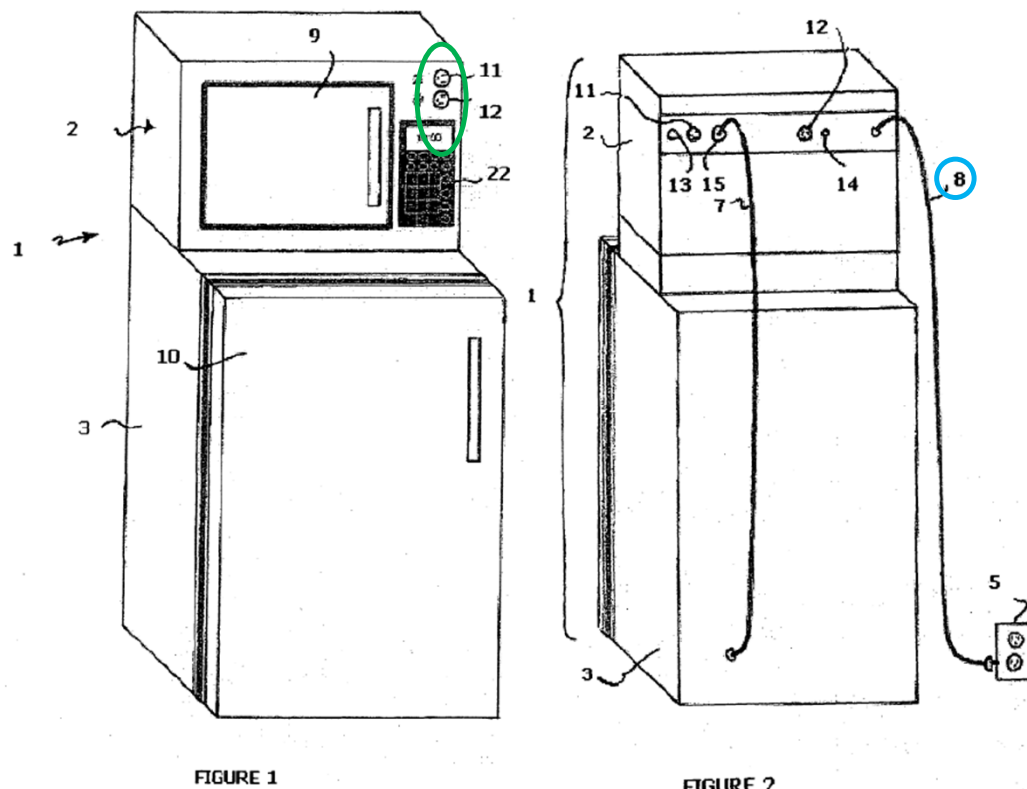


'745 Pat: Paper No. 1 at 6-7; Ex. 1001

'746 Pat: Paper No. 1 at 6-7; Ex. 1001

EMMA BACKGROUND

Emma (2008) – micro-fridge combo appliance + outlets



'745 Pat: Institution Decision, Paper No. 10 at 12-13

'746 Pat: Institution Decision, Paper No. 10 at 12

'745 Pat: Paper No. 1 at 8, 17, 19

'746 Pat: Paper No. 1 at 8-9, 17-18, 20

Ex. 1002, ¶¶ 64, 111

Ex. 1011, Figs. 1-2 (annotated)

FIGURE 1

FIGURE 2

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

Emma (2008) – power and control

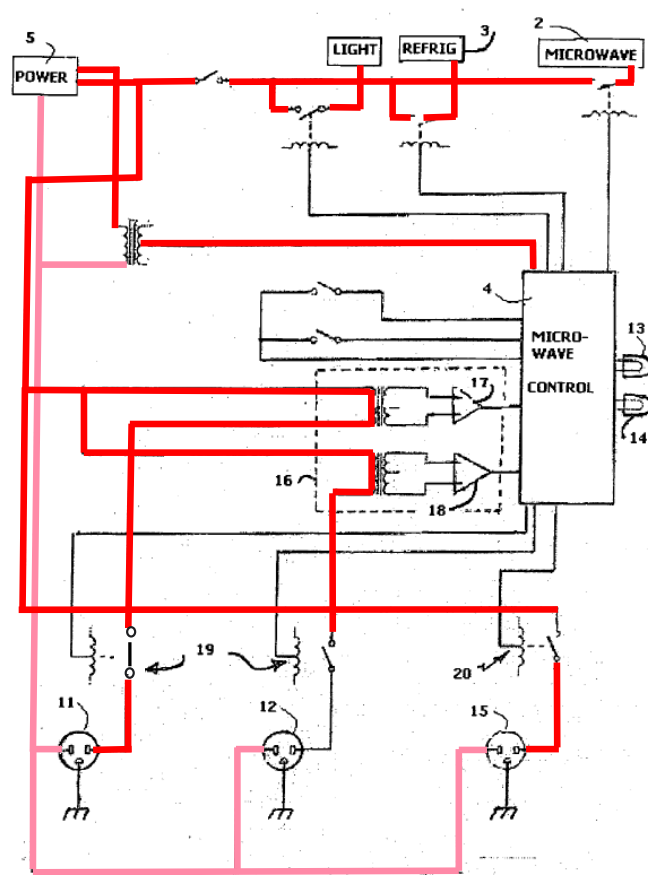


FIGURE 4

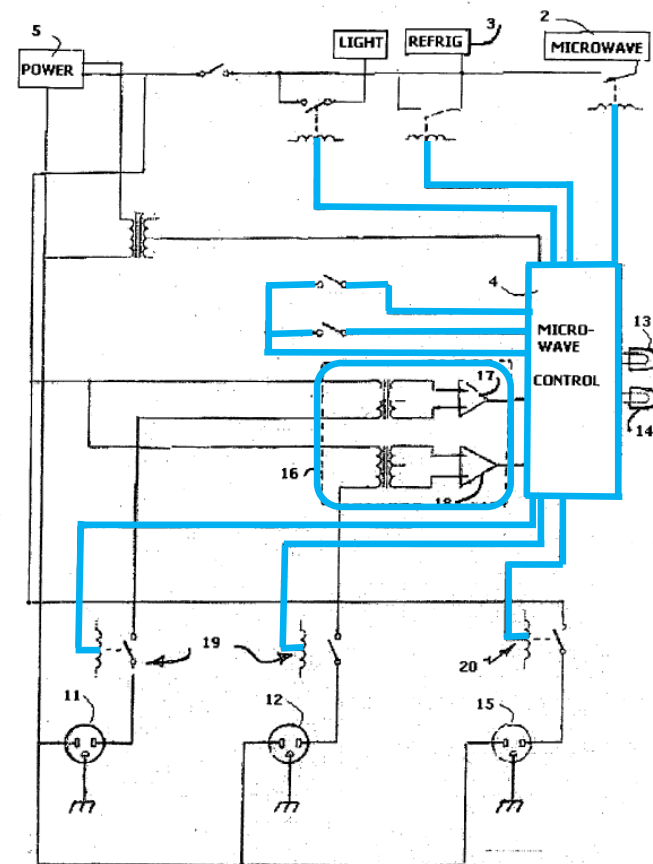


FIGURE 4

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Emma (2008) – power modulation

Low power receptacle 11 (green) receives power from power source 5 through the power circuit (red/pink) when relay 19 (orange) is closed.

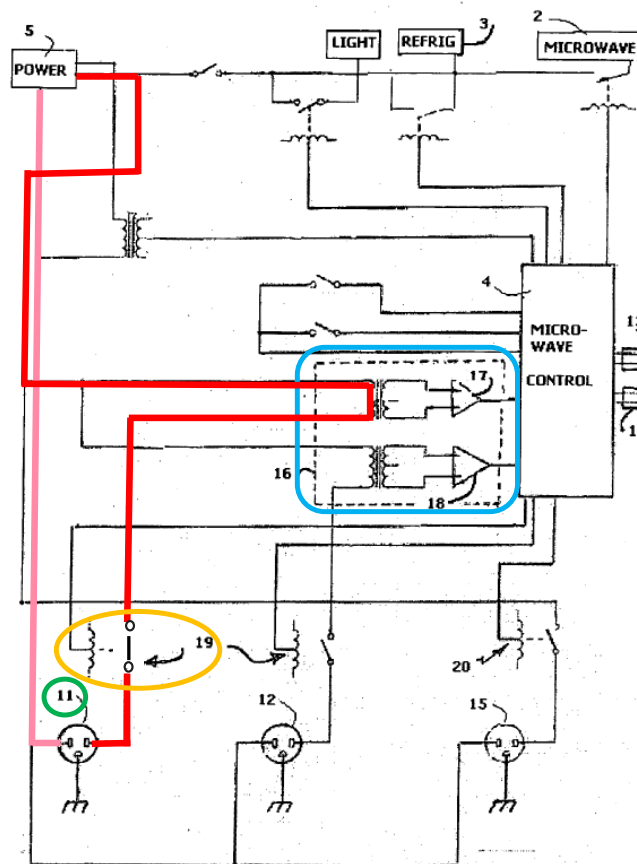


FIGURE 4

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

'745 Pat: Institution Decision, Paper No. 10 at 13-15
 '746 Pat: Institution Decision, Paper No. 10 at 12-14
 '745 Pat: Paper No. 1 at 9-10, 17-19
 '746 Pat: Paper No. 1 at 10, 17-20
 Ex. 1002, ¶¶ 65-66, 113-115
 Ex. 1011, Fig. 4 (annotated)

Emma (2008) – power modulation

To avoid an overload, microwave controller 4 (blue) cuts power to the low power receptacle 11 (green) by sending a signal to open relay 19 (orange).

Similarly, power can be cut to the refrigerator receptacle 15 during use of the microwave 2.

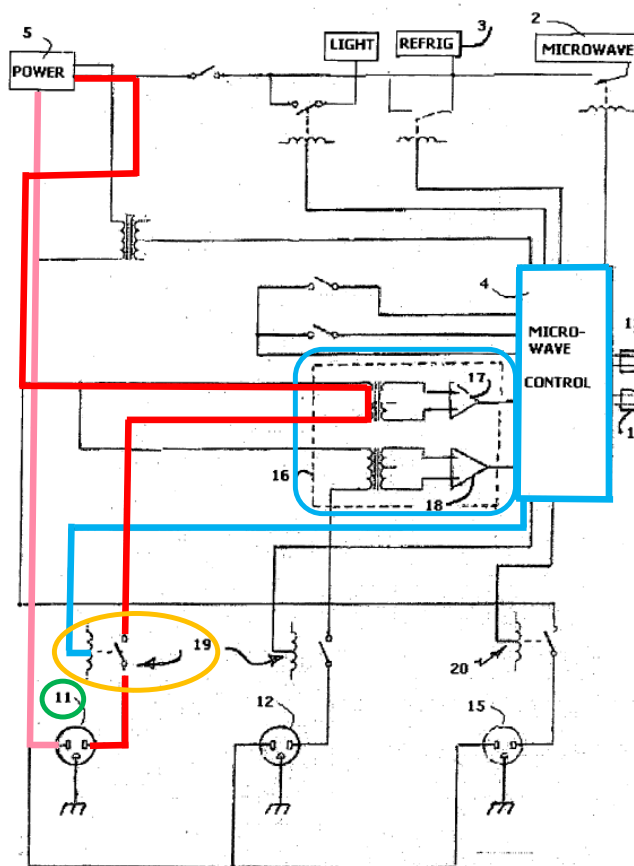


FIGURE 4

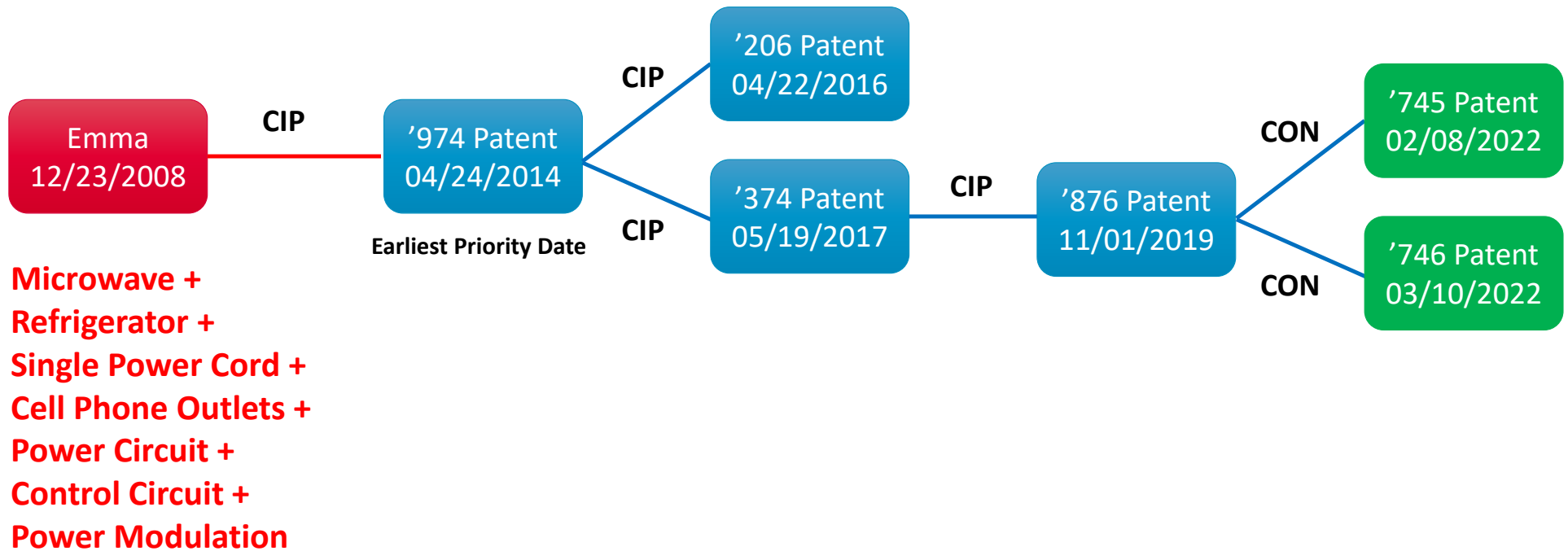
DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

'745 Pat: Institution Decision, Paper No. 10 at 13-15
 '746 Pat: Institution Decision, Paper No. 10 at 12-14
 '745 Pat: Paper No. 1 at 9-10, 17-19
 '746 Pat: Paper No. 1 at 10, 17-20
 Ex. 1002, ¶¶ 65-66, 113-115
 Ex. 1011, Fig. 4 (annotated)

Emma Family

PRIOR ART

CHALLENGED PATENTS



The '745 /'746 Patents – Emma + Smoke Sensor

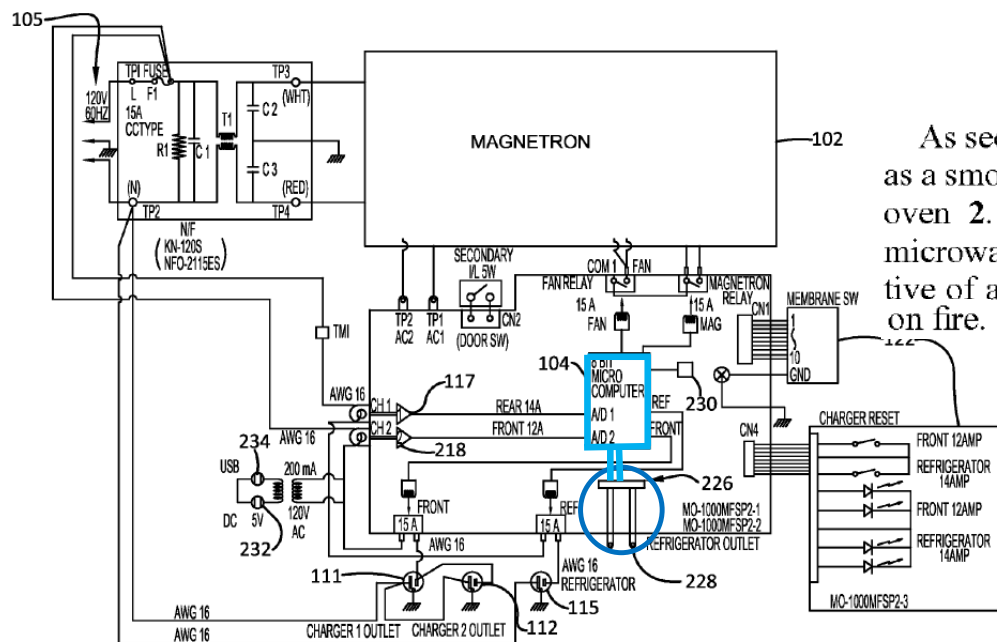


FIGURE 18

As seen in FIGS. 16, 18, and 20, a safety sensor 226 such as a smoke or gas sensor may be provided in the microwave oven 2. The smoke sensor 226 operates to turn off the microwave oven upon sensing smoke or polluted air indicative of a dangerous condition such as the microwave being on fire.

'745 Pat: Institution Decision, Paper No. 10 at 5-6

'746 Pat: Institution Decision, Paper No. 10 at 6

'745 Pat: Paper No. 1 at 10-11

'746 Pat: Paper No. 1 at 10-11

Ex. 1002, ¶ 67

Ex. 1001, 14:12-18, Fig. 18 (annotated)

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The '745/'746 Patents – Emma + USB Ports

As shown in FIGS. 15, 16 and 27, the exemplary front control panel 22 of the microwave oven 2 may include Universal Serial Bus (USB) ports 232, 234 for connection, communication, and power supply between the front control panel 22 and electronic devices such as a personal computer, cell phone, Smart Phone, Ipod®, Ipad®, or other suitable device to allow communication and/or charging of the electronic device plugged into the USB ports.

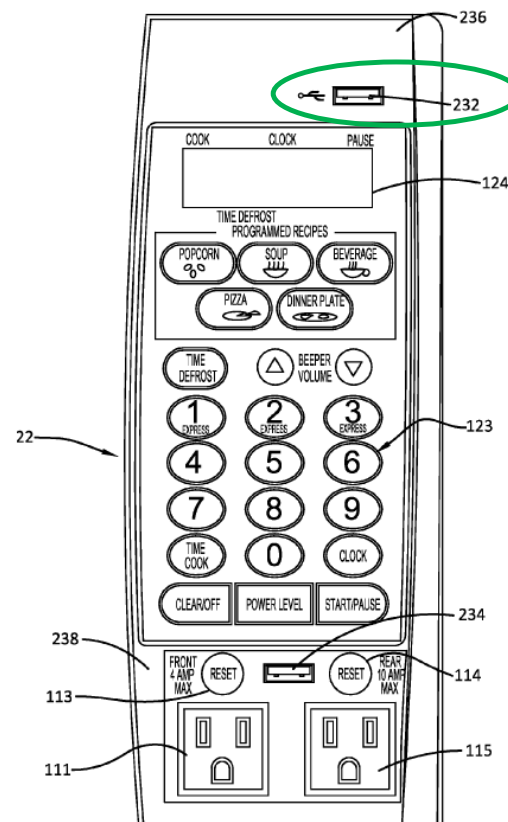


FIGURE 15

'745 Pat: Paper No. 1 at 11
'746 Pat: Paper No. 1 at 11
Ex. 1001, 20:8-15, Fig. 15 (annotated)

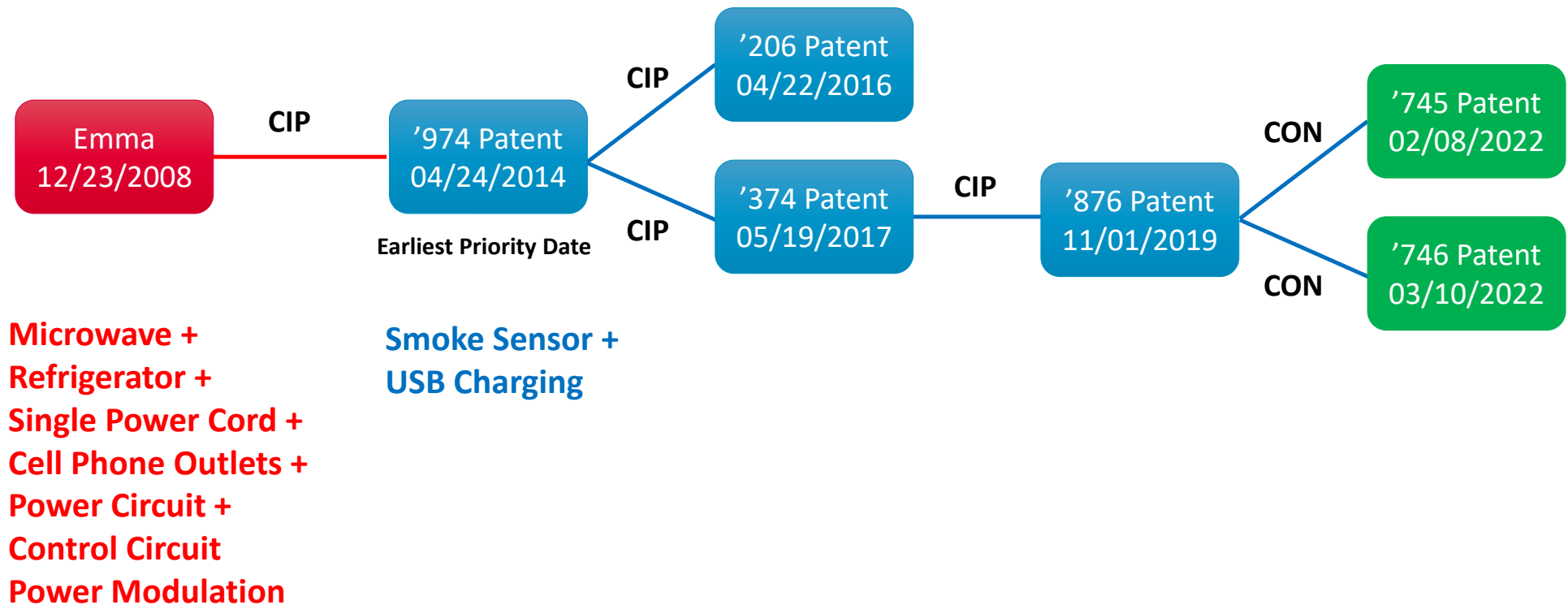
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Emma Patent Family

PRIOR ART

CHALLENGED PATENTS



Ultimate Invalidity Questions for the Board:

- Are the claims indefinite as determined in CJ William's *Markman* Order?
- Would a POSITA have found it obvious to add known smoke sensors to Emma's appliance?
- Would a POSITA have found it obvious to substitute Emma's cell phone auxiliary outlets with well-known USB charging ports?

Indefiniteness of “Level [Amount] of Smoke”

Claim Construction Timeline

Date	Event	Construction of “level [amount] of smoke”
Oct. 9, 2023	Petition	Patent Owner’s interpretation in infringement contentions. [’745 Pat: Paper No. 1 at 13-14; ’746 Pat: Paper No. 1 at 14.]
Jan. 17, 2024	Preliminary Patent Owner Response	plain and ordinary meaning [’745 Pat: Paper No. 7 at 5, fn. 2; ’746 Pat: Paper No. 7 at 5, fn. 2.]
Apr. 10, 2024	Institution Decision	“predetermined level of smoke ‘indicative of a dangerous condition ’” • “To the extent there is a dispute as to the meaning of this limitation, the parties should address that issue during trial” [’745 Pat: Paper No. 10 at 11-12; ’746 Pat: Paper No. 10 at 10-11.]
May 31, 2024	CJ Williams’ <i>Markman</i> Order	Found Indefinite: • “dangerous condition,” • “level of smoke” and “amount of smoke” [Ex. 1025 at 14-22.]
July 17, 2024	Patent Owner Response	Adopts Board’s preliminary construction [’745 Pat: Paper No. 22 at 6-7; ’746 Pat: Paper No. 23 at 6-7.]
Oct. 8, 2024	Petitioner Reply	Argues Board construction and underlying terms are indefinite in view of CJ Williams’ <i>Markman</i> Order [’745 Pat: Paper No. 29 at 2-5; ’746 Pat: Paper No. 30 at 2-5.]
Nov. 19, 2024	Patent Owner Sur-Reply	Disputes merits of CJ Williams’ <i>Markman</i> Order [’745 Pat: Paper No. 34 at 3-9; ’746 Pat: Paper No. 35 at 3-9]

CJ Williams Held “Dangerous Condition” is Indefinite

- CJ Williams held “**dangerous condition**” is indefinite because:
 - Specification indicates unknown threshold where smoke turns from normal to “dangerous”
 - Specification discusses smoke point of oil, but
 - does not specify type of oil (there are numerous with different boiling points)
 - does not specify when smoke from unspecified oil turns from normal to “dangerous”
 - Extrinsic evidence shows “dangerous condition” may be based on
 - Individual manufacturer preferences based on microwave design
 - Subjective preference about what constitutes a “dangerous condition”
 - Possibly an unidentified industry standard
 - Intrinsic and extrinsic evidence does not indicate with reasonable certainty when smoke crosses a threshold from normal to “dangerous condition”

'745 Pat: Paper No. 29 at 2-3

'746 Pat: Paper No. 30 at 2-3

Ex. 1025 at 16-22

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Board's Construction Uses Indefinite Term "Dangerous Condition"

- Board *preliminarily* defined "level of smoke" and "amount of smoke" as a predetermined level of smoke "indicative of a ***dangerous condition***"
- Patent Owner, Petitioner, Board, and CJ Williams all agree the specification defines "level of smoke" and "amount of smoke" as some threshold that indicates a "dangerous condition"
- Board's preliminary construction uses the indefinite term "dangerous condition"

'745 Pat: Paper No. 7 at 5

'746 Pat: Paper No. 7 at 5

'745 Pat: Paper No. 10 at 11-12

'746 Pat: Paper No. 10 at 10-11

'745 Pat: Paper No. 29 at 2-5

'746 Pat: Paper No. 30 at 2-5

Ex. 1025 at 14-16

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

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CJ Williams Held “Level [Amount] of Smoke” are Indefinite

- CJ Williams held “*level of smoke*” and “*amount of smoke*” are indefinite because:
 - Terms of degree that are tied to some unspecified threshold when the microwave becomes “unsafe”
 - Like “dangerous condition,” references to “oil” or “overcooked food” do not provide sufficient guidance
- There is no definite construction for the terms “level of smoke” and “amount of smoke”, thus these underlying terms must also be indefinite

Ex. 1025 at 14-16
'745 Pat: Paper No. 29 at 2-5
'746 Pat: Paper No. 30 at 2-5

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

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Patent Owner's Sur-Reply Waiver Arguments are Meritless

- **Patent Owner Argument 1:** Petitioner cannot challenge the Board's construction as indefinite. That is wrong because:
 - Board *sua sponte* proposed construction with indefinite term “dangerous condition”
 - Board invited parties to address disagreements with construction
 - Petitioner adopted Board's construction and argued prior art does not show microwave shutting down before a “dangerous condition”
 - Indefiniteness is a claim construction issue.
 - Under Federal Circuit Law, “a petitioner is entitled under the APA to respond to new claim construction arguments made by a patent owner or adopted by the Board sua sponte and ... both parties are entitled to respond to a new construction adopted by the Board sua sponte after an institution decision.” *Axonics, Inc. v. Medtronic, Inc.*, 75 F.4th 1374, 1381-84 (2023).

'745 Pat: Paper No. 34 at 1-3

'746 Pat: Paper No. 35 at 1-3

'745 Pat: Paper No. 29 at 2-5

'746 Pat: Paper No. 30 at 2-5

Patent Owner's Sur-Reply Waiver Arguments are Meritless

- **Patent Owner Argument 2:** Board cannot cancel the claims as indefinite based on its *sua sponte* construction. However,
 - In *Axonics*,
 - Patent Owner raised a new construction after institution, and the Board adopted that construction in its Final Written Decision.
 - The Board did not allow Petitioner to raise a new ground of invalidity based on the adopted construction.
 - The Federal Circuit held that “a petitioner must be given the opportunity in its reply to argue and present evidence of anticipation or obviousness under the new construction, at least where it relies on the same embodiments for each invalidity ground as were relied on in the petition.”
 - While the circumstances here are slightly procedurally different than *Axonics*, the same principles apply –
 - The Board's *sua sponte* construction and the Patent Owner's adoption of it entitles petitioner to challenge the validity of the claims on an unraised indefiniteness ground

⁷⁴⁵ Pat: Paper No. 34 at 1-3

⁷⁴⁶ Pat: Paper No. 35 at 1-3

⁷⁴⁵ Pat: Paper No. 29 at 2-5

⁷⁴⁶ Pat: Paper No. 30 at 2-5

Patent Owner's Sur-Reply Mischaracterizes CJ Williams' Stay Order

- Patent Owner alleges CJ Williams stayed the litigation to “reconsider [his] claim construction in light of the Board’s guidance.” He did not say that. For clarity:
 - Pending before CJ Williams is Petitioner’s Motion for Partial Summary Judgment of Invalidity Based on Indefiniteness and Patent Owner’s Motion for Reconsideration of Indefiniteness
 - CJ Williams stayed his decisions on these two motions pending the Board’s Final Written Decision because:
 - He values the expertise of the USPTO and could benefit from the Board’s final written decision before he rules on the pending Motions
 - The stay can avoid the risk of inconsistent rulings

'745 Pat: Paper No. 34 at 3
'746 Pat: Paper No. 35 at 3
Ex. 2037 at 10-13

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

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Patent Owner's Sur-Reply Disagreements with CJ Williams are Meritless

- **Patent Owner Argument 1:** claims are merely directed to using well-known smoke sensors that detect “burning food”. This argument demonstrates the claims are indefinite, because:
 - Patent Owner is attempting to offer a new construction with the term “burning food”
 - “burning food” is **not** a term found in the specification or claims
 - “burning food” is a made-up term and yet another boundless and subjective term:
 - Is food “burning” when it starts to smoke?
 - Is food “burning” when the food is on fire?
 - Is food “burning” when the food is charring like toast?
 - Smoke detectors detect smoke, not “burning food”
 - Patent Owner still cannot find a definite way to describe its claims
 - The claims do not merely recite a microwave with a known smoke sensor; they claim some unspecified threshold indicative of a dangerous condition

⁷⁴⁵ Pat: Paper No. 34 at 4-8

⁷⁴⁶ Pat: Paper No. 35 at 4-8

Patent Owner's Meritless Disagreements with CJ Williams

- **Patent Owner Argument 2:** specification discloses smoke point of oil
 - CJ Williams has rejected this argument based on well-reasoned findings.
- **Patent Owner Argument 3:** claims are flexible, not limited to burning of a specific food, microwave configuration, or particular smoke sensor
 - these are not claim terms, they are evidence that shows why the claim is indefinite
 - Patent Owner is ignoring the claim language, which recites some unspecified threshold indicative of a dangerous condition

'745 Pat: Paper No. 34 at 4-8

'746 Pat: Paper No. 35 at 4-8

Ex. 1025 at 17-18

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Patent Owner's Meritless Disagreements with CJ Williams

- **Patent Owner Argument 4:** CJ Williams improperly relied on *Teva* by requiring “mathematical precision”. Patent Owner mischaracterizes CJ Williams’ reliance on *Teva* because:
 - *Teva* claims recited term “molecular weight,” which was found ambiguous because evidence showed the term could be different types of molecular weights
 - Here, similar to *Teva*, the claims recite an ambiguous threshold, and the evidence does not provide an objective boundary for that term
- **Patent Owner Argument 5:** CJ Williams ran afoul of various patent doctrines, including requiring Intirion disclose well-known prior art and limit claims to specific embodiments
 - Patent Owner is confusing several inapplicable §112 doctrines
 - Indefiniteness is whether claims are amenable to construction – here they are not

⁷⁴⁵ Pat: Paper No. 34 at 7-9

⁷⁴⁶ Pat: Paper No. 35 at 7-9

Claim Mapping Disputes

Overview of Claim Mapping Disputes

Claim Term Descriptor	Prior Art Reference	Disputed Mapping?
Microwave Oven	Emma	No
Refrigerator	Emma	No
Control Circuit	Emma	No
Withhold and Deliver Electrical Power	Emma	Yes
Smoke Sensor	Smith	Yes
	Butt	Yes
Shutdown Function	Smith	Yes
	Butt	Yes
Reset Enable Function	Smith	Yes
	Butt	Yes
USB Ports	Quezada	No
Auxiliary Output Device	Emma	No
Sensor	Smith	Yes

Parties dispute what prior art teaches

- Emma
 - Delivery of power
- Smith
 - Smoke detector combined with microwave oven
 - Shut down prior to set end time
 - Reset of microwave after shut down
- Butt
 - Reset of appliance for use
 - Smoke sensor for use with appliance

Disputes over Emma Mapping

Disputes over Emma Mapping

Claim Term Descriptor	Prior Art Reference	Disputed Mapping?
Microwave Oven	Emma	No
Refrigerator	Emma	No
Control Circuit	Emma	No
Withhold and Deliver Electrical Power	Emma	Yes
Smoke Sensor	Smith	Yes
	Butt	Yes
Shutdown Function	Smith	Yes
	Butt	Yes
Reset Enable Function	Smith	Yes
	Butt	Yes
USB Ports	Quezada	No
Auxiliary Output Device	Emma	No

Emma Discloses “Withhold and Deliver Electrical Power”

- Petition explains Emma’s control circuit opens relays to cut power to devices when the microwave is in use.
- For example, control circuit opens relays 20 to cut power to refrigerator receptacle 15 when the microwave demands power

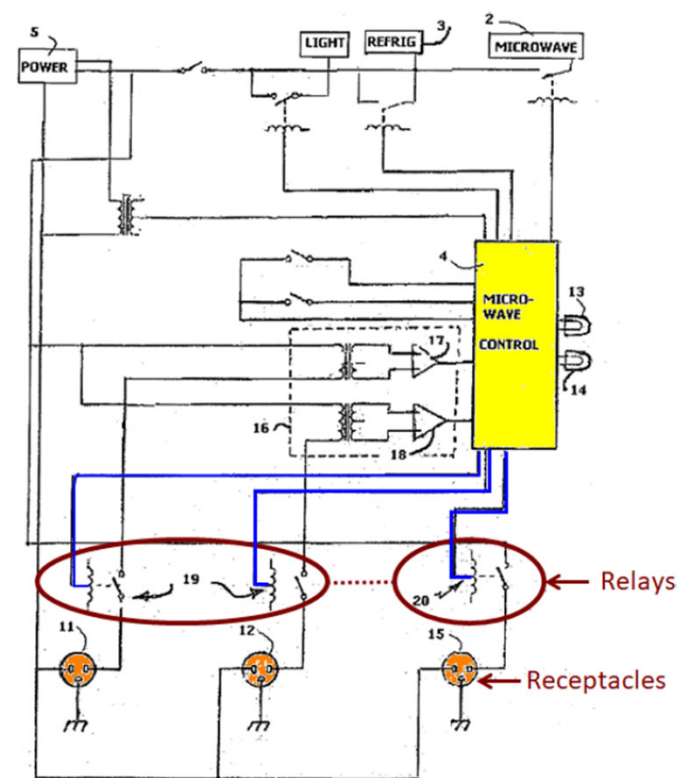


FIGURE 4

'745 Pat: Paper No. 1 at 41-46
'746 Pat: Paper No. 1 at 42-46
Ex. 1002, ¶¶ 203, 205-206, 289
Ex. 1023, ¶¶ 65, 192
Ex. 1011, Fig. 4 (annotated)

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

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Emma Discloses “Withhold and Deliver Electrical Power”

- Petition shows Emma delivers power to refrigerator when microwave is **not** in use:

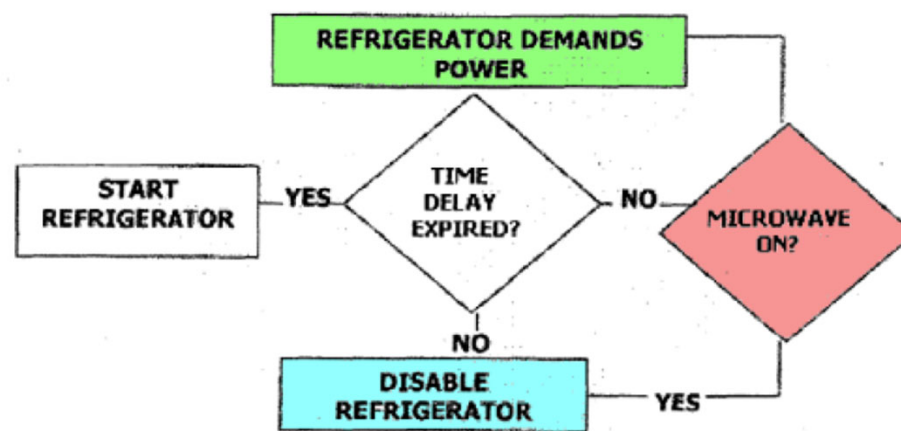


FIGURE 6

'745 Pat: Paper No. 1 at 41-46
'746 Pat: Paper No. 1 at 42-46
Ex. 1002, ¶¶ 203, 205-206, 289
Ex. 1023, ¶¶ 65, 192
Ex. 1011, Fig. 4 (annotated)

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

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Emma – “Withhold and Deliver Electrical Power”

- Patent Owner does not dispute Emma discloses withholding power from refrigerator when microwave is in use
- Patent Owner does not dispute Emma discloses delivering electrical power to refrigerator when the microwave is **not** in use

See '745 Pat: Paper No. 22 at 20-21

Emma – “Withhold and Deliver Electrical Power”

- Patent Owner’s sole complaint is that Petitioner’s mapping is deficient because it purportedly improperly incorporated Dr. Hornstein's declaration.
 - Patent Owner’s procedural deficiency complaint is irrelevant, as the Board rejected this argument when it instituted proceedings.
 - Patent Owner’s procedural deficiency argument is wrong—the Petition mapped this limitation.
 - Patent Owner’s argument is illogical as Patent Owner does not dispute Petitioner showed Emma teaches opening relays to withhold power
 - the converse must be true – close the relay to deliver power

’745 Pat: Institution Decision, Paper No. 10 at 25-26

See ’745 Pat: Paper No. 22 at 20-21

’745 Pat: Paper No. 1 at 41-46

’746 Pat: Paper No. 1 at 42-46

’745 Pat: Paper No. 29 at 5

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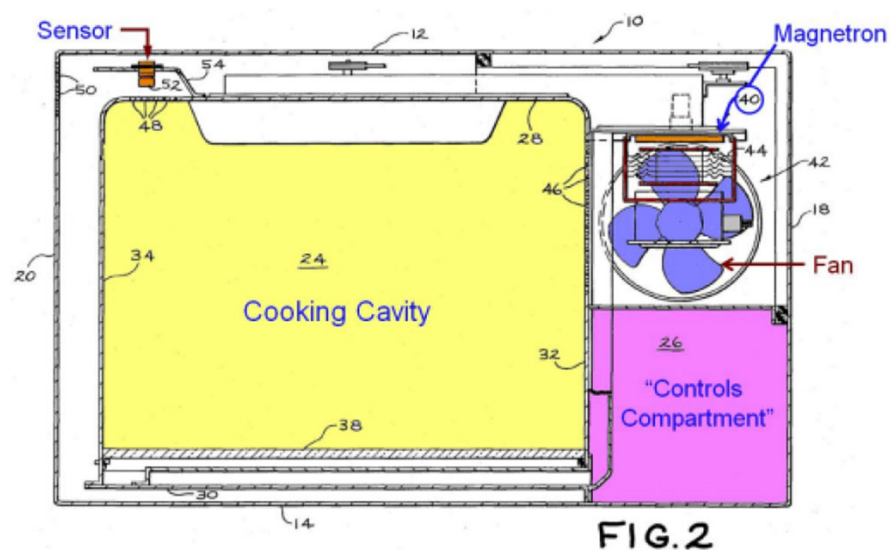
DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

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Disputes over Smith Mapping

Smith's Undisputed Teachings

- Smith teaches a microwave 10 that includes:
 - A cooking cavity 24 and magnetron 40
 - A fan 44 for circulating air
 - Gas sensor 52 located inside the microwave 10 in an air flow channel



'745 Pat: Institution Decision, Paper No. 10 at 16-17

'746 Pat: Institution Decision, Paper No. 10 at 15-16

'745 Pat: Paper No. 1 at 22-23

'746 Pat: Paper No. 1 at 22-24

Ex. 1002, ¶104

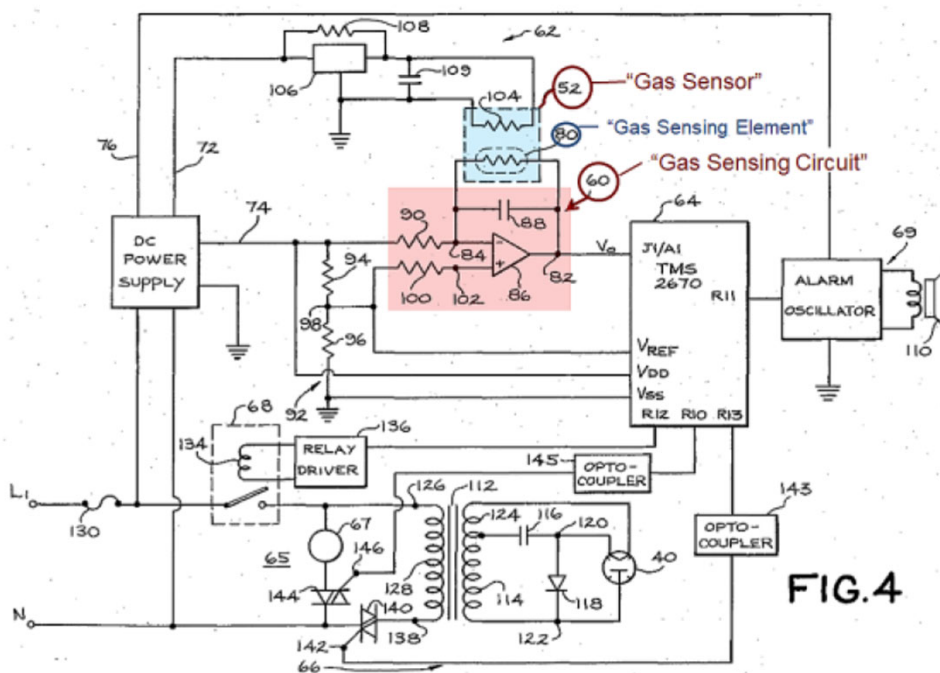
Ex. 1014, Fig. 2 (annotated)

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

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Smith's Undisputed Teachings

- Smith teaches a microwave 10 that includes:
 - Gas sensor 52 is connected to a control circuit (Fig. 4)
 - If gas concentration is out of range, gas sensor 52 sends signal to control circuit, which causes deenergizing of magnetron



'745 Pat: Paper No. 1 at 49-50

'746 Pat: Paper No. 1 at 49-50

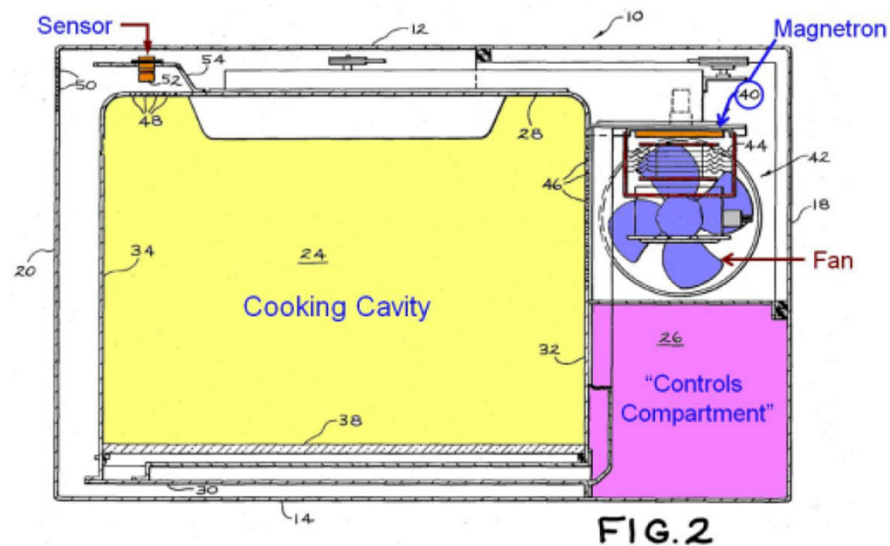
Ex. 1002, ¶¶ 170, 289

Ex. 1023, ¶72

Ex. 1014, Fig. 4 (annotated)

Smith's Undisputed Teachings

- “a method and apparatus for **anticipating** the occurrence of a fire in the cooking cavity of a **microwave oven**.”
- “[a]sensor responsive to the concentration of gases in the circulating air monitors the gas concentration level and generates an output signal representative thereof.”



'745 Pat: Institution Decision, Paper No. 10 at 16-17 (emphasis added)
 '746 Pat: Institution Decision, Paper No. 10 at 16-17 (emphasis added)
 '745 Pat: Paper No. 1 at 22-23
 '746 Pat: Paper No. 1 at 22-24
 Ex. 1002, ¶104
 Ex. 1014, Fig. 2 (annotated)

Disputes Over Smith Mapping

Claim Term Descriptor	Prior Art Reference	Disputed Mapping?
Microwave Oven	Emma	No
Refrigerator	Emma	No
Control Circuit	Emma	No
Withhold and Deliver Electrical Power	Emma	Yes
Smoke Sensor	Smith	Yes
	Butt	Yes
Shutdown Function	Smith	Yes
	Butt	Yes
Reset Enable Function	Smith	Yes
	Butt	Yes
USB Ports	Quezada	No
Auxiliary Output Device	Emma	No
Sensor	Smith	Yes

See Paper No. 22 at 32-41
See Paper No. 23 at 32-41

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

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Smith

- Three disputes about what Smith teaches
 - **Smoke Detector** - Smoke detector combined with microwave oven
 - **Shut Down Function** - Shut down of microwave prior to set end time
 - **Reset Enable** - Reset of microwave after shut down

Smith – Smoke Sensor

- Patent Owner contends Smith discloses only a humidity sensor, not a smoke sensor because
 - disclosed sensor is for automatic cooking
 - example sensor in U.S. Pat. 4,133,995 to Buck is humidity sensor
 - focused on “drying out phase” to “pre-combustion phase”
 - Fig. 3 of Smith is consistent with humidity sensor
 - gas sensors and VOC sensors are not necessarily smoke sensors
 - Figaro Model 186 is not same as Figaro 816
 - Dr. Tanbour opines it is a humidity sensor

⁷⁴⁵ Pat: Paper No. 22 at 32-37

⁷⁴⁶ Pat: Paper No. 23 at 32-37

⁷⁴⁵ Pat: Paper No. 34 at 10-12

⁷⁴⁶ Pat: Paper No. 35 at 11-13

Smith – “Smoke Sensor”

- '745 and '746 Patents disclose different types of smoke sensors
 - At least 3 types disclosed
 - Volatile Organic Compound (VOC) detector
- Smith clearly states it is sensing for gases other than humidity

'745 Pat: Institution Decision, Paper No. 10 at 27-28

'746 Pat: Institution Decision, Paper No. 10 at 24-25

'745 Pat: Ex. 1001 at 15:33-17:54

'746 Pat: Ex. 1001 at 15:33-17:54

Smith – “Smoke Sensor”

- Smith discloses smoke sensors
 - before actually reaching the ignition point, the “food begins to **char, smoke or smolder**, resulting in a second period of relatively rapidly increasing **gas concentration** in the circulating air” (Inst. Dec., Paper No., 10, pp. 28-29) (emphasis added)
 - that phase is the pre-combustion phase (Paper No. 29, pp. 5-7)
 - Pre-combustion phase is when magnetron is turned off to prevent fire (Paper No. 29, p. 7)
 - Dr. Tanbour’s opinion contradicts Smith’s disclosure (*Id.*)

See '745 Pat: Paper No. 29 at 5-7

See '746 Pat: Paper No. 30 at 5-7

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

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Smith – “Smoke Sensor”

- Smith discloses smoke sensors, including VOC sensors
 - VOCs are organic gases that are emitted into the air from products or processes
(’745 Pat: Inst. Dec., Paper No. 10 at 27-28; ’746 Pat: Inst. Dec., Paper No. 10 at 24-26)
 - Sensor 52
 - senses gases including **organic gases** that are emitted from heating food. (Ex. 1014, 3:3-21)(emphasis added)
 - illustrative and is TGS No. 186 from Figaro Engineering (*Id.*)
 - Petitioner expert believes TGS No. 186 is a typo and should be TGS No. 816 (Ex. 1002, ¶¶[167-169])
 - In any event, reference teaches function of TGS sensor – to sense gas, including organic gas (Ex. 1014, 3:3-21)
 - Meets ’745 Patent, Claim 22 – VOC sensors
(’745 Pat: Inst. Dec., Paper No. 10 at 36-37)

See ’745 Pat: Paper No. 29 at 5-7

See ’746 Pat: Paper No. 30 at 5-7

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

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Smith – “Shut Down Function”

- Shut Down Function - “withdraw[ing] cooking power to a microwave prior to a set end time of a current cooking session.”
(’745 Pat: Inst. Dec., Paper No. 10 at 30-32; ’746 Pat: Inst. Dec., Paper No. 10 at 29-31)
- Patent Owner contends this function not disclosed because
 - No disclosure of removing power prior to set end time
(’745 Pat: Paper No. 22 at 37-38; ’746 Pat: Paper No. 23 at 37-38)
 - Smith discusses automatic cooking “meaning the system may not have any ‘time’”
(’745 Pat: Paper No. 22 at 37-38; ’746 Pat: Paper No. 23 at 37-38)

Smith – “Shut Down Function”

- Smith does disclose Shut Down Function
 - No dispute that Smith discloses shut down of the microwave upon sensing level of smoke/gas
 - Dispute focused on whether shut down is prior to “set end time”
- Smith discloses shutting down before a set end time
 - Discloses microwaves for which user can set a cooking time.
 - Directed at shutting down microwave pre-combustion
 - “[R]egardless of *why* Smith shuts off power to the microwave. . . it would have been reasonably clear to a person of ordinary skill in the art from Smith’s written description that during a cooking event, the magnetron and blower of the microwave are turned off before a desired, or ‘set,’ cooking time has elapsed”
(’745 Pat: Institution Decision, Paper No. 10 at 31-32; ’746 Pat: Institution Decision, Paper No. 10 at 31)

See ’745 Pat: Paper No. 29 at 7-8

See ’746 Pat: Paper No. 30 at 7-8

Smith – “Shut Down Function”

- Dr. Tanbour’s statements about “automatic cooking” do not show no end time
 - Testified he does not know if automatic cooking involves setting a time period for cooking
(’745 Pat: Paper No. 29 at 8; ’746 Pat: Paper No. 30 at 8)
 - Testified that all microwaves, including Smith, enable users to set cooking time. (*Id.*)
 - Therefore Smith not limited to automatic cooking.
 - Even Patent Owner knows Dr. Tanbour does not state that automatic cooking means no end time – “Smith discusses automatic cooking, meaning the system **may not** have any ‘time,’”
(’745 Pat: Paper No. 22 at 37; ’746 Pat: Paper No. 23 at 37) (emphasis added)

See ’745 Pat: Paper No. 29 at 7-8

See ’746 Pat: Paper No. 30 at 7-8

Smith – “Reset Enable Function”

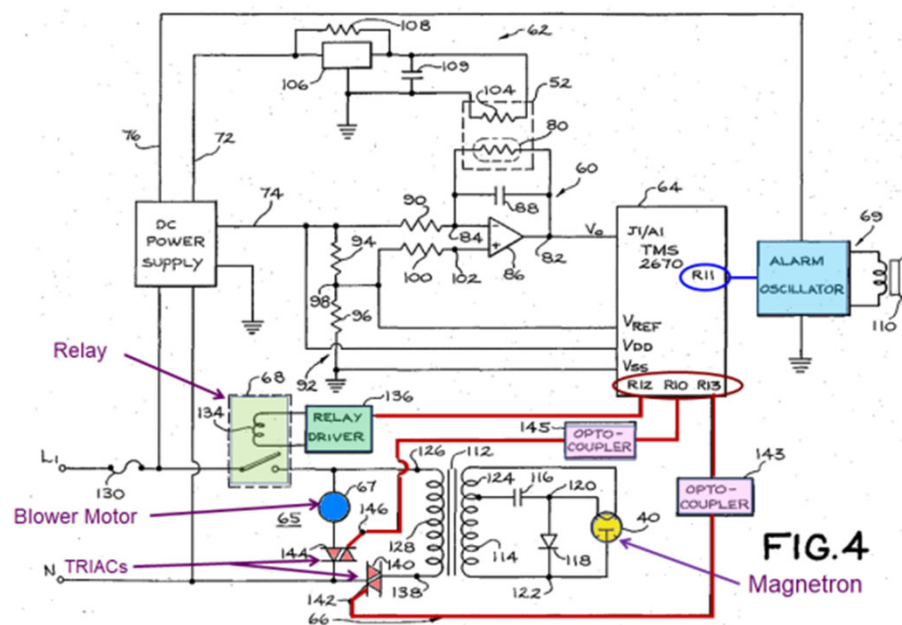
- Reset Enable Function – “enable the magnetron to receive cooking power in a next subsequent cooking session”
(’745 Pat: Inst. Dec., Paper No. 10 at 24; ’746 Pat: Inst. Dec., Paper No. 10 at 23)
- Patent Owner contends this limitation is not taught by Smith because
 - Does not mention a reset or enabling power in a subsequent session
(’745 Pat: Paper No. 22 at 38-39; ’746 Pat: Paper No. 23 at 38-39)
 - Does not teach opening and closing relay to remove and re-enable power.
(’745 Pat: Paper No. 22 at 38-39; ’746 Pat: Paper No. 23 at 38-39)

Smith – “Reset Enable Function”

- A POSITA would understand Smith discloses a microwave that can be re-used, or reset after shut down
- Smith discloses
 - opening relay to remove power.
(’745 Pat: Paper No. 1 at 58-59; ’746 Pat: Paper No. 1 at 59-60)
 - Removing power before fire
(’745 Pat: Paper No. 29 at 6-8; ’746 Pat: Paper No. 30 at 5-7)
- POSITA would understand that the microwave can be reused

Smith – “Reset Enable Function”

- Relay 68 opens to remove power to magnetron when certain gas level determined.



See '745 Pat: Paper No. 1 at 58-59

See '746 Pat: Paper No. 1 at 58-59

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

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Smith – “Reset Enable Function”

- POSITA would understand how to reset the microwave to be re-used
- Dr. Horenstein confirmed POSITA would understand to reset microwave for re-use after shutdown ('745 Pat: Paper No. 29 at 8-9; '746 Pat: Paper No. 30 at 8-9)
- Dr. Tanbour also testified
 - Functioning and use of relays in electrical circuits was known ('745 Pat: Paper No. 29 at 9; '746 Pat: Paper No. 30 at 9)
 - Microwave in Smith would be re-usable because shut-down pre-ignition ('745 Pat: Paper No. 29 at 9; '746 Pat: Paper No. 30 at 9)
 - POSITA would know how to re-enable microwave after shutdown in Smith. ('745 Pat: Paper No. 29 at 9-10; '746 Pat: Paper No. 30 at 9)
 - opening/closing the door, reset button, elapsed time, or other hybrid means

Disputes over Butt Mapping

Disputes Over Butt Mapping

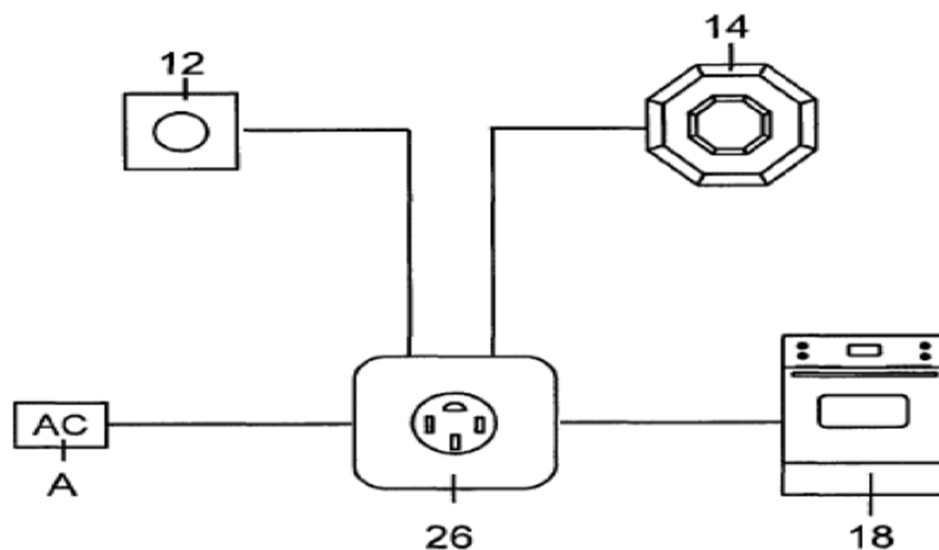
Claim Term Descriptor	Prior Art Reference	Disputed Mapping?
Microwave Oven	Emma	No
Refrigerator	Emma	No
Control Circuit	Emma	No
Withhold and Deliver Electrical Power	Emma	Yes
Smoke Sensor	Smith	Yes
	Butt	Yes
Shutdown Function	Smith	Yes
	Butt	Yes
Reset Enable Function	Smith	Yes
	Butt	Yes
USB Ports	Quezada	No
Auxiliary Output Device	Emma	No
Sensor	Smith	Yes

Butt

- Three disputes about what Butt teaches
 - **Smoke Detector** - Smoke detector combined with microwave oven
 - **Shut Down Function** - Shut down of microwave prior to set end time
 - **Reset Enable** - Reset of microwave after shut down

Butt's Undisputed Teachings

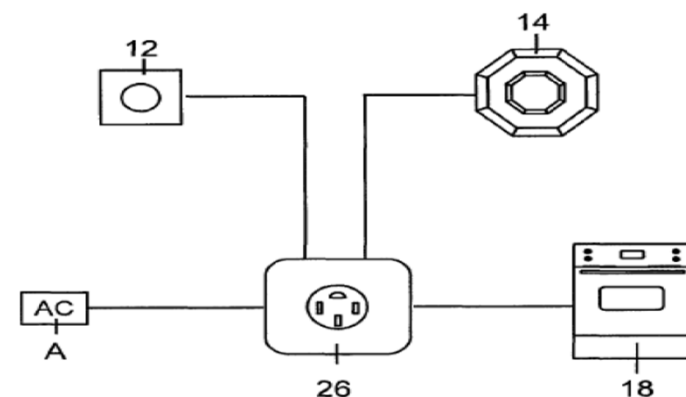
- Smoke detector 14
- Controller 20 within circuit box 26
- Electrical Appliance 18 (any kitchen appliance)
- Reset button 12



'745 Pat: Institution Decision, Paper No. 10 at 15-16
'746 Pat: Institution Decision, Paper No. 10 at 14-15
'745 Pat: Paper No. 1 at 23-25
'746 Pat: Paper No. 1 at 24-26
Ex. 1002, ¶¶106-108
Ex. 1015, Fig. 1B

Butt's Teaches a "Smoke Sensor"

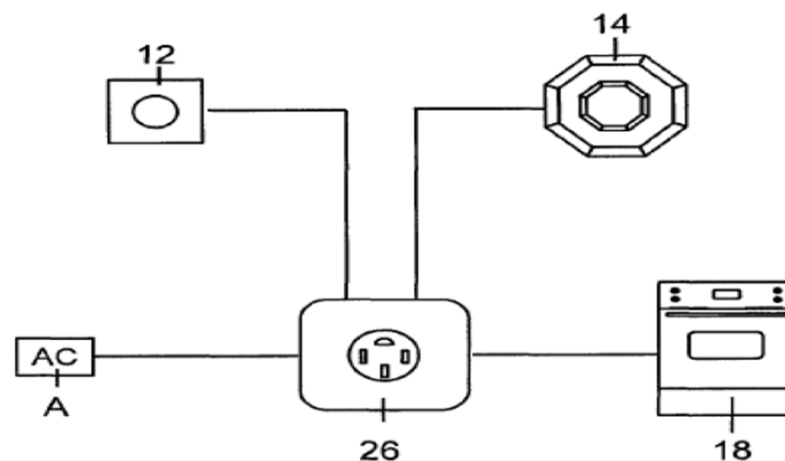
- Butt's smoke detector 14 is in operative connection with controller 20 in circuit box 26
 - Patent Owner does not dispute this.
- Butt's smoke detector 14 is in operative connection with the inside of appliance 18 (e.g., microwave) because it is positioned to detect smoke emanating from there
 - Patent Owner argues Butt's smoke sensor is not physically inside the microwave, but:
 - This is not a claim requirement.



'745 Pat: Paper No. 1 at 50-52; '746 Pat: Paper No. 1 at 50-52
See '745 Pat: Paper No. 22 at 44-47; '746 Pat: Paper No. 23 at 44-47
'745 Pat: Paper No. 29 at 11-12; '746 Pat: Paper No. 30 at 11-12
Ex. 1015, Fig. 1B

Butt Teaches a “Shutdown Function”

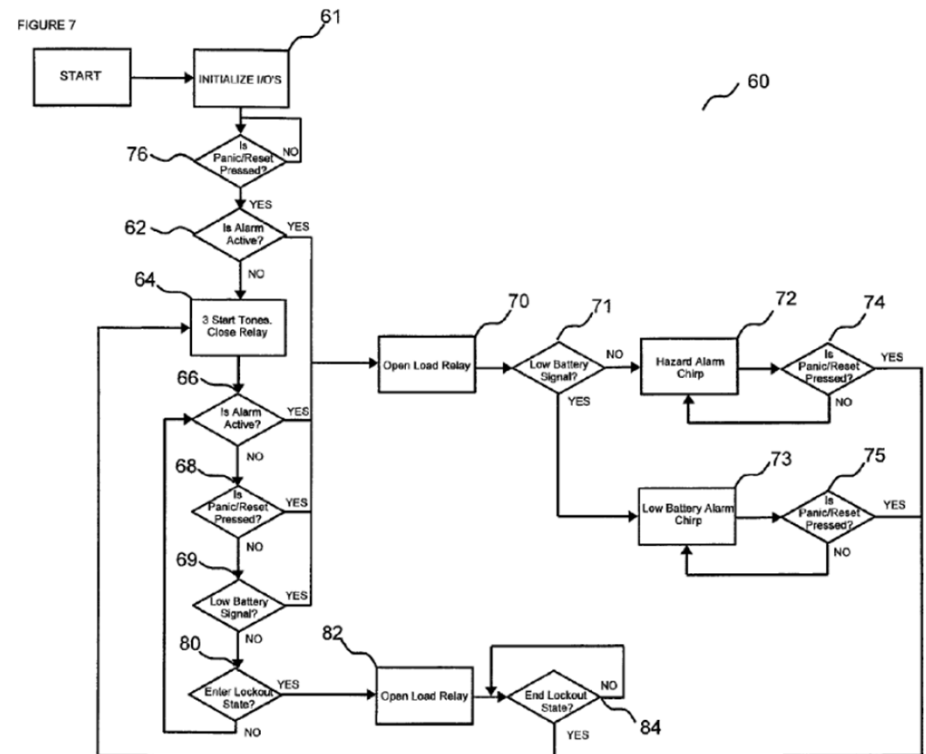
- Butt teaches if smoke detector 14 senses smoke, a signal is sent to controller 20, which cuts power to appliance 18
 - Patent Owner argues Butt shuts down appliance *after* a fire has started, but:
 - If appliance is a microwave, if there is a fire it would be shut down prior to the set end time



'745 Pat: Paper No. 1 at 54-56; '746 Pat: Paper No. 1 at 55-56
'745 Pat: Paper No. 22 at 47-48; '746 Pat: Paper No. 23 at 47-48
'745 Pat: Paper No. 29 at 12; '746 Pat: Paper No. 30 at 12
Ex. 1015, Fig. 1B

Butt Teaches a “Reset Enable Function”

- Butt teaches if a user pushes the reset button, controller 20 closes a relay to re-deliver power to appliance 18
- In sur-reply, Patent Owner states Butt only re-enables power after a user hits the reset button, but:
 - Patent Owner does not explain why this does not satisfy the claim limitation



'745 Pat: Paper No. 1 at 56-58

'746 Pat: Paper No. 1 at 57-59

See '745 Pat: Paper No. 34 at 17

See '746 Pat: Paper No. 35 at 17-18

Ex. 1015, Fig. 7

Disputes over Motivations to Combine

Ground 2: Emma + Smith

Ground 2: Emma + Smith

- A POSITA would have combined Emma with Smith with predicable results/reasonable expectation of success because:
 - All claimed elements are in prior art
 - Both references teach optimizing microwaves, including safety features
 - Emma – control circuit for power modulation to prevent dangerous overload conditions
 - Smith – smoke sensor to prevent microwave fire
 - Both references teach a control circuit with relays for shutting down power to a component in response to a signal regarding operation of the microwave
 - No change in Smith’s smoke sensor by combining with Emma
 - Consistent with Emma having “all-in-one-appliance”
- Obvious to try, because recognized need in the art to improve microwave safety

⁷⁴⁵ Pat: Paper No. 1 at 72-75

⁷⁴⁶ Pat: Paper No. 1 at 70-72

Ground 2: Emma + Smith

- If Board finds no explicit Reset Enable Function in Smith, obvious to modify Smith to include it with predictable results/reasonable expectation of success because:
 - Smith teaches anticipating and preventing fires
 - Smith shutdown is configured to be reversible – re-close relays in control circuit
 - Problematic to offer a microwave that had to be serviced or replaced after one smoke sensor trip before a fire
- Obvious to try, because components are non-destructive, designed for power cycling, and small finite number of reset solutions

^{'745 Pat:} Paper No. 1 at 75-76

^{'746 Pat:} Paper No. 1 at 72-74

Patent Owner's Disputes with Emma + Smith

- **Patent Owner Argument 1:** Even if Smith discloses a VOC sensor, not all VOC sensors are smoke sensors. ('745 Pat: Paper No. 22 at 41-42; '746 Pat: Paper No. 23 at 41-42)
- This is meritless because:
 - As the Board properly recognized in the Institution Decision, Smith discloses a smoke sensor. ('745 Pat: Inst. Dec., Paper No. 10 at 27-29; '746 Pat: Inst. Dec., Paper No. 10 at 24-27).
 - Petitioner showed Smith detects VOCs, including through the testimony of Dr. Tanbour. ('745 Pat: Paper No. 29 at 5-7; '746 Pat: Paper No. 30 at 5-7).
- **Patent Owner Argument 2:** Petitioner offers an improper motivation to combine by alleging any functionality can be added to Emma. ('745 Pat: Paper No. 22 at 42; '746 Pat: Paper No. 23 at s42)
- This is wrong because:
 - This is not Petitioner's alleged motivation. Dr. Horenstein's opinion is based on Emma and Smith improving the *safety* of microwaves. ('745 Pat: Paper No. 29 at 10-11; '746 Pat: Paper No. 30 at 11)
 - Patent Owner does not address Petitioner's several other bases for combining Emma with Smith. ('745 Pat: Paper No. 29 at 10-11; '746 Pat: Paper No. 30 at 11)

Patent Owner's Disputes with Emma + Smith

- **Patent Owner Argument 3:** Petitioner offers no “evidence” a POSITA would look to Smith and combine it with Emma’s power cycling. (’745 Pat: Paper No. 34 at 13-14; ’746 Pat: Paper No. 35 at 14-15).
 - Patent Owner’s argument is unclear.
 - Petitioner provided evidence that a POSITA would be motivated to combine Smith’s smoke sensor functionality with Emma’s microwave appliance, to improve microwave safety features. (See ’745 Pat: Paper No. 1 at 72-75; ’746 Pat: Paper No. 1 at 70-72).
- **Patent Owner Argument 4:** Petitioner does not explain why a POSITA would combine Emma with Smith when it would exceed Smith’s max power consumption. (’745 Pat: Paper No. 34 at 14; ’746 Pat: Paper No. 35 at 14-15).
 - Patent Owner is misleading; this argument solely pertains to Dr. Tanbour’s opinions on the Figaro-816 sensor, a sensor they say is not disclosed. (Patent Owner citing Ex. 2001, ¶166).
 - Smith teaches a smoke sensor in a microwave, separate from the Figaro-816 embodiment
 - POSITA has “ordinary creativity with common sense, common wisdom, and common knowledge.”

Patent Owner's Disagreements with Emma + Smith

- **Patent Owner Argument 5:** Petitioner is using an “after-the-fact” Figaro document

(’745 Pat: Paper No. 22 at 42-43; ’746 Pat: Paper No. 23 at 42-43).

- Smith discloses smoke sensors in microwaves, separate from Figaro-816 embodiment.

(’745 Pat: Paper No. 29 at 5-7; ’746 Pat: Paper No. 30 at 5-7).

- Figaro-816 is an embodiment in Smith.

(See ’745 Pat: Inst. Dec., Paper No. 10 at 28; ’745 Pat: Inst. Dec., Paper No. 10 at 25).

Ground 4: Emma + Smith + Butt

Ground 4: Emma + Smith + Butt

- A POSITA would have combined Emma with Smith and Butt with predictable results/reasonable expectation of success because:
 - All claimed elements known in the prior art references
 - All three references relate to optimizing electric cooking appliances
 - Butt's reset function would result in the components functioning the same way as they do separately
 - Smoke sensing to withdraw electrical power and then re-enabling the appliance
 - All three references digitally control power distribution for an electrical appliance based on sensor inputs
- Obvious to modify Emma + Smith to include Butt's reset functionality
 - Emma + Smith teach microwave smoke sensor with control circuitry to modulate power
 - Butt's reset adds obvious benefit of re-using the microwave after smoke sensor trip
- Obvious to try, given recognized need in the art to optimize microwave functionality

'745 Pat: Paper No. 1 at 77-81

'746 Pat: Paper No. 1 at 76-80

Patent Owner's Disputes with Emma + Smith + Butt

- **Patent Owner Argument 1:** Petition combines **both** Smith **and** Butt's smoke sensors into Emma microwave. ('745 Pat: Paper No. 22 at 52-53; '746 Pat: Paper No. 23 at 52-53).
- This argument is non-sensical and incorrect because:
 - The claims do not recite incorporating into a microwave two different smoke sensors
 - Petition clearly argued a POSITA would combine Emma microwave + Smith's smoke sensor + Butt's reset enable function:
 - ***"Any inclusion of Butt's reset functionality with Smith's smoke sensor*** operatively connected with the cooking area into Emma, would result in such elements merely performing the same function as they do separately, i.e., smoke sensing to withdraw electrical power from an electrical cooking appliance and then re-enabling the electrical cooking appliance." (See e.g., '745 Pat: Paper No. 1 at 78; '746 Pat: Paper No. 1 at 77) (emphasis added).
 - ***"It would have been obvious to a POSITA to modify Emma with Butt and Smith to include the smoke sensor in operative connection with the microwave oven with the reset functionality disclosed by Butt*** for the added benefit of re-using the microwave oven." (See e.g., '745 Pat: Paper No. 1 at 79; '746 Pat: Paper No. 1 at 77) (emphasis added).

See '745 Pat: Paper No. 29 at 20-21

See '746 Pat: Paper No. 30 at 20-21

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

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Patent Owner's Disputes with Emma + Smith + Butt

- **Patent Owner Argument 2:** combination is against Butt's teaching of an external smoke SENSOR. ('745 Pat: Paper No. 22 at 54; '745 Pat: Paper No. 23 at 53-54).
- This argument is meritless because:
 - Combination relies on Butt's reset enable function; it does not require moving Butt's smoke sensor "inside" the microwave or closer thereto
 - Incorrectly implies a POSITA would have to cannibalize parts from Butt to integrate it
 - A POSITA can modify Emma/Smith based on Butt's teachings, including reset function
- **Patent Owner Argument 3:** Smith teaches away from Butt because Smith sensor is for humidity and it is cheaper. ('745 Pat: Paper No. 22 at 55; '746 Pat: Paper No. 22 at 54).
- This argument is meritless because:
 - Smith is not limited to humidity sensor; it discloses smoke sensor
 - Added cost is not relevant to the motivation to combine
 - A POSITA is not required to replace Butt's smoke sensor for the Smith sensor,
 - A POSITA can combine the teachings of both references without including all features

See '745 Pat: Paper No. 29 at 20-21

See '746 Pat: Paper No. 30 at 20-21

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

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Patent Owner's Disputes with Emma + Smith + Butt

- **Patent Owner Argument 4:** proposed combination would be shutting off a microwave after detecting a fire inside a small, closed, compartment, in which case microwave would not be re-enabled.
(’745 Pat: Paper No. 22 at 55-56; ’745 Pat: Paper No. 23 at 55).
- This argument is baseless because:
 - Challenged claims do not require a fire
 - Butt teaches resetting an appliance after a smoke sensor shutdown of that specific appliance
 - Dr. Tanbour concedes it is obvious to re-use the microwave because it was shut down before a fire
 - Dr. Tanbour conceded a POSITA would understand how to re-enable Smith after a safety shutdown

See ’745 Pat: Paper No. 29 at 20-22

See ’746 Pat: Paper No. 30 at 20-22

Patent Owner's Disputes with Emma + Smith + Butt

- **Patent Owner Argument 5:** Butt and Smith have different purposes, risks, and considerations because Butt concerns smart home smoke detection while Smith is humidity sensing in a microwave.
(’745 Pat: Paper No. 22 at 56; ’745 Pat: Paper No. 23 at 55-56).
- This argument is meritless because:
 - Smith and Butt both teach sensing smoke from appliances
 - A POSITA would be motivated to combine Butt’s reset feature with Smith’s smoke sensor
- **Patent Owner Argument 6:** Smith would not work with Butt’s reset function because Figaro 816 has an internal heater that must be preheated for 7 days.
(’745 Pat: Paper No. 22 at 56-57; ’745 Pat: Paper No. 23 at 56-57).
 - Smith not limited to Figaro 816 (which Patent Owner says is not applicable)
 - Smith does not teach microwave features cannot be used after plugging it in
 - Smith describes disabling cooking power with control relay, which doesn’t remove power to the sensor

See ’745 Pat: Paper No. 29 at 20-23

See ’746 Pat: Paper No. 30 at 20-23

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

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Ground 6: Emma + Smith + Knowledge

Ground 6: Emma + Smith + Knowledge

- This ground pertains to dependent claims reciting USB ports for charging
- Board state this ground “requires” ISDU.
(’745 Pat: Inst. Dec., Paper No. 10 at 42; ’746 Pat: Inst. Dec., Paper No. 10 at 40).
- That is not correct:
 - “Grounds 5 and 6: Obvious in View of Emma combined **with either** ISDU and Smith, and further combined with the Knowledge of a POSITA”
 - “Grounds 5 and 6...combination of Emma with the smoke sensors taught in ***ISDU or Smith***, and also substitute one or more of Emma’s auxiliary low power receptacles / outlets for a USB port...”
 - Ground 5 = Emma + ISDU + Knowledge
 - Ground 6 = Emma + Smith + Knowledge

’745 Pat: Paper No. 1 at 12, 81

’746 Pat: Paper No. 1 at 12, 80

Ground 6: Emma + Smith + Knowledge

- A POSITA would have been motivated to modify Emma's microwave to include USB ports with predictable results/reasonable expectation of success because:
 - Emma teaches low power auxiliary outlets for charging cell phones
 - POSITA knew at the time USB ports for charging cell phones was becoming prolific worldwide
 - Use of devices to convert AC to DC for charging cell phones with USB ports was also prolific and standardized
 - USB ports were being used for charging in a variety of different implementations, including computers, vehicles, and wall outlets.
 - A POSITA would have recognized that a microwave with charging outlets for cell phones would similarly benefit from implementing USB ports for charging
 - A POSITA would be motivated to make the substitution given the adoption of USB for charging and easy ability to directly connect to small devices via USB cables
- Obvious to try, because USB power charging was common at time of invention and there was a finite number of solutions

⁷⁴⁵ Pat: Paper No. 1 at 81-85

⁷⁴⁶ Pat: Paper No. 1 at 80-83

Patent Owner's Disputes with Emma + Smith + Knowledge

- **Patent Owner Argument 1:** Replacing Emma's auxiliary outlets with USB ports would have reduced Emma's functionality. ('745 Pat: Paper No. 22 at 63; '745 Pat: Paper No. 23 at 63)
 - Non-sensical – USB ports for charging cell phones was common at the time
- **Patent Owner Argument 2:** No evidence of a finite number of solutions. ('745 Pat: Paper No. 22 at 63; '745 Pat: Paper No. 23 at 63).
 - Petitioner provided this evidence in Dr. Horenstein's declaration
 - It was common knowledge that there were a finite number of ways to charge cell phones
- **Patent Owner Argument 3:** Petitioner failed to address power control for the USB ports. ('745 Pat: Paper No. 22 at 63; '745 Pat: Paper No. 23 at 63)
- This is wrong, because:
 - Petitioner argued Emma teaches power control of an auxiliary outlet
 - Petitioner argued AC/DC conversion for USB ports was well known at the time
 - Simple substitution of a USB port for Emma's auxiliary outlet

'745 Pat: Paper No. 1 at 81-85

'746 Pat: Paper No. 1 at 80-83

'745 Pat: Paper No. 29 at 23-24

'746 Pat: Paper No. 30 at 23-24

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Ground 8: Emma + Smith + Quezada

Ground 8: Emma + Smith + Quezada

- This ground pertains to dependent claims reciting USB ports for charging
- Board state this ground “requires” ISDU.
(’745 Pat: Inst. Dec., Paper No. 10 at 42; ’746 Pat: Inst. Dec., Paper No. 10 at 40).
- That is not correct:
 - “Grounds 7 and 8: Obvious in View of Emma combined **with either** ISDU or Smith, and further combined with Quezada”
 - Ground 7 = Emma + ISDU + Quezada
 - Ground 8 = Emma + Smith + Quezada

’745 Pat: Paper No. 1 at 12, 85

’746 Pat: Paper No. 1 at 13, 83

Quezada's Teachings

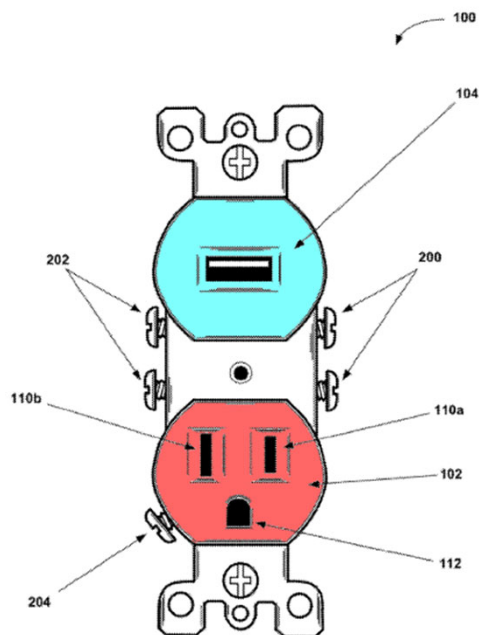


FIG. 2

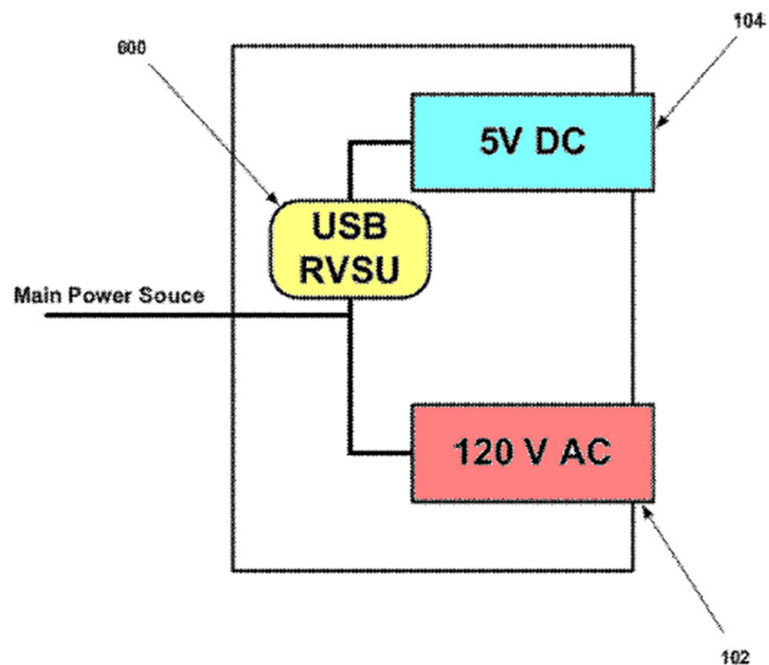


FIG. 6

'745 Pat: Paper No. 1 at 25-28
'746 Pat: Paper No. 1 at 26-28
Ex. 1020, Figs. 2 and 6 (annotated)

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Ground 8: Emma + Smith + Quezada

- A POSITA would have been motivated to modify Emma's microwave to include Quezada's USB ports with predictable results/reasonable expectation of success because:
 - All claimed elements known in prior art
 - Both references charge cell phones with AC/DC conversion
 - Emma teaches microwave with auxiliary outlets for charging cell phones
 - Quezada teaches USB ports as an alternative with standard AC outlets for DC charging
 - Quezada's AC/DC and USB system can be substituted into any device using a standard electrical outlet, including Emma's microwave
 - Emma would have the same withhold and deliver electrical power function using the USB port
 - Quezada would work as intended with any power circuit, including Emma's
 - USB ports for charging cell phones had become widespread at time of invention
- Obvious to try, because USB power charging was common and it was a desirable way to charge small devices given size of USB ports and provided USB cables

^{'745 Pat:} Paper No. 1 at 85-88

^{'746 Pat:} Paper No. 1 at 83-87

Patent Owner's Disputes with Emma + Smith + Quezada

- **Patent Owner Argument 1:** No motivation to combine found in the references themselves because Quezada is not related to appliances.
(’745 Pat: Paper No. 22 at 63-64; ’746 Pat: Paper No. 23 at 63-64).
- This argument is meritless.
 - Emma uses auxiliary outlets
 - Quezada teaches replacing auxiliary outlets with USB ports, thus the motivation is in Quezada
- **Patent Owner Argument 2:** combination would reduce functionality of Emma as a USB port may not provide enough power for some devices
 - USB ports were well-known alternatives for charging low power devices.

’745 Pat: Paper No. 29 at 24-25

’746 Pat: Paper No. 30 at 24-25

Secondary Considerations of Non-Obviousness

Secondary Considerations of Non-Obviousness

- Commercial Success
 - Microwave-Refrigerator combination is undisputed prior art
 - Patent Owner did not demonstrate a nexus
 - *E.g.*, Bid requirements includes numerous features unrelated to claimed invention

'745 Pat: Paper No. 29 at 25-26

'746 Pat: Paper No. 30 at 25-27

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Secondary Considerations of Non-Obviousness

- Long-Felt Need
 - Patent Owner's "false alarm" argument is meritless, as the claims do not recite a method/system for solving false alarms
 - Patent Owner's time lapse argument is meritless as Patent Owner has not shown a long-felt need
- Teaching Away
 - Patent Owner's "false alarm" argument is meritless, as the claims do not recite a method/system for solving false alarms
 - Patent Owner's "power regulations" argument is meritless, as the claims do not recite a method/system for addressing power usage

^{'745 Pat:} Paper No. 29 at 26-27

^{'746 Pat:} Paper No. 30 at 27-28

Secondary Considerations of Non-Obviousness

- Copying
 - Petitioner added known smoke detector into microwave
 - Patent Owner does not offer any evidence that any other aspects of its products were copied
 - “False alarms” is not a claimed feature.

'745 Pat: Paper No. 29 at 28-29

'746 Pat: Paper No. 30 at 27-28

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