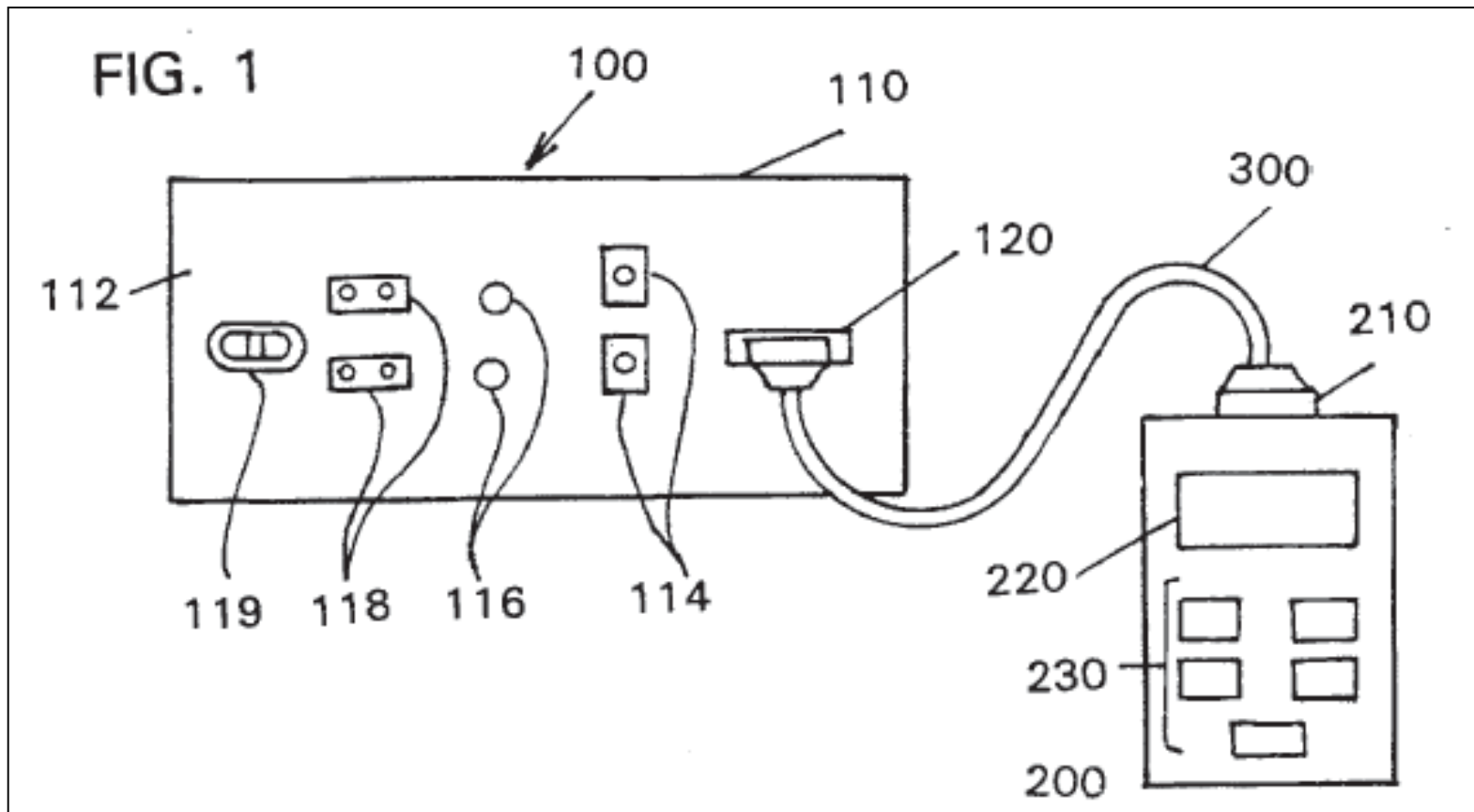


Patent Owner's Oral Argument

IPR2014-00131

U.S. Patent No. 5,652,544

U.S. Patent No. 5,652,544



- Ex. 1001, FIG. 1 (discussed at Paper 23, pp. 14-16)

Claim 1 (Ground 1)

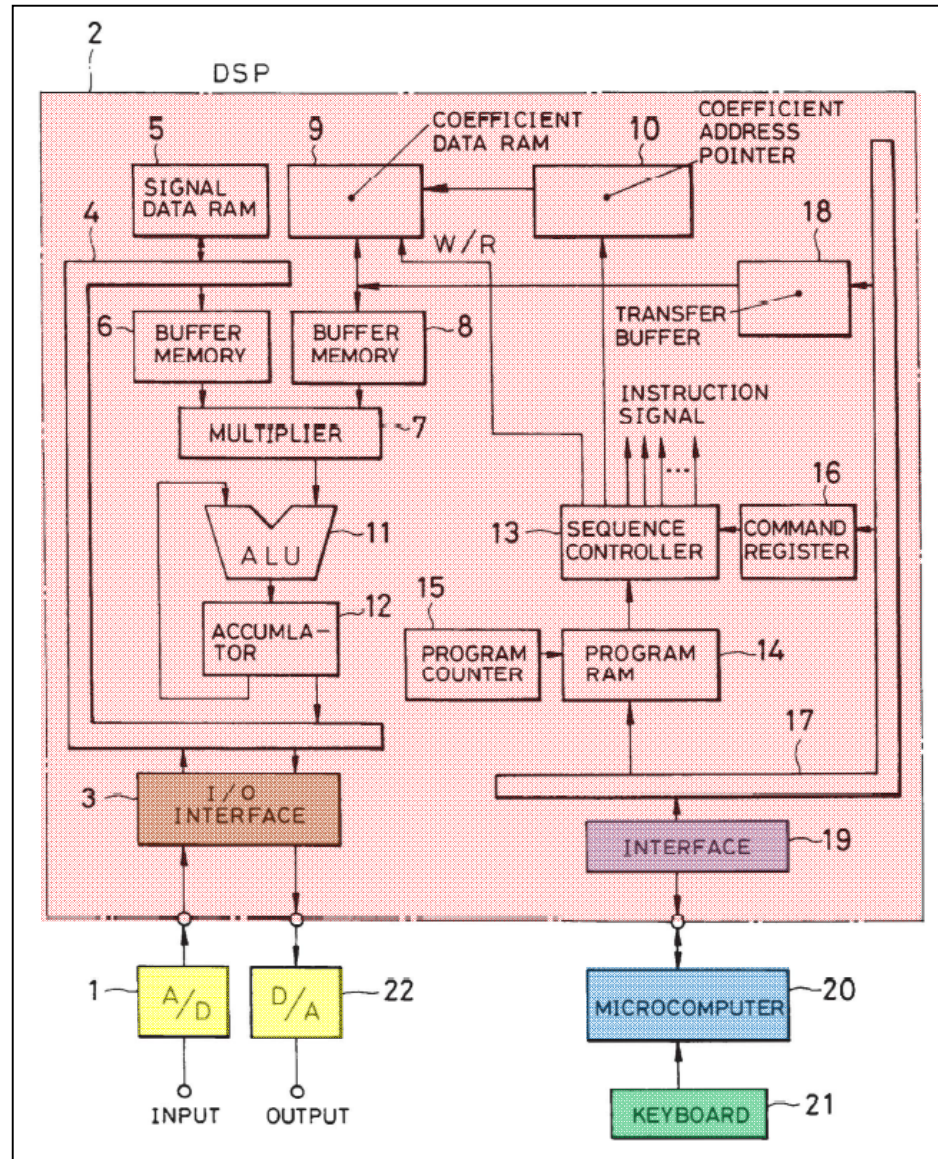
Ground	Claims	Basis for Invalidity Challenge
1	1-6, 9-13, 15, and 19	Sudo and Porambo under 35 U.S.C. § 103
2	1-6, 9-13, 15, 19, 21, and 25	Sudo and Krokstad under 35 U.S.C. § 103
3	7, 20, 21, 23, 24, 25, and 26	Sudo, Porambo, and APA under 35 U.S.C. § 103
4	7, 24, and 26	Sudo, Porambo and TMS320 under 35 U.S.C. § 103
5	8	Sudo, Porambo, and TMS320 under 35 U.S.C. § 103
6	8	Sudo, Krokstad, and TMS320 under 35 U.S.C. § 103
7	14 and 18	Sudo, Krokstad, and Porambo under 35 U.S.C. § 103

Claim 1 (Ground 1)

1. An amplifier comprising:
an input port for receiving an input signal;
a signal processing circuit comprising a digital signal processor capable of receiving at least one of a signal processing function and a signal processing function parameter, wherein the signal processing circuit receives the input signal from the input port and modifies the input signal;
a power amplifier for amplifying the modified input signal received from the signal processing circuit and outputting an amplified signal to an output device;
an external programmer; and
a programming signal input port for receiving at least one programming signal from the external programmer, **the external programmer being removably connectable to the programming signal input port** for modifying at least one of a signal processing function and a signal processing function parameter defined in said signal processing circuit.

- Ex. 1001, Cl. 1 (discussed at Paper 23, pp. 22-27)

Claim 1 (Ground 1)



- Ex. 1005, FIG. 1 (discussed at Paper 23, pp. 8, and 24-26)

Claim 1 (Ground 1)

Dr. Ellis's cross-examination testimony:

Q. Describe for me how Interface 19 is connected to Microcomputer 20, according to your understanding of Sudo.

A. ***It doesn't say.***

- Paper 23, p. 22 (quoting Ex. 2002, 177:11-15)

Q. Does Sudo teach the concept of a removable connection?

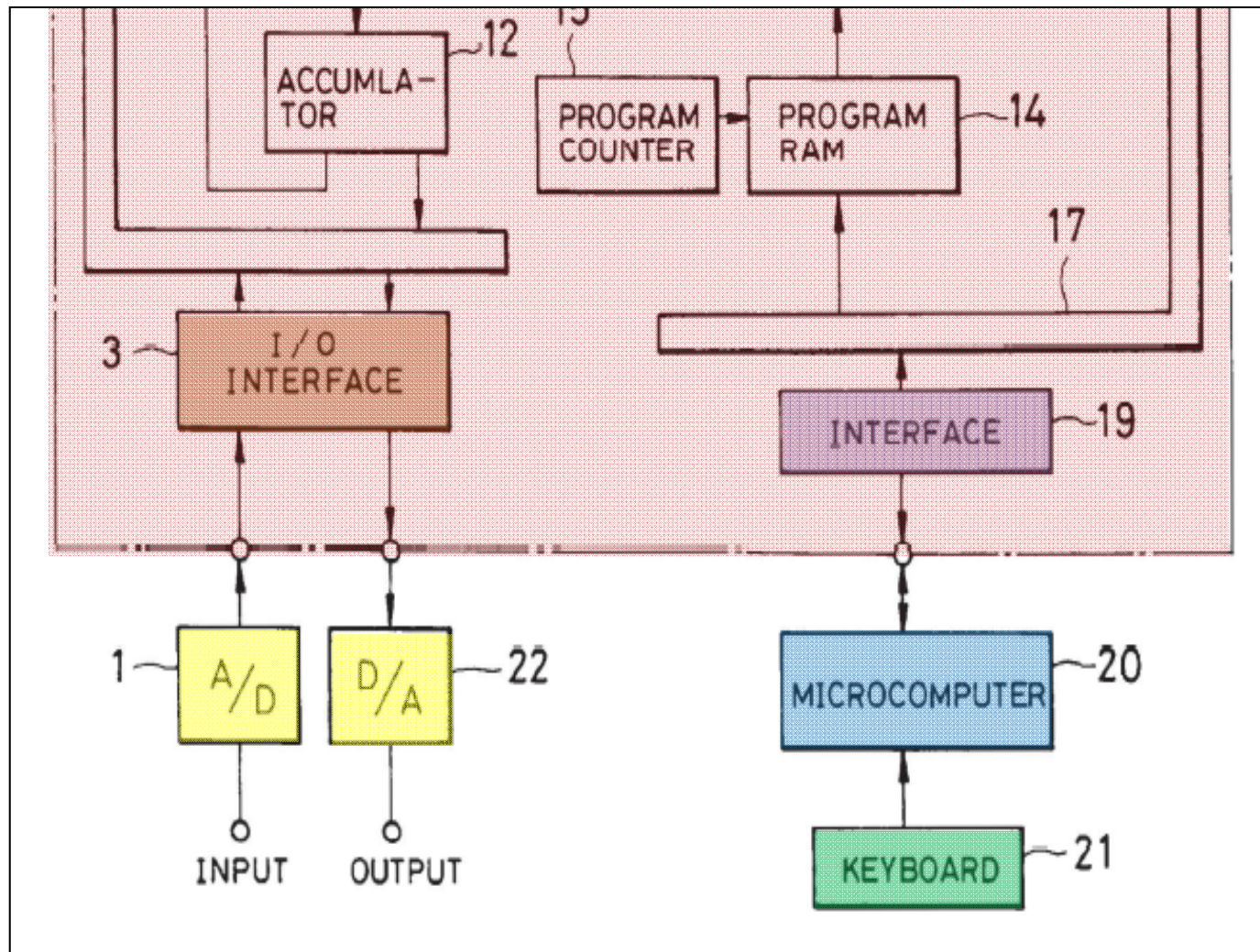
A. ***The subject matter of Sudo is not about those kinds of issues.***

Q. Is that a no?

A. ***Sudo doesn't teach a removable connection.*** Sudo is about ways of updating parameter RAM.

- Paper 23, p. 22 (quoting Ex. 2002, 180:20-181:1)

Claim 1 (Ground 1)



- Ex. 1005, FIG. 1 (discussed at Paper 23, pp. 8, and 24-26)

Claim 1 (Ground 1)

Cordell explains that the connection is hard-wired:

37. In my opinion, Interface 19 is plainly not that of a connector, nor is the interface 19 removable. I believe that a PHOSITA would recognize that this is a hard-wired printed wiring board interface, just as are the A/D and D/A interfaces to I/O Interface 3. A PHOSITA understands that the A/D and D/A would be connected to the I/O interface 3 using a hardwired connection. The box enclosing the DSP and its inner detail in Figure 1 is, in my opinion, meant to highlight the DSP integrated circuit device being discussed. Interface 19 is inside the dotted box, suggesting that it is internal to the DSP integrated circuit. In my opinion, a PHOSITA would interpret the small circles on the perimeter of DSP 2 as being pins or groups of pins on the integrated circuit package.

- Ex. 2001, ¶ 37 (discussed at Paper 23, pp. 24-25)

Claim 1 (Ground 2)

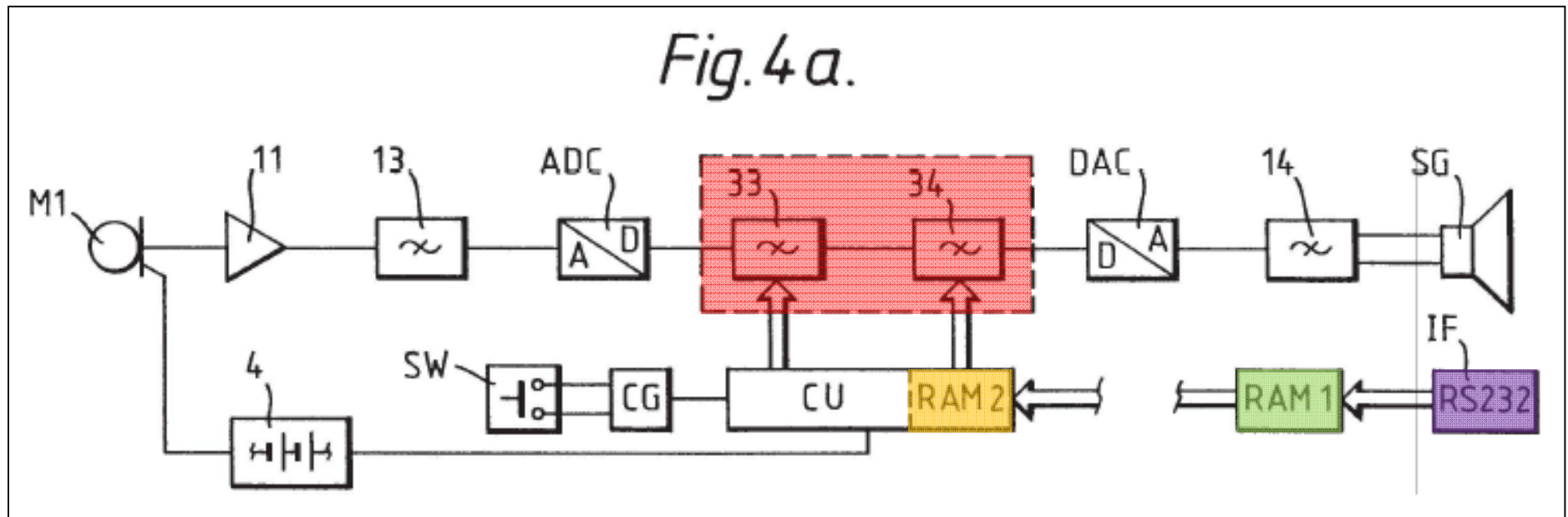
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7	14 and 18	Sudo, Krokstad, and Porambo under 35 U.S.C. § 103

Claim 1 (Ground 2)

1. An amplifier comprising:
an input port for receiving an input signal;
a signal processing circuit comprising a digital signal processor capable of receiving at least one of a signal processing function and a signal processing function parameter, wherein the signal processing circuit receives the input signal from the input port and modifies the input signal;
a power amplifier for amplifying the modified input signal received from the signal processing circuit and outputting an amplified signal to an output device;
an external programmer; and
a programming signal input port for receiving at least one programming signal from the external programmer, **the external programmer being removably connectable to the programming signal input port** for modifying at least one of a signal processing function and a signal processing function parameter defined in said signal processing circuit.

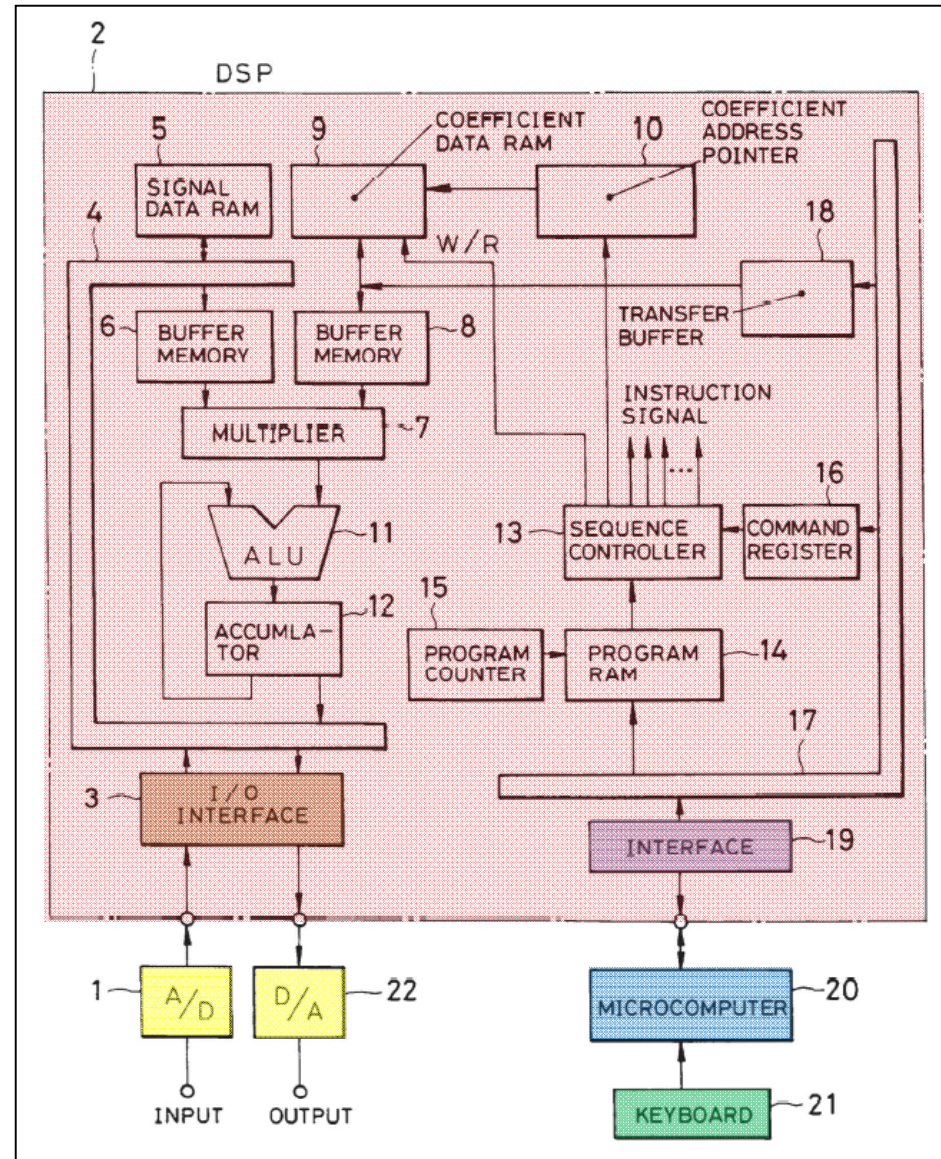
- Ex. 1001, Cl. 1 (discussed at Paper 23, pp. 33-36)

Claim 1 (Ground 2)



- Ex. 1007, FIG. 4A (discussed at Paper 23, pp. 9-11)

Claim 1 (Ground 2)



- Ex. 1005, FIG. 1 (discussed at Paper 23, p. 8)

Claim 1 (Ground 2)

Cordell explains that an RS232 connection would not be suitable for Sudo:

92. An RS232 connection between DSP 2 and microcomputer 20 would not work because it would not be fast enough to satisfy the needs for transfer of the programming information from microcomputer 20 to DSP 2. The interconnection between the DSP 2 and microcomputer 20 requires a wide bus operating at high speed and having to satisfy tight timing constraints. As described above, DSP 2 is depicted as an integrated circuit

- Ex. 2001, ¶ 92 (discussed at Paper 23, pp. 34-35)

Claim 1 (Ground 2)

Dr. Ellis admits that an RS232 connection would be unsuitable for Sudo:

Q. So RS-232 wouldn't be --

A. ***RS-232 would not be suitable.***

Q. Why?

A. ***Too slow.***

Q. Too slow for what?

A. Too slow for the detail of the way that the data transfers occur in this invention.

Q. ***So to be clear, according to your understanding of Sudo, you do not believe that the connection between Microcomputer 20 and Interface 19 could be an RS-232 connection.***

A. ***Yes.***

Q. And it couldn't be a USB connection, because that hadn't been developed yet.

A. That's right. Yeah.

- Paper 23, p. 36 (quoting Ex. 2002, 180:24-181:13)

Claim 11 (Grounds 1 and 2)

Ground	Claims	Basis for Invalidity Challenge
1	1-6, 9-13, 15, and 19	Sudo and Porambo under 35 U.S.C. § 103
2	1-6, 9-13, 15, 19, 21, and 25	Sudo and Krokstad under 35 U.S.C. § 103
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7	14 and 18	Sudo, Krokstad, and Porambo under 35 U.S.C. § 103

Claim 11 (Grounds 1 and 2)

11. The amplifier of claim 9, wherein the external programmer further comprises a storage device for storing the input programming information and previously selected control signals.

- Ex. 1001, Cl. 11 (discussed at Paper 23, pp. 28-32, 37)

Claim 11 (Grounds 1 and 2)

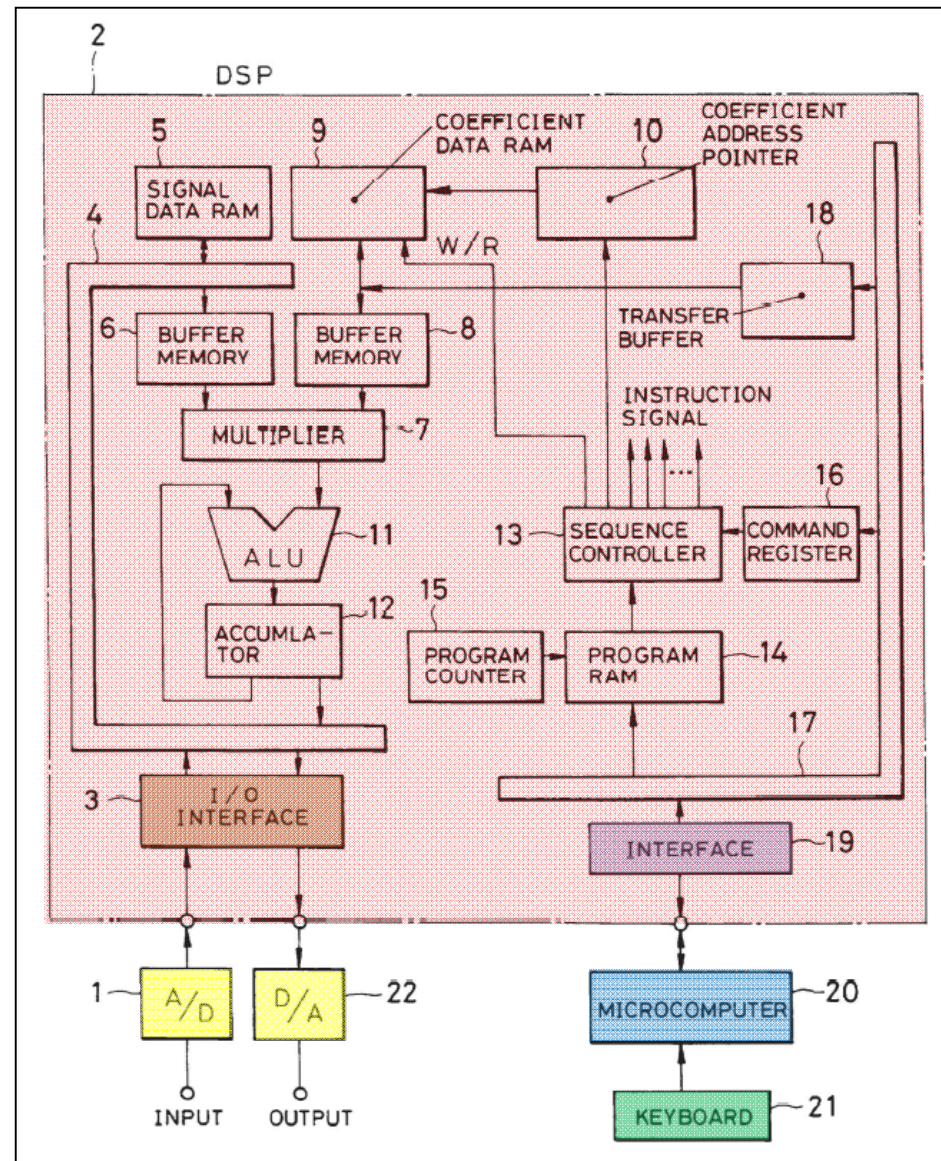
Petitioner's Argument:

and are written to the rewriteable RAM...”). A person of ordinary skill in the art would have considered it obvious in light of Sudo to store previously entered control signals in the storage memories in order to determine when the user has made a switch in a desired sound field and it was time to download a new program to the DSP. *See* Ex. 1003, Declaration of Professor Ellis at page 19, ¶¶65-66.

Therefore, claim 11 is unpatentable.

- Paper 6 pp. 44-45 (discussed at Paper 23, pp. 29-30)

Claim 11 (Grounds 1 and 2)



- Ex. 1005, FIG. 1 (discussed at Paper 23, p. 8)

Claim 13 (Grounds 1 and 2)

Ground	Claims	Basis for Invalidity Challenge
1	1-6, 9-13, 15, and 19	Sudo and Porambo under 35 U.S.C. § 103
2	1-6, 9-13, 15, 19, 21, and 25	Sudo and Krokstad under 35 U.S.C. § 103
3	7, 20, 21, 23, 24, 25, and 26	Sudo, Porambo, and APA under 35 U.S.C. § 103
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7	14 and 18	Sudo, Krokstad, and Porambo under 35 U.S.C. § 103

Claim 13 (Grounds 1 and 2)

13. The amplifier of claim 9, wherein the controller comprises a microprocessor for receiving programming information from at least one of the input device and a control circuit of the amplifier.

- Ex. 1001, Cl. 13 (discussed at Paper 23, pp. 32-33, 37)

Claim 13 (Grounds 1 and 2)

amplifier. Sudo discloses that the microcomputer 20 used to program the DSP has a CPU (e.g. a microprocessor) that receives programming information from an input device (from keys pressed on the keyboard). Ex. 1005 3:54-65.

A person of ordinary skill in the art would have considered it obvious in light of Sudo to use a microprocessor in an external programmer that receives programming information from an input device as a way to supply desired programming information to the external programmer. See Ex. 1003 Declaration of Prof. Ellis at page 20, ¶¶72-74. Therefore, claim 13 is unpatentable.

Claim 13	Prior Art
The amplifier of claim 9, wherein the controller comprises a microprocessor for receiving programming information from at least one of the input device and a control circuit of the amplifier.	Sudo discloses an external programmer with a CPU that receives programming information from an input device (keys on a keyboard). Ex. 1005 3:54-65.

- Paper 06, 47 (discussed at Paper 23, pp. 32-33, 37)

Claim 13 (Grounds 1 and 2)

121. Petitioner relies on Sudo for the alleged disclosure of a microprocessor in an external programmer to receive programming information from a control circuit in the amplifier in order to satisfy the limitation of claim 13.⁶⁷ Sudo makes no mention of microcomputer 20 receiving information (especially programming information) from the DSP. In Sudo, the microcomputer merely transfers (transmits) programming information to the DSP.⁶⁸

- Ex. 2001, ¶ 121

Claim 21 (Ground 2)

Ground	Claims	Basis for Invalidity Challenge
1	1-6, 9-13, 15, and 19	Sudo and Porambo under 35 U.S.C. § 103
2	1-6, 9-13, 15, 19, 21, and 25	Sudo and Krokstad under 35 U.S.C. § 103
3	7, 20, 21, 23, 24, 25, and 26	Sudo, Porambo, and APA under 35 U.S.C. § 103
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7	14 and 18	Sudo, Krokstad, and Porambo under 35 U.S.C. § 103

Claim 21 (Ground 2)

21. The amplifier of claim 1, wherein said digital signal processor receives and stores a combination of at least two signal processing functions.

- Ex. 1001, Cl. 21 (discussed at Paper 23, pp. 37-39)

Claim 21 (Ground 2)

Krokstad discloses a DSP in an amplifier that is programmed to provide at least three signal processing functions including compression, equalization and pre-compensation. Ex. 1007 page 20, lines 1-2.

A person of ordinary skill in the art would have considered programming a DSP in an amplifier to perform at least two signal processing functions to have been obvious in view of Krokstad as a way to achieve more than one desired audio effect with a single digital signal processor without having to provide additional circuitry.

Paper 6 (the Petition), p. 54. Thus, Petitioner contends that merely programming a DSP with two separate signal processing functions satisfies this claim element.

- Paper 23, p. 38

Claim 21 (Ground 2)

Cordell explains that there is no “combination:”

signal processing function and a signal processing function parameter.⁷¹ Krokstad does not disclose the programming of functions into the DSP. Krokstad only discloses the programming of coefficients into the DSP.⁷² Additionally, Krokstad only mentions different preconfigured functions (precompensator 37, compressor 33, equalizer 34).⁷³

There is no mention or suggestion of these functions being combined to create a new and different combination of functions.

- Ex. 2001, ¶ 126 (discussed at Paper 23, p. 38)

Claim 21 (Ground 3)

Ground	Claims	Basis for Invalidity Challenge
1	1-6, 9-13, 15, and 19	Sudo and Porambo under 35 U.S.C. § 103
2	1-6, 9-13, 15, 19, 21, and 25	Sudo and Krokstad under 35 U.S.C. § 103
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7	14 and 18	Sudo, Krokstad, and Porambo under 35 U.S.C. § 103

Claim 21 (Ground 3)

21. The amplifier of claim 1, wherein said digital signal processor receives and stores a combination of at least two signal processing functions.

- Ex. 1001, Cl. 21 (discussed at Paper 23, pp. 37-39, 42-44)

Claim 21 (Ground 3)

A person of ordinary skill in the art would have considered programming a DSP in an amplifier to perform at least two signal processing functions to have been obvious in view of the APA as a way to achieve more than one desired audio effect with a single digital signal processor without having to provide additional circuitry.

Paper 06 (the Petition), p.53. Again, Petitioner fails to consider the term “a combination” in the claim element “a combination of at least two signal processing functions,” indicating that Petitioner has at least misunderstood this claim.

- Paper 23, p. 43

Claim 21 (Ground 3)

Cordell explains that there is no “combination:”

127. Petitioner also relies on statements alleged as Patent Owner’s Admitted Prior Art. These statements are made in the context of a conventional signal processing circuit, not in the context of programming a digital signal processor. Moreover, these statements do not address combining multiple signal processing functions to create a new and different combination of functions.

- Ex. 2001, ¶ 127 (Paper 23, p. 43)