

SONY GROUP CORPORATION, SONY CORPORATION, SONY CORPORATION OF
AMERICA, AND SONY ELECTRONICS, INC., Petitioner,

v.

INMUSIC BRANDS, INC., Patent Owner.

IPR2023-00294
Patent 7,567,498 B2

Petitioners' Oral Hearing Demonstratives
April 25, 2024

Overview

The '498 Patent

Claim Construction

- Turntable
- Representative
- Controller

Ground 1 (Cortellesi)

- Figure 4 embodiment
- Controller

Ground 3 (Spencer + Cohen)

- Output digital audio signal

The '498 Patent

InMusic and its expert largely admit that the '498 patent is a collection of well-known components, performing their known functions, to achieve a well-understood result.

The '498 Patent

Some applications have connected the line level output of a turntable (or the output of a phono pre-amp which has received the audio output from the phono cartridge) to the analog input of a computer sound card. Other applications have used an external audio conversion device between the turntable and the soundcard.

In addition, there are currently several devices that allow the phonographic turntable to act as a control device, similar to a computer mouse, to modulate or apply some effect (such as "scratching") to audio playing within the computer.

The SPDIF (Sony/Phillips Digital Interface) has been built into some turntables in order to provide a digital output. However, this is not a standard protocol such as USB (universal serial bus) or firewire (IEEE 1394).

(‘498 patent, Ex. 1001, 1:25-38)

The '498 Patent

The New York Times

<https://www.nytimes.com/2004/01/01/technology/basics-from-vinyl-to-digital-hold-the-crackle.html>

BASICS

BASICS; From Vinyl to Digital, Hold the Crackle

By Roy Furchgott

Jan. 1, 2004

Correction Appended

SEARCH the Gnutella Network as you may, some recordings are so scarce or of such limited appeal that you cannot find them anywhere, except maybe in your own vinyl collection. But your rare 45 of Blondie's "Little GTO" need not be a stranger in the land of the CD player. Technology is available that will not only enable you to turn your hot wax into digital tracks, but will also let you clean up the static that separates your favorite Bruce Springsteen bootleg from its glory days.

To turn LP's into CD's, you will need some hardware: specifically a turntable, a preamplifier and a computer. You will also need software to digitize the analog signal, edit the digital recording, clean it and burn it to a CD or DVD.

(Ex. 1007, p. 001)

The '498 Patent

8 Q. Did the combination of elements in Claim 1
9 of the '498 patent produce a surprising technical
10 result?

11 A. Surprising? I'm not sure I understand
12 what you mean by "surprising."

13 Q. Okay. Did it produce an unexpected
14 technical result?

15 A. I think the purpose of a valid patent is
16 to describe something that is enabled. So from that
17 perspective, I don't think it would be considered
18 surprising or unusual.

(Zatkovich Dep., Ex. 1029, 29:8-18)

The '498 Patent

10 Q. Sure. Was the technology available in the
11 relevant timeframe to construct a system that would
12 meet Claim 1 prior to the disclosure of the
13 '498 patent itself?

14 A. I believe the various components discussed
15 in the '498 patent were -- were known, if not
16 well-known. The ability to transmit audio signals
17 over a USB port was well-known. In fact, the USB
18 standard had been known at least eight years prior
19 to this invention, yet the unique combination of
20 components in this invention was not seen for those
21 eight years.

(Zatkovich Dep., Ex. 1029, 28:10-21)

Claim Construction – “Turntable”

“Turntable”:

It appears that no construction is required, because no issue turns on the meaning of “turntable”

Claim Construction - Representative

“Representative”:

inMusic’s proposal:

Based on these uses, and the overall description in the ’498 patent of an improved turntable that digitizes the analog signal created from the audio recording on a vinyl LP and outputs that digital audio signal, Mr. Zatkovich opines that the term “representative” should be construed as “[r]eproducibly indistinguishable to a listener, but in a different format from the original.” Ex. 2004 ¶ 128.

(POR, p. 15)

inMusic’s sur-reply:

recording.” The Board need not construe the entire contours of the term “representative,” and inMusic does not intend to graft any particular fidelity or quality requirements onto the claim. But if the LP record has the song “Let it Be” by The Beatles stored on it, the digital version must also be this song by The Beatles and substantially similar to the analog version. The claim would not be

(Sur-reply, p. 12)

Claim Construction - Controller

“Controller”:

inMusic’s proposal:

Based on these uses, as well as his familiarity with controllers in the prior art, Mr. Zatkovich opines that the term should be construed as “[a]n electronic device which receives a digital data stream, renders it into a specific data format, and manages the output of that formatted stream on a specific interface.” Ex. 2004 ¶ 123.

(POR, p. 14)

Claim Construction - Controller

Claim 1 states:

“a controller responsive to said analog to digital converter for generating an output digital audio signal of music or speech representative of an audio recording from an output of said analog to digital converter, representative of said analog audio signal;”

. . .

“wherein said output digital audio signal is output from said turntable and uses standard computer protocol.”

Claim Construction - Controller

“Controller”:

inMusic’s proposal:

Based on these uses, as well as his familiarity with controllers in the prior art, Mr. Zatkovich opines that the term should be construed as “[a]n electronic device which receives a digital data stream, renders it into a specific data format, and manages the output of that formatted stream on a specific interface” Ex. 2004 ¶ 123.

(POR, p. 14)

Claim Construction - Controller

- “Controller” has a broad ordinary meaning (a device that controls another device).
- There is no definition of “controller” in the specification.
- inMusic does not argue that disclaimer has taken place.
- inMusic is trying to read limitations, unsupported by the claim language or specification, into the term “controller”.

(Reply, pp. 10-11)

Ground 1 – Cortellesi

InMusic's principal argument: Figure 4 is just a depiction of an external analog record player; it does not have components of Figs. 1 and 2, and specifically an A/D converter or controller.

(POR, pp. 20-28).

However, Cortellesi states that the Fig. 4 encompasses the apparatus of the invention with a turntable, and clearly states that the inventive apparatus includes a CPU (EC) (controller), A/D converter, and USB output for digital music.

(Petition, pp. 22-24, 26-32, 47-48, Reply, pp. 12-17).

Ground 1 – Cortellesi

1	EP 0 999 553 A1	2
Description		Fig. 3 is a schematic top plan view of said virtual disk;
[0001] The present invention relates to the professional playing of records and particularly is directed to the personnel of discos, dance-halls and restaurants, where there is the problem of having a lot of records available, as well as professionals so-called disk jockeys working in discos and private broadcasting companies with the need of being always ready to transmit pieces of music by request or jingles without solution of continuity.		5 Figs. 3a and 3b show an enlarged detail of the ball ring on the disk and a cross section of Fig. 3, respectively;
In order to meet such requirements the disk jockeys should resort to expensive, sophisticated, cumbersome apparatus including juke-box of large playing capacity that does not allow a personalized handling of the pieces of music in succession or the so-called scratching with the purpose of personalizing the played music.		10 Fig. 4 is a top plan view of a first embodiment of the apparatus provided with a record player carrying the virtual disk provided with a reading sensor.
[0002] The present invention aims at overcoming the problems mentioned above by providing a cheap, reliable, portable electronic apparatus using a dedicated hard-disk where it is possible to store digitally several pieces of music and to play them without the need of having the original musical supports or records.		15 [0004] With reference to the block diagram of Figure 1, the portable apparatus for archiving, handling and listening to pieces of music according to the present invention consists essentially of a central processing unit capable of receiving and recording the desired pieces of music in digital form through a plurality of inside and outside units, and at least one playing unit capable of converting the signal from digital to analogue form in order to allow the selected pieces of music to be played/
The search of the stored pieces of music and the handling of the peripheral units described herebelow is carried out by the keyboard and the display of the apparatus. Several information relative to the stored pieces of music can be stored on the hard disk by the keyboard to facilitate its search.		20 listened to.
The recording function provided by the apparatus makes it possible to record pieces of music both live through microphone or preamplified line connection and directly from standard playing units, such as compact disk players, tape recorders, and record players. The hard disk holding the pieces of music is located within the apparatus or in additional outside modules. The pieces of music stored in the hard disk are identified by their peculiar data which can be entered manually or, if possible, received automatically by a data source.		25 According to a preferred embodiment the apparatus of the invention includes:
According to another peculiar characteristic the apparatus further includes a virtual disk which allows the disk jockeys to synchronize perfectly a listened piece of music with the following one by performing automatically the same operations (scratching) as those performed today on the records placed on the turntables of the record players located in the console.		30 a central processing unit EC comprising a micro-processor CPU processing and delivering data from the several inside and/or outside units by digital connections. The microprocessor executes a program for processing the digital information for the operation of the apparatus by means of settings selected on the keyboard or received from the various interfaces;
[0003] Further features and advantages of the invention will be readily apparent from the following detailed description with reference to the accompanying drawings which show some preferred embodiments of the invention by way of a not limiting example.		35 a digital/analogue converter CA/D for storing directly from audio analogue sources (vinyl records, tapes, radio, live) and for receiving signals from a virtual disk, if any;
In the drawings:		40 a storage unit, UM; such unit stores all data relative to the pieces of music. It can be provided with different storage capacities and made by different technical solutions according to the specific applications and/or requirements. In addition to digital data for the music reproduction such unit also stores all data for the search such as author's name, title of the record, title of the piece, duration, musical genre, rhythm, situation, marks, personal comments, text of the song, music score, and disk cover. Such unit can be connected to an outside unit for increasing the storage capacity and the number of pieces of music that can be stored.
Fig. 1 is a first block diagram of the storing, playing apparatus;		45 a playing unit, RD/A; such unit receives data from the central processing unit EC and decodes the same from digital to analogue form so as to provide at its output stereo audio signals to right and left channels and digital signals in S/PDIF standard. A plurality of playing units RD/A to play several pieces of music or several passages of the same piece at the same time can be included in the apparatus. Such unit also allows position and reproduction rate
Fig. 2 is a block diagram of a storing, playing apparatus further provided with a virtual disk;		50
		2
		002

Fig. 4 is a top plan view of a first embodiment of the apparatus provided with a record player carrying the virtual disk provided with a reading sensor.

(Ex. 1004, ¶0003, 2:8-10)

(Petition, pp. 45-47, Reply, 12-17)

Ground 1 – Cortellesi

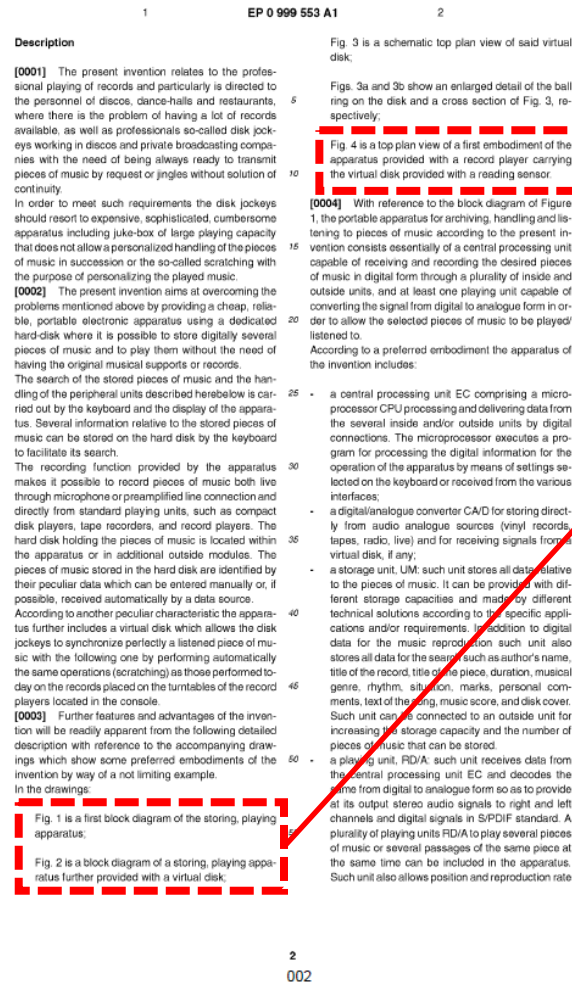


Fig. 1 is a first block diagram of the storing, playing apparatus;

Fig. 2 is a block diagram of a storing, playing apparatus further provided with a virtual disk;

(Ex. 1004, ¶0003, 1:54-60)

Fig. 4 is a top plan view of a first embodiment of the apparatus provided with a record player carrying the virtual disk provided with a reading sensor.

(Ex. 1004, ¶0003, 2:8-10)

(Petition, pp. 45-47, Reply, 12-17)

Ground 1 – Cortellesi

(19)		Europäisches Patentamt European Patent Office Office européen des brevets		(11)	EP 0 999 553 A1
(12)	EUROPEAN PATENT APPLICATION				
(43)	Date of publication: 10.05.2000 Bulletin 2000/19		(51)	Int Cl.7: G11B 27/00 , G10H 1/00, G11B 27/10, G11B 31/00, G11B 19/02, G11B 19/26, G11B 20/10, G11B 27/034, G11B 27/11 // G07F17/16, H04H1/02	
(21)	Application number: 99830690.6				
(22)	Date of filing: 02.11.1999				
(84)	Designated Contracting States: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE Designated Extension States: AL LT LV MK RO SI		(72)	Inventor: Cortellesi, Alessandro 00042 Roma (IT)	
(30)	Priority: 02.11.1998 IT LT980015		(74)	Representative: Sarpi, Maurizio et al Studio Ing. Ivo Jacobacci & C. S.R.L., Via R. Cadorna 29 00187 Roma (IT)	
(71)	Applicant: Cortellesi, Alessandro 00042 Roma (IT)				
(54)	Portable apparatus for storing, handling and listening to pieces of music				
(57)	An apparatus for disk jockeys to store, handle and play pieces of music in succession includes means for receiving and storing the desired pieces of music in digital form, means for the digital/analogue conversion of the selected pieces of music to play/listen to them, and means for allowing the disk jockey to change manually the rhythm of the pieces of music to be played in real time.				

Ground 1 – Cortellesi

1 EP 0 999 553 A1 2

Description

[0001] The present invention relates to the professional playing of records and particularly is directed to the personnel of discos, dance-halls and restaurants, where there is the problem of having a lot of records available, as well as professionals so-called disk jockeys working in discos and private broadcasting companies with the need of being always ready to transmit pieces of music by request or jingles without solution of continuity.

In order to meet such requirements the disk jockeys should resort to expensive, sophisticated, cumbersome apparatus including juke-box of large playing capacity that does not allow a personalized handling of the pieces of music in succession or the so-called scratching with the purpose of personalizing the played music.

[0002] The present invention aims at overcoming the problems mentioned above by providing a cheap, reliable, portable electronic apparatus using a dedicated hard-disk where it is possible to store digitally several pieces of music and to play them without the need of having the original musical supports or records.

The search of the stored pieces of music and the handling of the peripheral units described herebelow is carried out by the keyboard and the display of the apparatus. Several information relative to the stored pieces of music can be stored on the hard disk by the keyboard to facilitate its search.

The recording function provided by the apparatus makes it possible to record pieces of music both live through microphone or preamplified line connection and directly from standard playing units, such as compact disk players, tape recorders, and record players. The hard disk holding the pieces of music is located within the apparatus or in additional outside modules. The pieces of music stored in the hard disk are identified by their peculiar data which can be entered manually or, if possible, received automatically by a data source.

According to another peculiar characteristic the apparatus further includes a virtual disk which allows the disk jockeys to synchronize perfectly a listened piece of music with the following one by performing automatically the same operations (scratching) as those performed today on the records placed on the turntables of the record players located in the console.

[0003] Further features and advantages of the invention will be readily apparent from the following detailed description with reference to the accompanying drawings which show some preferred embodiments of the invention by way of a not limiting example.

In the drawings:

Fig. 1 is a first block diagram of the storing, playing apparatus;

Fig. 2 is a block diagram of a storing, playing apparatus further provided with a virtual disk;

Fig. 3 is a schematic top plan view of said virtual disk;

Figs. 3a and 3b show an enlarged detail of the ball ring on the disk and a cross section of Fig. 3, respectively;

Fig. 4 is a top plan view of a first embodiment of the apparatus provided with a record player carrying the virtual disk provided with a reading sensor.

[0004] With reference to the block diagram of Figure 1, the portable apparatus for archiving, handling and listening to pieces of music according to the present invention consists essentially of a central processing unit capable of receiving and recording the desired pieces of music in digital form through a plurality of inside and outside units, and at least one playing unit capable of converting the signal from digital to analogue form in order to allow the selected pieces of music to be played/ listened to.

According to a preferred embodiment the apparatus of the invention includes:

- a central processing unit EC comprising a micro-processor CPU processing and delivering data from the several inside and/or outside units by digital connections. The microprocessor executes a program for processing the digital information for the operation of the apparatus by means of settings selected on the keyboard or received from the various interfaces;
- a digital/analogue converter C/A/D for storing directly from audio analogue sources (vinyl records, tapes, radio, live) and for receiving signals from a virtual disk, if any;
- a storage unit, UM: such unit stores all data relative to the pieces of music. It can be provided with different storage capacities and made by different technical solutions according to the specific applications and/or requirements. In addition to digital data for the music reproduction such unit also stores all data for the search such as author's name, title of the record, title of the piece, duration, musical genre, rhythm, situation, marks, personal comments, text of the song, music score, and disk cover. Such unit can be connected to an outside unit for increasing the storage capacity and the number of pieces of music that can be stored.
- a playing unit, P/D/A: such unit receives data from the central processing unit EC and decodes the same from digital to analogue form so as to provide at its output stereo audio signals to right and left channels and digital signals in S/PDIF standard. A plurality of playing units P/D/A to play several pieces of music or several passages of the same piece at the same time can be included in the apparatus. Such unit also allows position and reproduction rate

Fig. 4 is a top plan view of a first embodiment of the apparatus provided with a record player carrying the virtual disk provided with a reading sensor.

[0004] With reference to the block diagram of Figure 1, the portable apparatus for archiving, handling and listening to pieces of music according to the present invention consists essentially of a central processing unit capable of receiving and recording the desired pieces of music in digital form through a plurality of inside and outside units, and at least one playing unit capable of converting the signal from digital to analogue form in order to allow the selected pieces of music to be played/ listened to.

According to a preferred embodiment the apparatus of the invention includes:

- a central processing unit EC comprising a micro-processor CPU processing and delivering data from the several inside and/or outside units by digital connections. The microprocessor executes a program for processing the digital information for the operation of the apparatus by means of settings selected on the keyboard or received from the various interfaces;
- a digital/analogue converter C/A/D for storing directly from audio analogue sources (vinyl records, tapes, radio, live) and for receiving signals from a virtual disk, if any;

(Ex. 1004, ¶0003-0004, 2:8-37)

(Petition, pp. 45-47, Reply, 12-17)

Ground 1 – Cortellesi

3 EP 0 999 553 A1 4

of the piece of music to be controlled in order to obtain rhythm synchronization during the playing of several pieces of music at the same time as well as to carry out scratching if a virtual disk is available, as described herebelow;

- knobs MA and manual controls for selecting the piece of music and controlling position, speed, start, stop (scratching);
- a display DV: such unit displays the operations selected by control keyboard TC, the piece of music played by the playing unit along with the rhythm information (beats per minute) relative to the same piece, and data of the pieces of music stored in the storing unit (author's name, title of the record, title of the piece, duration, musical genre, rhythm, situation, marks);
- a control keyboard, TC: the keyboard controls the selection of the pieces of music to be played and other functions such as play, record, stop, pause, forward fast, back fast, jumping, and those of the plurality of outside interfaces. Data relative to the pieces of music stored in the apparatus can also be manually entered through such keyboard.

[0005] Processing unit EC can be connected directly to compact disk player CD for recording and/or playing records directly in conventional or compressed audio format as well as to the normal hi-fi apparatus to play or record pieces of music. Furthermore, the apparatus can be connected to a telephone line through modem; in such a way, it is possible to transfer and/or record the pieces of music remotely from another similar apparatus, and if it is the case to purchase and store the desired piece of music directly from the record company, record shops or commercial enterprises enabled to such selling.

The desired acoustic quality of any recorded piece of music can be provided by selecting the digital compression level applied by a compression chip MP3 by keyboard TC from a minimum, by which no quality loss is provided, to a maximum allowing up to 100.000 hours of music recorded in the digital apparatus. The compression rate is adjustable.

The apparatus is further provided with several interfaces to the outside such as:

- Audio/Video TV interface ITV that allows the connection of a television set for displaying all data of the pieces of music recorded in the storing unit such as author's name, title of the record, title of the piece, duration, musical genre, rhythm, situation, marks, personal comments, text of the song, music score, and disk cover. Such data can be arranged at will for providing a fast search and a list of personalized pieces of music to be played or recorded in outside pocket modules;
- Reception/transmission data interface IDA that allows the apparatus to be updated and new pieces

of music to be received via telephone and/or analogue or digital communication lines;

- Digital interface for pocket cartridges ITA that allows pieces of music to be recorded in additional modules that can be used for playing them again by means of portable players, "walkman" players, car players;
- USB-interface that allows the apparatus to be directly connected to a personal computer for digital data processing/transmitting by software programs that improve the quality of the recorded pieces of music (removal of ground noise/interferences, digital mixing);
- Satellite interface ISAT that allows the apparatus to be updated and new pieces of music to be transmitted/received via satellite.

In addition to the use of knobs MA which allow the scratching to be carried out, the invention provides, as already mentioned, the use of a virtual disk to be placed on the turntable of a common record player (see Figs 2a and 2b).

The block diagram of Fig. 2 is different from the previous diagram by the presence of a virtual disk VD which is connected to an analogue/digital converter CA/D that allows DJ to act manually, even in a digital context, on the rhythmic synchronization of the records played in succession.

As can be seen in Fig. 2, the virtual disk VD is made of plastic material with the same dimensions as a common long playing vinyl record. A number of metal balls 12 separated from one another to form a ring with radius r lower than radius R of the disk are set within the disk. The balls are enclosed in the thickness of the disk as their diameters are lower than such thickness.

The disk is placed on the turntable of a common record player and handled as a common long playing record (L.P.), however, without using any pick-up arm. The place of the latter is taken by a directional sensor of magnetic flux SD which is integral with the record player and positioned over the disk so as to stand above the ball ring 12 at about 2 mm therefrom, as shown in Fig. 4.

By such contrivance, the analogue signals generated by sensor SD are directly correlated with the position of the disk and also include information about its speed of rotation. Such signals are converted by the analogue/digital converter CA/D into digital form for the next processing by central processing unit EC. Thus the microprocessor executes a program that quickly provides extremely precise information of position and speed by reading data provided by converter CA/D.

The software uses the information relative to position and speed of disk VD and reads digital data of the piece of music which should be actually played in storing unit

The apparatus is further provided with several interfaces to the outside such as:

(Ex. 1004, ¶0005, 3:44-45)

- USB-interface that allows the apparatus to be directly connected to a personal computer for digital data processing/transmitting by software programs that improve the quality of the recorded pieces of music (removal of ground noise/interferences, digital mixing);

(Ex. 1004, ¶0005, 4:8-13)

The block diagram of Fig. 2 is different from the previous diagram by the presence of a virtual disk VD which is connected to an analogue/digital converter CA/D that allows DJ to act manually, even in a digital context, on the rhythmic synchronization of the records played in succession.

(Ex. 1004, ¶0005, 4:27-32)

(Petition, pp. 45-47, Reply, 12-17)

Ground 1 – Cortellesi

InMusic's second argument: Cortellesi's EC is not a "controller" because it does not provide an output digital signal and does not "generate" a signal.

(POR, pp. 20-28).

However, Cortellesi makes clear that all data passes through the EC, which serves as both hub and data processor. It was obvious based on Cortellesi to output digital music from the EC through the USB interface.

(Petition, pp. 41-47).

Ground 1 – Cortellesi

A POSITA would have understood and found obvious that Cortellesi teaches a system wherein a variety of potential inputs provide analog or digital signals representing an audio recording, wherein the analog inputs are converted to digital, wherein the CPU EC receives the digital inputs and either stores the music in digital

47

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form, outputs the music to analog speakers, or outputs the music in digital form (*e.g.* over the USB interface) to an external system such as a computer. (Ex. 1002, ¶100). More specifically, it was obvious from Cortellesi that the CPU EC outputs the digital audio signal to an external computer via a USB interface, so that a user could apply “software programs that improve the quality of the recorded pieces of music (removal of ground noise/interferences, digital mixing)....” (Ex. 1004, 4:8-13)(Ex. 1002, ¶100).

(Petition, pp. 47-48)

Ground 1 – Cortellesi

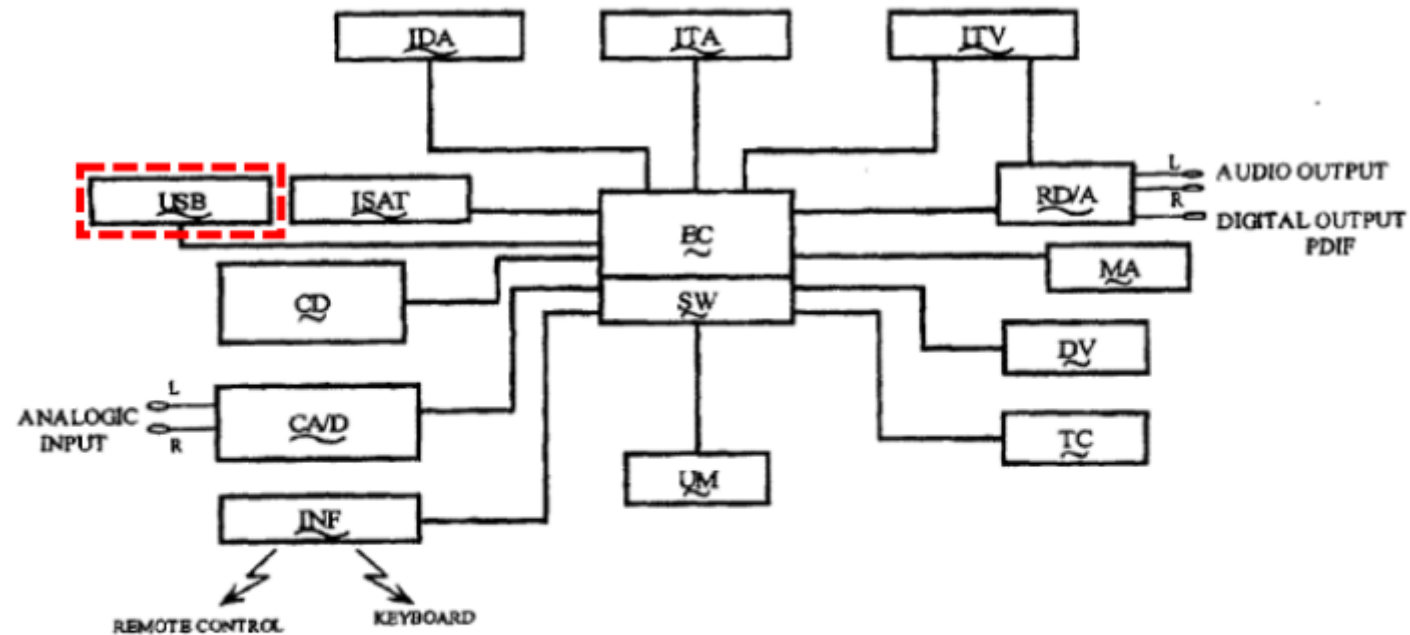


FIG. 1

(Ex. 1004, Fig. 1)(Ex. 1002, ¶99).

(Petition, pp. 47)

Ground 1 – Cortellesi

a central processing unit EC comprising a micro-processor CPU processing and delivering data from the several inside and/or outside units by digital connections. The microprocessor executes a program for processing the digital information for the operation of the apparatus by means of settings selected on the keyboard or received from the various interfaces;

(Ex. 1004, ¶0005, 2:25-32)

- USB-interface that allows the apparatus to be directly connected to a personal computer for digital data processing/transmitting by software programs that improve the quality of the recorded pieces of music (removal of ground noise/interferences, digital mixing);

(Ex. 1004, ¶0005, 4:8-13)

(Petition, pp. 41-47)

Ground 1 – Cortellesi

16 What in your mind does it take to generate
17 a signal?
18 A. I would say some -- some form of energy,
19 either electrical or mechanical, or something that
20 can actually produce a measurable outcome.
21 I don't know if that's the type of
22 question you're asking.
23 Q. No, that's good. I think that's fair.
24 If -- so if I have a component that takes
25 some digital information and converts that to a
1 sequence of voltages on a wire, is that generating a
2 signal in your mind?
3 A. Yes, in general I would say so.
4 Q. What if I had some digital data and
5 processed it into a different digital format, would
6 that be generating a new signal?
7 A. It could be, yes.

(Zatkovich Dep., Ex. 1029, 40:13-41:7)

(Reply, p. 23)

Ground 3 – Spencer in view of Cohen

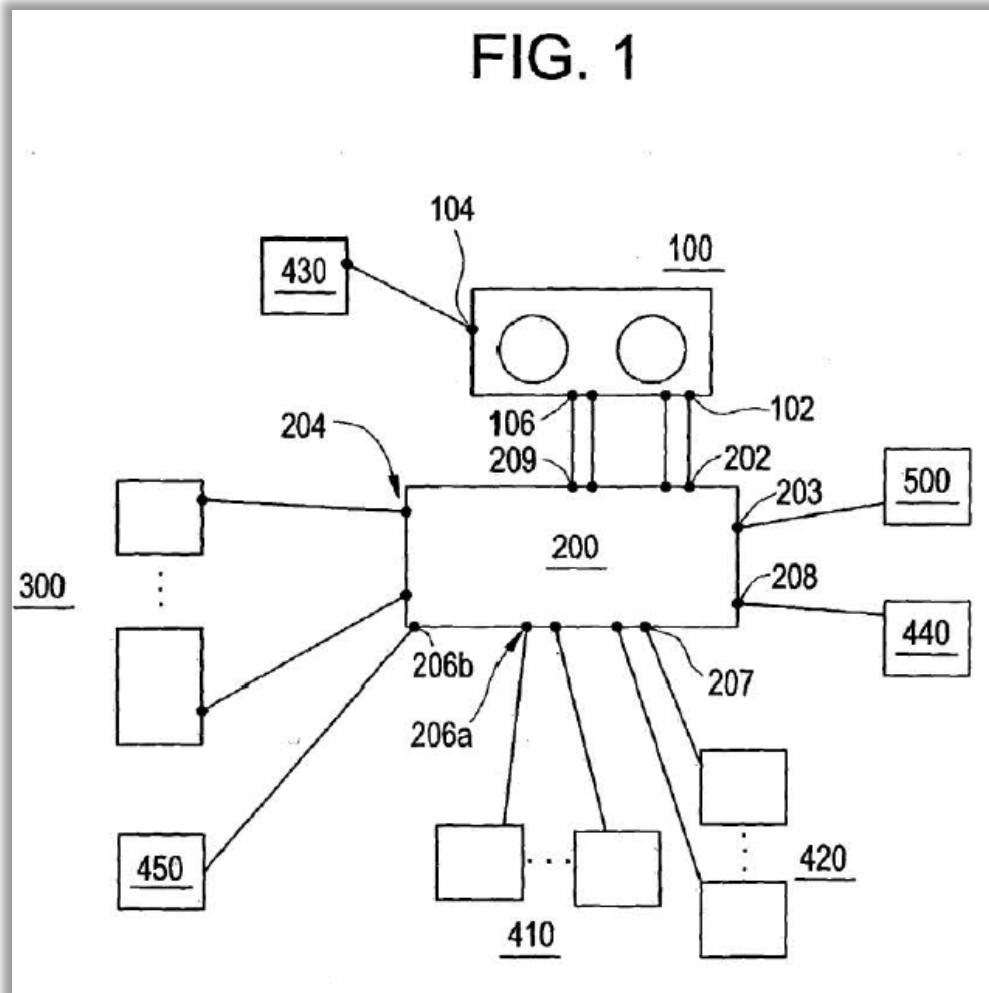
InMusic's principal argument: Spencer only outputs music in analog form.

(POR, pp. 42-50)

However, Spencer clearly states that digital audio is output to a computer over a USB connection and subsequent references to the “analog signal” describe the origin, not the format, of the data.

(Petition, pp. 53-55, 57, Reply, pp. 23-28)

Ground 3 – Spencer in view of Cohen



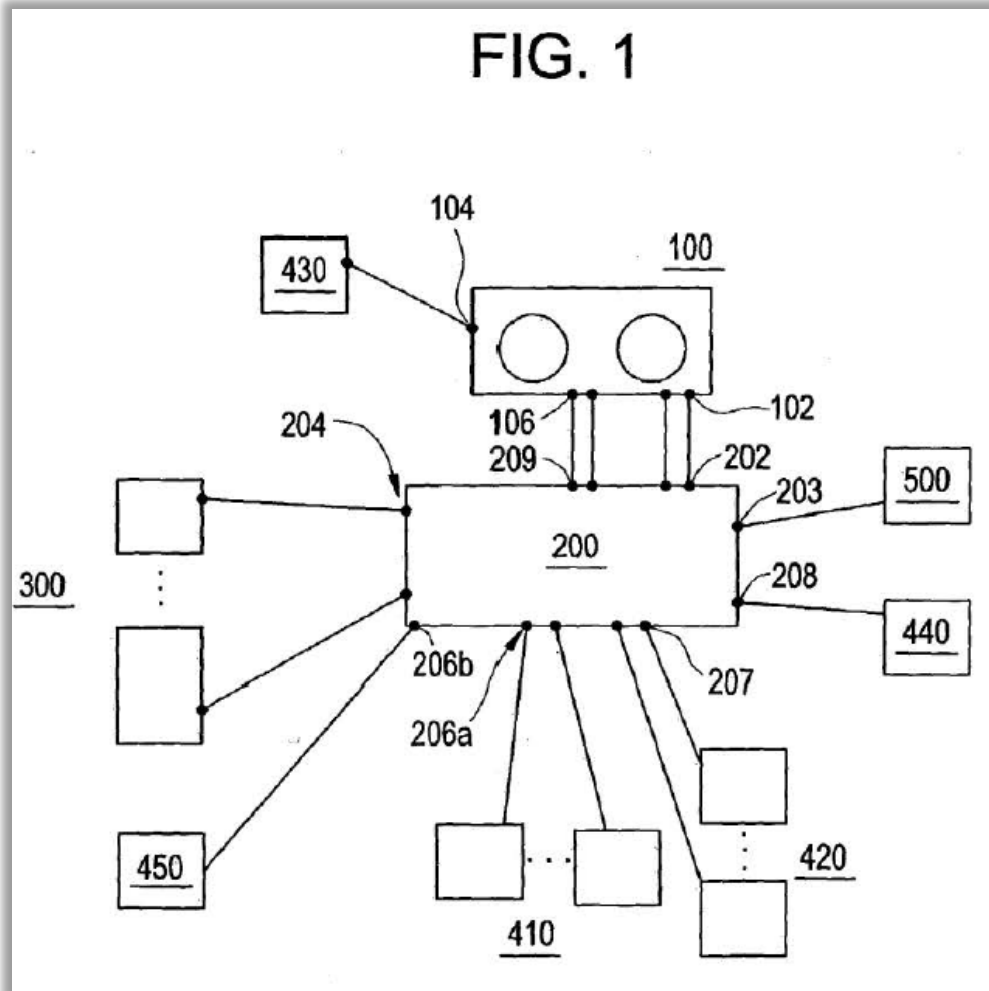
(Spencer, Ex. 1005, Fig. 1)

[0030] In another aspect of the present invention, output ports 102 on the controller unit 100, e.g., a turntable unit, may be coupled to corresponding SCSI, USB, or other suitable type port 202 on the data processor unit 200 to communicate digitized audio signals and information useful in determining an intratrack needle position from the controlling unit 100 to the data processor unit 200. Analog audio

(Ex. 1005, ¶0030)

(Petition, pp. 53-55, 57, Reply, pp. 23-28)

Ground 3 – Spencer in view of Cohen



(Spencer, Ex. 1005, Fig. 1)

1 Q. Can you describe generally how two
2 computers would communicate using USB?
3 A. Well, there's -- there's several forms of
4 communication in USB. The most likely form of
5 communication for audio would probably be the
6 isonic -- the isochronous exchange method in USB.
7 Basically, there's a host controller
8 usually on a computer and then there's a device
9 controller usually on the device. They establish
10 themselves on a network known as a USB bus.
11 And when the device wishes to send
12 information to the host, it has to wait for the host
13 to pole it, say, "Do you have any information for
14 me?"
15 And the device will say, Yes. I want to
16 do an isochronous data exchange."
17 And then the host says, "then go ahead."
18 And then the device begins sending, in the
19 case of isochronous, streaming-like data.
20 Q. Was it digital data?
21 A. Yes.

(Zatkovich Dep., Ex. 1029, 30:1-21)

(Reply, p. 25)

Ground 3 – Spencer in view of Cohen

[0068] According to the principles of the present invention, the rate at which sampling of the audio waveform is progressively increased may be determined using information related to the needle location and the base sampling rate. More specifically, the rate at which the audio waveform is sampled is inversely proportional to the instant radial distance, *r*, of the stylus 123 from the spindle 114. Accordingly, the sampling rate of the audio waveform at any radial distance must be based off of a base sampling rate. Assuming the surface of the record is moving past the stylus 123 at the base turntable speed, the base sampling rate is the rate at which the data processor unit 200 generates the analog waveform.

(Ex. 1005, ¶0068)

1 Q. But after the sampling process, isn't it a
2 digital waveform?
3 A. Right, but it's describing it as the
4 analog waveform that it received.
5 Q. So it's using "analog waveform" more as a
6 name than a description of the format it's in?
7 MR. BLUM: Objection. Form.
8 THE WITNESS: It's -- it's distinguishing
9 in what form that it's received. It's
10 distinguishing from -- a waveform that's received,
11 for example, from a CD player as a digital waveform
12 from the analog signal that it receives from the
13 turntable.

(Zatkovich Dep., Ex. 1029, 40:13-41:7)

(Reply, pp. 27-28)