

FILE HISTORY

US 5,652,544

PATENT: 5,652,544

INVENTORS: Fink, Dennis

TITLE: Apparatus and method for programming an
amplifier

APPLICATION NO: US1995558344A

FILED: 16 NOV 1995

ISSUED: 29 JUL 1997

COMPILED: 24 OCT 2013

330-065
330
Class
Subclass
ISSUE CLASSIFICATION

5652544



UTILITY SERIAL NUMBER 08/558344	PATENT DATE JUL 29 1997	PATENT NUMBER 5652544
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SERIAL NUMBER 08/558.344	FILING DATE 11/16/95	CLASS 330	SUBCLASS 002	GROUP ART UNIT 2515	EXAMINER MULLINS
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APPLICANTS

DENNIS FINK, WARWICK, NY.

CONTINUING DATA***
VERIFIED

THIS APPLN IS A CON OF 08/337,157 11/09/94, *now abandoned.*
OK JSM *JSM*
1/6/97

FOREIGN/PCT APPLICATIONS***
VERIFIED

NONE JSM

FOREIGN FILING LICENSE GRANTED 01/16/96

Foreign priority claimed 35 USC 119 conditions met	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no <input type="checkbox"/> yes <input type="checkbox"/> no	AS FILED	STATE OR COUNTRY NY	SHEETS DRWGS. 1	TOTAL CLAIMS 20	INDEP. CLAIMS 3	FILING FEE RECEIVED \$750.00	ATTORNEY'S DOCKET NO. P/214-33
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ADDRESS

OSTROLENK FABER GERB & SOFFEN
1180 AVENUE OF THE AMERICAS
NEW YORK NY 10036-8403

TITLE

APPARATUS AND METHOD FOR PROGRAMMING AN AMPLIFIER

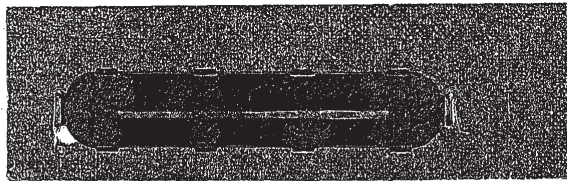
U.S. DEPT. of COMMERCE • Patent and Trademark Office-PCT-436L (rev. 7-94)

PARTS OF APPLICATION FILED SEPARATELY		Applications Examiner	
NOTICE OF ALLOWANCE MAILED <i>1-9-97</i>		CLAIMS ALLOWED	
Assistant Examiner		Total Claims <i>26</i>	Print Claim <i>1</i>
ISSUE FEE		DRAWING	
Amount Due <i>1800.00</i>	Date Paid <i>3/14/97</i>	Sheets Drwg. <i>1</i>	Figs. Drwg. <i>3</i>
Label Area		Print Fig. <i>2</i>	ISSUE BATCH NUMBER <i>I 20</i>
JAMES B. MULLINS EXAMINER GROUP ART UNIT 2515 PREPARED FOR ISSUE			
WARNING: The information disclosed herein may be restricted. Unauthorized disclosure may be prohibited by the United States Code Title 35, Sections 122, 181 and 368. Possession outside the U.S. Patent & Trademark Office is restricted to authorized employees and contractors only.			

ISSUE FEE IN FILE

08/337157

Class	Subclass	ISSUE CLASSIFICATION



ABANDONED

UTILITY SERIAL NUMBER	08/337157	PATENT DATE	PATENT NUMBER
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SERIAL NUMBER	FILING DATE	CLASS	SUBCLASS	GROUP ART UNIT	EXAMINER
08/337,157	11/09/94	330	002	2582 2515	McNally

DENNIS FINK, WARWICK, NY.

CONTINUING DATA***

VERIFIED

None JSM

FOREIGN/PCT APPLICATIONS***

VERIFIED

None JSM

FOREIGN FILING LICENSE GRANTED 12/16/94

***** SMALL ENTITY *****

foreign priority claimed	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	AS FILED →	STATE OR COUNTRY	SHEETS DRWGS.	TOTAL CLAIMS	INDEP. CLAIMS	FILING FEE RECEIVED	ATTORNEY'S DOCKET NO.
5 USC 119 conditions met	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no							
certified and Acknowledged	Examiner's Initials		NY	1	20	3	\$365.00	P21426

OSTROLENK FABER GERB & SOFFEN
1180 AVENUE OF THE AMERICAS
NEW YORK NY 10036-8403

APPARATUS AND METHOD FOR PROGRAMMING AN AMPLIFIER

U.S. DEPT. of COMM.-Pat. & TM Office - PTO-436L (rev. 10-78)

PARTS OF APPLICATION FILED SEPARATELY				Applications Examiner			
NOTICE OF ALLOWANCE MAILED				CLAIMS ALLOWED			
Assistant Examiner				Total Claims		Print Claim	
ISSUE FEE		Primary Examiner		DRAWING			
Amount Due	Date Paid			Sheets Drwg.	Figs. Drwg.	Print Fig.	
Label Area		PREPARED FOR ISSUE		ISSUE BATCH NUMBER			
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08/337,157

APPARATUS AND METHOD FOR PROGRAMMING AN AMPLIFIER

Transaction History

Date	Transaction Description
11-09-1994	Information Disclosure Statement (IDS) Filed
11-09-1994	Information Disclosure Statement (IDS) Filed
01-03-1995	Application Captured on Microfilm
04-12-1995	Case Docketed to Examiner in GAU
05-10-1995	Non-Final Rejection
05-17-1995	Mail Non-Final Rejection
11-16-1995	Request for Extension of Time - Granted
01-16-1996	Aband. for Failure to Respond to O. A.
01-23-1996	Mail Abandonment for Failure to Respond to Office Action
02-07-1996	Abandonment for Purposes of Filing an FWC - File Combined with Child Application

5,652,544

APPARATUS AND METHOD FOR PROGRAMMING AN AMPLIFIER

Transaction History

Date	Transaction Description
11-16-1995	Preliminary Amendment
12-18-1995	Initial Exam Team nn
01-18-1996	Application Captured on Microfilm
02-07-1996	Case Docketed to Examiner in GAU
02-12-1996	Non-Final Rejection
02-14-1996	Mail Non-Final Rejection
07-19-1996	Information Disclosure Statement (IDS) Filed
07-19-1996	Information Disclosure Statement (IDS) Filed
07-19-1996	Response after Non-Final Action
07-19-1996	Request for Extension of Time - Granted
08-14-1996	Date Forwarded to Examiner
09-09-1996	Final Rejection
09-17-1996	Mail Final Rejection (PTOL - 326)
12-19-1996	Response after Final Action
12-30-1996	Date Forwarded to Examiner
01-07-1997	Mail Notice of Allowance
01-07-1997	Notice of Allowance Data Verification Completed
03-17-1997	Issue Fee Payment Verified
03-17-1997	Mailroom Date of Drawing(s)
04-17-1997	Drawing(s) Matched to Application
04-17-1997	Drawing(s) Received at Publications
04-21-1997	Drawing(s) Processing Completed
06-23-1997	Issue Notification Mailed
07-29-1997	Recordation of Patent Grant Mailed

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APPROVED FOR LICENSE ☐INITIALS **JEC 019446**Date
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	1. Application _____ papers.	
5/10	2. I.D.S	11-9-94
12/98	3. Ry (3 mss)	5-17-95
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	5. PTO1432 (ADAN)	1-23-96
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08/558344

PATENT APPLICATION

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1. Application _____ papers.

2/8/96 6

Pre Amtd A

11-16-95

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Reg (3 mos)

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Reg (3 mos)

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Amtd B

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Prior Art

7-19-96

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F.R. (3 mos)

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Amtd C WEX

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PTL-77/22 Amtd D

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Formal Drawings (1 shts) set 1

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PTO Grant JUL 29 1997

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OFFICE-1966-420-310

PATENT NUMBER		ORIGINAL CLASSIFICATION	
		CLASS	SUBCLASS
		330	065
APPLICATION SERIAL NUMBER		CROSS REFERENCE(S)	
08/558,344			
APPLICANT'S NAME (PLEASE PRINT)		CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)
FINK		330	129 279 305
		381	1088 120
IF REISSUE, ORIGINAL PATENT NUMBER			
INTERNATIONAL CLASSIFICATION			
A03F 1/00			
		GROUP ART UNIT	ASSISTANT EXAMINER (PLEASE STAMP OR PRINT FULL NAME)
		2515	
		PRIMARY EXAMINER (PLEASE STAMP OR PRINT FULL NAME)	
		JAMES B. MULLINS EXAMINER	
PTO 270 (REV. 5-91)		ISSUE CLASSIFICATION SLIP GROUP ART UNIT 252	
		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	

Claim	Date
Final	Original
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SYMBOLS

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POSITION	ID NO.	DATE
CLASSIFIER	18	12-1-94
EXAMINER	341	12/14/94
TYPIST	503	12/16
VERIFIER	VW80	12/19/94
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INDEX OF CLAIMS

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Claim	Date
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EXAMINER	264	12-26-95
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VERIFIER	20	1/16/96
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INDEX OF CLAIMS

Claim	Date
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SYMBOLS

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I Interference

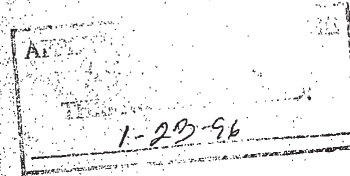
A Appeal

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SEARCHED			
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381	87		
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	121		
UPDATES		2/9/96	AK
UPDATES		3/4/96	AK
UPDATES		1/6/97	AK



SEARCH NOTES		
	Date	Exmr.
APS	5/19/95	AK

INTERFERENCE SEARCHED			
Class	Sub.	Date	Exmr.
CLASSES	5	1/6/97	AK
SUBS	AK		



SEARCHED			
Class	Sub.	Date	Exmr.

SEARCH NOTES		
	Date	Exmr.

INTERFERENCE SEARCHED			
Class	Sub.	Date	Exmr.

=> s 12 and housing
353325 HOUSING

L3 3204 L2 AND HOUSING

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MISSING OPERATOR 'L3 AMD'

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19491 330/CLAS

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7 ANSWERS ARE AVAILABLE. SPECIFIED ANSWER NUMBER EXCEEDS ANSWER SET
SIZE

ENTER ANSWER NUMBER OR RANGE (1):1-7

1. 5,268,601, Dec. 7, 1993, Logarithmic **amplifier** circuit with
temperature compensation; Peter A. Cossins, 327/350, 362; **330/289**
[IMAGE AVAILABLE]

2. 4,945,316, Jul. 31, 1990, Voltage follower with pull-apart conector;
Mark D. Sebal, et al., **330/110**; 327/91; **330/51** [IMAGE AVAILABLE]

3. 4,939,786, Jul. 3, 1990, Adaptive thermal protection for a power
amplifier by remote sense; Kevin J. McCallum, et al., 455/67.1;
330/207P; 455/115, 117, 127 [IMAGE AVAILABLE]

4. 4,924,193, May 8, 1990, Volume control circuit for use in portable
telephone or the like; Akio Saito, et al., **330/284**; 379/58; 381/86
[IMAGE AVAILABLE]

5. 4,747,296, May 31, 1988, Electronic tonometer with baseline nulling
system; Steven E. Feldon, et al., 73/4R, 753; 128/652; 324/130;
330/9; 364/558 [IMAGE AVAILABLE]

6. 4,628,397, Dec. 9, 1986, Protected input/output circuitry for a
programmable controller; Ronald E. Gareis, et al., 361/98;
330/207P; **298**; 361/57, 97, 101, 103; 364/483 [IMAGE AVAILABLE]

7. 4,223,272, Sep. 16, 1980, Four-terminal network of adjustable
transfer function; Karl H. Feistel, **330/51**; **65**; **107**; **148**
[IMAGE AVAILABLE]

=> s 12 and display
163061 DISPLAY

L5 6904 L2 AND DISPLAY

=> s 15 and 330/clas

19491 330/CLAS

L6 28 L5 AND 330/CLAS

=> d 16 1-28

1. 5,412,336, May 2, 1995, Self-biasing boot-strapped cascode
amplifier; Raymond L. Barrett, Jr., et al., 327/560, 545, 561;
330/288; **310** [IMAGE AVAILABLE]

2. 5,410,282, Apr. 25, 1995, Wide dynamic range **amplifier** with error
correction; Ronald J. Larrick, et al., **330/149**; **59**; **151**;
308; 359/189 [IMAGE AVAILABLE]

3. 5,382,916, Jan. 17, 1995, Differential voltage follower; Ken R. King,

et al., **330/253**, **257**, **301** [IMAGE AVAILABLE]

4. 5,373,249, Dec. 13, 1994, Complementary cascode push-pull
amplifier; Raymond L. Barrett, Jr., et al., **330/264**, **267**
[IMAGE AVAILABLE]

5. 5,363,061, Nov. 8, 1994, Operational transconductance **amplifier**
with matched outputs; Raymond L. Barrett, Jr., et al., **330/288**,
295, **310** [IMAGE AVAILABLE]

6. 5,175,533, Dec. 29, 1992, TO-CMOS buffers, comparators, folded
cascode amplifiers, systems and methods; William R. Krenik, 345/199;
326/71, 73; **330/253**, **258** [IMAGE AVAILABLE]

7. 5,155,614, Oct. 13, 1992, Low-power demodulating receiver with
amplifier stages sharing the same bias current; Ralph H. Carmen, et
al., 359/189; **330/59**, 359/154 [IMAGE AVAILABLE]

8. 5,107,140, Apr. 21, 1992, Anticipatory automatic gain control
circuit; David M. Sherman, 327/331, 65, 72, 306, 309, 334; **330/85**,
136, **279** [IMAGE AVAILABLE]

9. 5,049,834, Sep. 17, 1991, **Amplifier** having a constant-current
bias circuit; Takafumi Kasai, **330/255**, **264**, **265**, **268**
[IMAGE AVAILABLE]

10. 5,045,802, Sep. 3, 1991, Frequency characteristic setting circuitry
for an **amplifier**; Takashi Miyake, et al., **330/2**, 327/44 [IMAGE
AVAILABLE]

11. 5,027,656, Jul. 2, 1991, Fuel gauge damper circuit with a return to
zero gauge circuit; James R. Garrison, 73/313, 113; 324/154R; **330/253**
[IMAGE AVAILABLE]

12. 4,945,316, Jul. 31, 1990, Voltage follower with pull-apart connector;
Mark D. Sebald, et al., **330/110**, 327/91; **330/51** [IMAGE AVAILABLE]

13. 4,904,954, Feb. 27, 1990, Ultrasonic signal **amplifier** circuit
and system of gain control thereof; Kan Otake, et al., **330/281**,
141 [IMAGE AVAILABLE]

14. 4,882,547, Nov. 21, 1989, Linearizer control system; Allen Katz,
330/149, 327/100 [IMAGE AVAILABLE]

15. 4,864,639, Sep. 5, 1989, Self-test device and method having an
amplifier converted into an oscillator; Mark A. Dapore, et al.,
455/226.4; 324/76.77, 76.79; **330/112**, 331/59; 455/67.7, 341 [IMAGE
AVAILABLE]

16. 4,838,082, Jun. 13, 1989, Fuel gauge damper circuit; Blane K. McCoy,
et al., 73/313, 113; **330/253**, 377/21 [IMAGE AVAILABLE]

17. 4,803,476, Feb. 7, 1989, Video terminal for use in graphics and
alphanumeric applications; Edward Knapton, et al., 345/189; **330/51**
[IMAGE AVAILABLE]

18. 4,747,296, May 31, 1988, Electronic tonometer with baseline nulling
system; Steven E. Feldon, et al., 73/4R, 753; 128/652; 324/130;

330/9; 364/558 [IMAGE AVAILABLE]

19. 4,743,860, May 10, 1988, Audio power **amplifier**; James M. Dziagwa, **330/251**; **264** [IMAGE AVAILABLE]

20. 4,628,397, Dec. 9, 1986, Protected input/output circuitry for a **programmable** controller; Ronald E. Gareis, et al., 361/98; **330/207P**; **298**; 361/57, 97, 101, 103; 364/483 [IMAGE AVAILABLE]

21. 4,627,098, Dec. 2, 1986, Automatic gain control for a remote control system having symmetrical send/receive signaling circuits; Arman V. Dolikian, et al., 455/70; **330/86**; **281**; 340/825.48; 379/58, 102; 455/244.1 [IMAGE AVAILABLE]

22. 4,598,253, Jul. 1, 1986, JFET ohmic differential **amplifier**; Kenneth A. Reindel, et al., **330/253**; **261** [IMAGE AVAILABLE]

23. 4,574,801, Mar. 11, 1986, Electrosurgical unit with regulated output; Michael R. Manes, 606/38; **330/59**; 331/186 [IMAGE AVAILABLE]

24. 4,550,276, Oct. 29, 1985, Buss structures for multiscene manual lighting consoles; Michael Callahan, et al., 315/312, 294, 299, 314, 316; **330/298**; 361/18 [IMAGE AVAILABLE]

25. 4,525,789, Jun. 25, 1985, **Programmable** network tester with data formatter; Kyran B. Kemper, et al., 364/481; **330/278**; 364/550; 370/15; 371/26 [IMAGE AVAILABLE]

26. 4,494,212, Jan. 15, 1985, Variable gain **amplifier**; William C. Muellner, 364/571.07; 327/306; **330/278** [IMAGE AVAILABLE]

27. 4,484,295, Nov. 20, 1984, Control circuit and method for varying the output of a waveform generator to gradually or rapidly vary a control signal from an initial value to a desired value; James F. Bedard, et al., 364/607; 323/322, 350, 354; **330/282**; 363/16; 364/480 [IMAGE AVAILABLE]

28. 4,447,783, May 8, 1984, **Programmable** RF power regulator (stabilizer); Donald L. Quick, 323/275, 280; **330/207P**; 455/115, 117 [IMAGE AVAILABLE]

=> s 15 and 381/clas
15172 381/CLAS
L7 140 L5 AND 381/CLAS
=> s 13 and 381/clas
15172 381/CLAS
L8 34 L3 AND 381/CLAS
=> d 18 1-34

1. 5,402,501, Mar. 28, 1995, Automated audio mixer; Scott W. Silfvajt, et al., **381/119** [IMAGE AVAILABLE]

2. 5,384,854, Jan. 24, 1995, Co-processor controlled switching apparatus and method for dispatching console; Stephen R. Downs, et al., **381/81**; 379/203, 211, 267, 269; **381/123** [IMAGE AVAILABLE]

3. 5,326,349, Jul. 5, 1994, Artificial larynx; David R. Baraff, 623/9; **381/70**; 433/167 [IMAGE AVAILABLE]

4. 5,263,199, Nov. 16, 1993, Vehicle accessory having integrally contained radio receiver and recording means; Ronald P. Barnes, et al., 455/344; 360/137; 369/7; **381/86**; 455/345 [IMAGE AVAILABLE]
5. 5,175,759, Dec. 29, 1992, Communications device with movable element control interface; Michael P. Metroka, et al., 379/58, 61, 63; **381/43**; 455/89 [IMAGE AVAILABLE]
6. 5,095,798, Mar. 17, 1992, Electronic gaming device with pseudo-stereophonic sound generating capabilities; Saturo Okada, et al., 84/609, DIG.27; 273/85G, 435; 364/410; **381/17** [IMAGE AVAILABLE]
7. 5,083,312, Jan. 21, 1992, **Programmable** multichannel hearing aid with adaptive filter; James R. Newton, et al., **381/68.4***, **68***, **68.2** [IMAGE AVAILABLE]
8. 5,052,685, Oct. 1, 1991, Sound processor for video game; Danny D. Lowe, et al., 273/460, 85G, DIG.28; **381/17** [IMAGE AVAILABLE]
9. 5,051,799, Sep. 24, 1991, Digital output transducer; Jon D. Paul, et al., 375/242, 247; **381/168** [IMAGE AVAILABLE]
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United States Patent [19]
Fink

[11] **Patent Number:** **5,652,544**
[45] **Date of Patent:** **Jul. 29, 1997**

[54] **APPARATUS AND METHOD FOR
PROGRAMMING AN AMPLIFIER**

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[21] Appl. No.: **558,344**

[22] Filed: **Nov. 16, 1995**

Related U.S. Application Data

[63] Continuation of Ser. No. 337,157, Nov. 9, 1994, abandoned.

[51] Int. Cl. ⁶ **H03F 1/00**

[52] U.S. Cl. **330/65; 330/129; 330/279;
330/305; 381/88; 381/120**

[58] Field of Search 330/2, 65, 66,
330/129, 279, 305; 381/87, 88, 105, 120,
121

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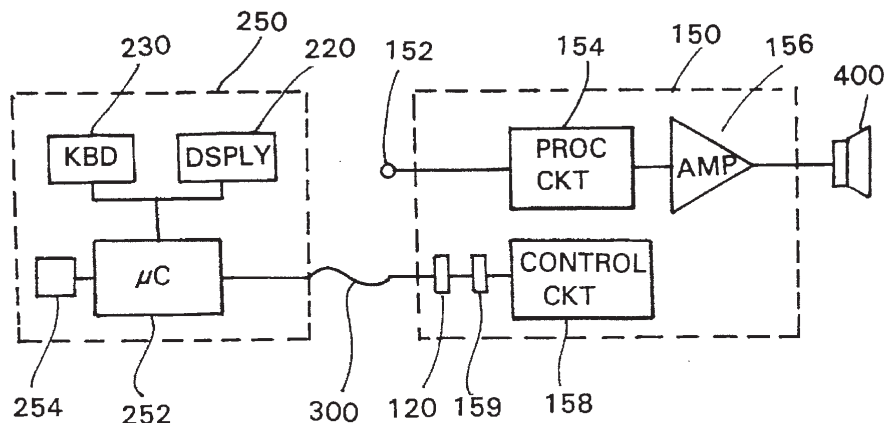
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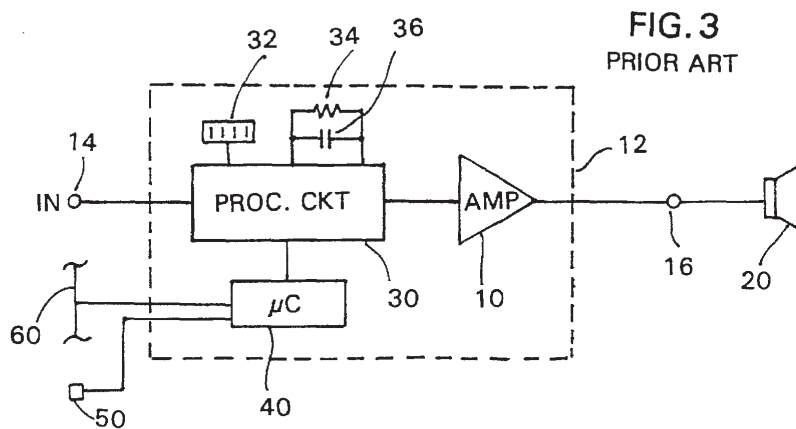
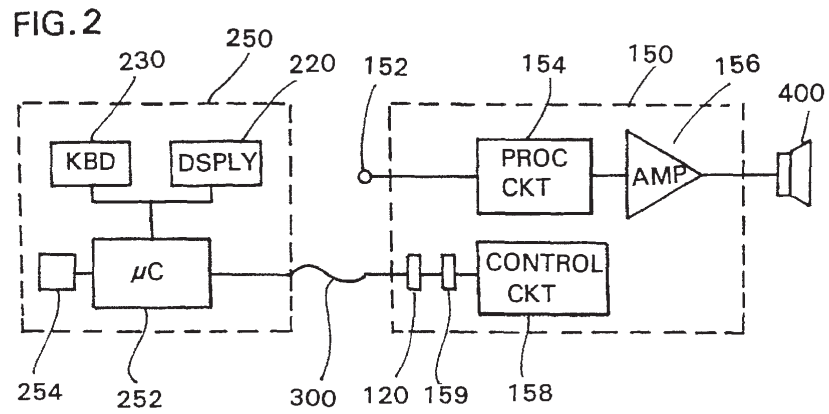
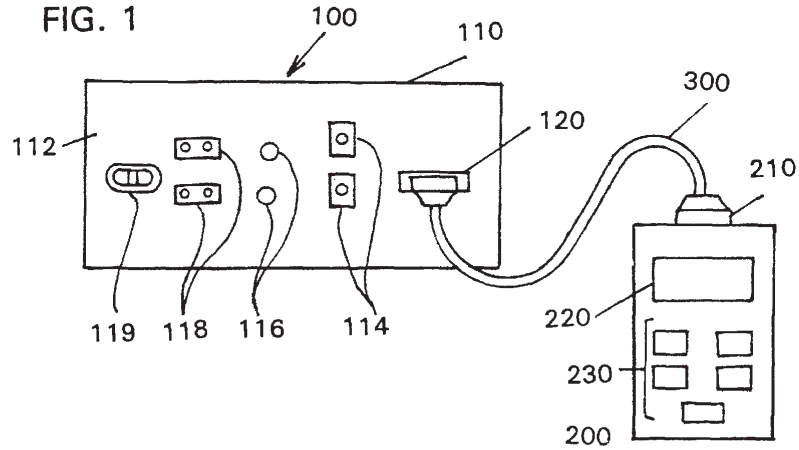
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[57] **ABSTRACT**

An apparatus and method for programming an amplifier includes an amplifier and a portable programmer that is removably connectable to the amplifier. The portable programmer includes a microprocessor, a keypad, and a display screen. The amplifier includes a programming input port, a signal processing circuit, a power amplifier and a control circuit. When the portable programmer is connected to the amplifier, information relating to parameter of various signal processing circuit elements can be read and modified through the programmer. The information input via the keypad and displayed on the display screen is transmitted from the programmer via the microprocessor to the signal processing control circuit to change signal processing functions and/or signal process function parameters of at least one of the signal processing circuit elements. As a result, processing of a signal transmitted through the amplifier is changed so that a sound produced by the signal can be modified. The signal processing circuit elements remain programmed when the programmer is removed and/or power is disconnected.

26 Claims, 1 Drawing Sheet





APPARATUS AND METHOD FOR PROGRAMMING AN AMPLIFIER

This is a continuation of application Ser. No. 08/337,157,
filed on Nov. 9, 1994 now abandoned.

BACKGROUND OF THE INVENTION

A. Field of the Invention

The present invention relates to an apparatus and method
for programming a signal processing circuit of an amplifier,
and more particularly, to an amplifier and a portable ampli-
fier programmer capable of being removably connected to
the amplifier to read and/or change various parameters of an
amplifier signal processing circuit to thereby modify a signal
output from the amplifier.

B. Description of the Prior Art

Amplifiers typically have an input port for being con-
nected to an input device such as a musical instrument, a
sound system, a public address system, etc. and for receiving
audio signals from the input device. The amplifier is also
connected to and drives a load or output device such as a
loudspeaker. The amplifier includes a signal processing
circuit for modifying and amplifying input signals and
transmitting the modified signals as output signals to the
load.

The signal processing circuits include several resistive
elements, capacitive elements, switching elements, opera-
tional amplifiers and other suitable devices which are
selected to modify an input signal in a desired manner. The
various elements of the signal processing circuit define a
plurality of sound processing parameters such as a frequency
and an amplitude of a cross-over function, relative levels and
routing in a mixer, response times, ratios and thresholds in
a compressor and frequency, gain and bandwidth in an
equalizer.

Thus, when an input signal is transmitted through the
various elements of the signal processing circuit, the result-
ant output signal will have a desired frequency and ampli-
tude in accordance with a signal processing function set in
the amplifier.

Users of amplifiers and sound systems often want to
modify the signal processing parameters to alter a sound
produced by the signals output from the amplifiers.
However, it is difficult and time consuming to change the
signal processing functions and function parameters in con-
ventional amplifiers for reasons discussed below.

A conventional amplifier 10 is shown in FIG. 3. The
amplifier is mounted within an amplifier housing 12 and
includes an input port 14 and an output port 16. A load such
as a loudspeaker 20 is connected to the output port 16 so that
the amplifier 10 drives the loudspeaker 20. A signal pro-
cessing circuit 30 of the amplifier 10 is located within the
amplifier housing 12. The signal processing circuit 30
includes a plurality of signal processing circuit elements
which may include a plurality of switches 32, resistors 34
and capacitors 36 and other suitable signal modifying
devices (not shown). The signal processing function and
function parameters of the amplifier 10 are determined by
the plurality of signal processing circuit elements.

The signal processing function and parameters of the
amplifier 10 can only be modified by setting one of the
switches 32 or removing and/or replacing one or more of the
resistors 34 and capacitors 36. However, the amplifier hous-
ing 12 must be opened and a signal processing circuit
support (not shown) must be removed from the amplifier

housing 12 before any of the switches 32, resistors 34 or
capacitors 36 can be modified or replaced. After modifying
the circuit elements, the signal processing circuit support
must be re-inserted into the amplifier housing 12 and the
amplifier housing 12 must be closed.

The opening and closing of the amplifier housing 12 and
removal of the signal processing circuit support is time
consuming and does not allow a user to immediately sound
check the results of the modification of the signal processing
parameters. Instead, the signal processing circuit support
must be reinserted in the amplifier housing 12 to be plugged
back into the signal path before the amplifier 10 can be
operated. In addition, the modification, removal and/or
replacement of the various circuit elements to modify the
parameters is a time consuming and difficult process because
the signal processing control circuit elements are typically
plug-in or solderable components. Also, because anyone is
capable of opening the amplifier housing 12 and modifying
the signal processing circuit 30, there is no way to prevent
an unauthorized modification of the amplifier signal pro-
cessing parameters.

The conventional amplifier 10 may include a controller 40
for receiving input command signals for modifying the
signal processing parameters. The controller 40 can be
connected to either manually controllable knobs 50 located
on an amplifier control plate (not shown) or to a network 60
comprised of several interconnected amplifiers. If the con-
troller 40 is connected to the knobs 50, any person can make
unauthorized modifications to the signal processing param-
eters by simply turning one of the knobs 50. Also, to repeat
the desired settings in a number amplifiers connected in a
network, all of the knobs of each of the amplifiers must be
individually and manually set to be at the exact same values.
If the controller 40 is connected to the network 60, a
computer or similar input device must be provided to input
control signals through the network 60 to the controller 40
which increases the cost and complexity of the amplifier
system.

Also, the presence of the controller 40 in the amplifier 10
introduces noise into the signal path caused by a digital/
analog converter required for the controller 40. Further, the
amplifier 10 must be provided with a battery backup or other
suitable device to provide non-volatility required in digitally
controlled systems.

SUMMARY OF THE INVENTION

A preferred embodiment of the present invention provides
an amplifier and amplifier programmer capable of being
removably connected to the amplifier to quickly and easily
change signal processing functions and/or parameters of the
amplifier without providing a conventional controller in the
amplifier and without modifying signal processing circuit
elements. The preferred embodiment of the present inven-
tion includes a portable amplifier programmer that is capable
of receiving input information and transmitting the input
information to an amplifier signal processing circuit to
modify signal processing functions and/or parameters.

Another feature of the preferred embodiment relates to an
amplifier having a data port for being connected to the
portable amplifier programmer and receiving control signals
from the programmer. The amplifier also includes a control
circuit connected between the data port and a signal pro-
cessing circuit for performing an interface function between
the command signals input from the portable programmer
and the signal processing circuit. The control circuit elec-
trically isolates the control elements from the programmer

port. It also provides the optional connections required when programming elements over a network.

The control circuit may be preferably located outside of the signal path but connected to the signal processing circuit within the amplifier housing. The control circuit isolates the incoming command signals from the signal processing circuit elements to allow the parameters of the signal processing circuit elements to be modified as desired.

In an alternative embodiment, the control circuit and the signal processing circuit of the amplifier may be formed by a digital signal processor, described in U.S. patent application Ser. No. 08/546,839, which is a continuation application of U.S. patent application Ser. No. 08/336,481, entitled "DIGITAL SIGNAL PROCESSOR FOR AMPLIFIER," filed on Nov. 9, 1994, in the name of the same Applicant as in the present application, the disclosure of which is hereby incorporated by reference. If such a digital signal processor is provided in the amplifier, both signal processing functions and function parameters can be changed by inputting control information from the portable programmer to the amplifier.

The signal processing circuit elements are preferably provided with a memory or storage device for storing a set parameter value so that the set parameter value is not changed or deleted upon an off-on operation of the amplifier. For example, a conventional digitally programmable resistor can be used for one or more of the circuit elements. As is known, such a digitally programmable resistor stores a set resistance to provide a desired non-volatility. In addition, other known storage means such as an on board logic circuit or programmable gate array can be used to store the set parameter values.

The portable amplifier programmer according to the preferred embodiment includes a microprocessor, a keypad, a display screen and a connecting member for connecting the portable amplifier programmer to an amplifier to download signal processing parameters to the amplifier control circuit.

The keypad can be used to input either a desired modification to an output signal or a desired parameter value for a specific signal processing circuit element. An example of the input desired signal modification is a boost of 5 dB in the output signal is desired. The desired signal modification may be preferably displayed on the display screen. The microprocessor receives the desired signal modification and determines which control elements in the signal processing circuit must be modified and to what extent the performance characteristics of the selected control elements must be modified. The microprocessor then generates control signals for modifying the control elements and outputs the control signals to the amplifier to modify the signal processing parameters of the amplifier. More specifically, the control signals are transmitted from the microprocessor through the input port of the amplifier to the control circuit. The control circuit then sends the control signals to the signal processing circuit to modify the signal processing parameters.

When the keypad is used to input a parameter value for one or more of the signal processing circuit elements, the input desired parameter values are received by the microprocessor and converted to a command signal to be downloaded to the control circuit through the portable programmer.

Thus, the microprocessor is programmed to convert the input desired signal modification or desired parameter into a preferably digital command signal for changing the parameters of the amplifier signal processing circuit elements to produce the desired signal modification or desired circuit element parameter value.

If a digital signal processor is provided in the amplifier, programs and program data for defining a plurality of signal processing functions and function parameters may be entered into the portable programmer and downloaded from the portable programmer to the amplifier.

The signal processing circuit may preferably have a memory or storage means for storing the information input from the portable amplifier programmer so that the portable amplifier programmer can be disconnected from the amplifier after inputting the desired signal modification or signal processing function and parameter program.

The programmer is also capable of reading the previously set parameters and functions stored in the signal processing circuit. A portable programmer user can select a reading mode wherein the programmer sends an inquiry signal to the signal processing circuit and outputs to the programmer a set value for each of the signal processing circuit elements. The parameter values for each of the circuit elements may be preferably displayed in numerical form on the programmer display.

The microprocessor in the portable programmer is capable of receiving the previously set parameters of the circuit elements and transfers these parameter values to the display screen to enable a portable programmer operator to decide if a given parameter value should be changed. The keypad can be used to scroll through the parameter values for each of the circuit elements so that each of the parameters for the circuit elements is displayed on the display screen. Because the portable amplifier programmer can read a parameter for each of the circuit elements, the programmer can prompt a portable programmer user to accept or change a parameter for each of the plurality of signal processing circuit elements.

The portable amplifier programmer may preferably include a memory or suitable storage device for storing a plurality of preset signal processing parameters and desired parameter values input through the keypad. The preset signal processing parameters may be stored in a plurality of different groups each of which contains a desired parameter for each of the signal processing circuit elements. For example, if a desired operation of a stereo sound system or public address system varies according to the time of day or the type of event being conducted, the signal processing parameters of an amplifier can be modified by selecting a preset group for that particular time of day or type of event. Thus, the user of the portable amplifier programmer only has to select a single group from a menu and the programmer will input that stored group to the control circuit of the amplifier.

The embodiments of the present invention provide several advantages. Because the programmer can be quickly and easily connected via a data port in the amplifier, there is no need to open the amplifier housing and remove a signal processing circuit support to change the circuit parameters. Also, there is no need to physically modify the circuit elements by setting a switch or removing and/or replacing a capacitor, resistor, operational amplifier or other suitable circuit element. In addition, the amplifier programmer allows changes in the signal processing circuitry of the amplifier to be made while the amplifier is in operation to thereby allow the results achieved by the modification of the signal processing parameters to be evaluated immediately.

Further, because the programmer contains a microprocessor, this eliminates the need for a microprocessor in the amplifier. Accordingly, the complexity and noise produced by a analog/digital converter required with the

microprocessor located within the amplifier is eliminated. Also, if a plurality of amplifiers are provided in a network, a substantial savings in amplifier cost is achieved because only one microprocessor is necessary and provided in the portable amplifier programmer instead of a microprocessor being provided in each amplifier.

An improved security feature is provided by the preferred embodiment of the invention. Because the parameters of the signal processing circuit elements cannot be changed without using the portable amplifier programmer, no unauthorized modification of the signal processing circuit elements is possible.

Further, non-volatility is achieved without battery backup, RAM or ROM so that when the control signals for the signal processing circuit elements in the amplifier are input from the programmer, the circuit elements remain programmed whether the power to the amplifier is on or off. In addition, the amplifier circuitry can be programmed by either the portable programmer or a standard computer which is connected to a network of amplifiers which allows for maximum flexibility.

Also, the programmer can easily download the same parameter settings via the network to a number of amplifiers ensuring identical setup. This eliminates the need to independently and manually change the knobs on each of a plurality of amplifiers.

Other features and advantages of the present invention will become apparent from the following description of the invention which refers to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic view showing a preferred embodiment of a portable amplifier programmer and amplifier of the present invention;

FIG. 2 is a schematic view of the control circuit of the programmer and amplifier shown in FIG. 1; and

FIG. 3 is a schematic view of a conventional amplifier circuit having a conventional signal processing parameter programmer.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

An amplifier 100 according to one aspect of a preferred embodiment of the invention is shown in FIG. 1. The amplifier includes an amplifier housing 110 which includes a control panel 112 having a plurality of control elements and ports. Input ports 114 for receiving connectors from one or more input devices are provided on the control panel 112. Also, a plurality of control knobs 116 for controlling gain, volume, an equalizer circuit, a level threshold, etc. are provided on the control panel 112 as is conventional. A plurality of output ports 118 and an AC power connector 119 are also provided on the control panel 112.

The control panel 112 also includes a programming port 120 for receiving a connector from the portable amplifier programmer described below. This programming port may also be connected to a data bus of a network of interconnected amplifiers. The network is connected to a computer or other similar device and control information can be input from the computer to the amplifier via the programming port 120.

A preferred embodiment of a portable amplifier programmer 200 is also shown in FIG. 1. The programmer 200 is removably connectable to the amplifier 100 through a connector 300 which is connected to the programming port 120

of the amplifier 100 and an output port 210 of the portable programmer 200. The programmer 200 preferably includes a display screen 220 for displaying parameter values, desired signal modifications and other suitable information. The portable programmer 200 also includes an input device such as keypad 230 for entering parameter and signal modification information, signal processing function programs and program data.

The portable programmer 200 allows a user to modify parameters of amplifier circuit elements inside the amplifier, modify signal processing functions set by the signal processing circuit, read back previously set parameter values and store a group of input parameter values for future use as will be explained in greater detail below.

FIG. 2 shows an amplifier circuit 150 of the amplifier 100 shown in FIG. 1 and an operational circuit 250 of the portable programmer 200.

The amplifier circuit 150 of the amplifier 100 includes an input interface 152 connected to the input port 116. The input interface 152 provides audio signals from an input device (not shown) such as a musical instrument, public address system, sound system, etc. to a signal processing circuit 154 which is connected to a power amplifier 156. The amplifier circuit 150 is connected to a load 400 such as a loudspeaker.

The signal processing circuit 154 and power amplifier 156 are preferably located within the amplifier housing 110. The amplifier housing 110 also has a control circuit 158 located therein. The control circuit is preferably connected to the programming port 120 and the signal processing circuit 154.

The amplifier circuit 150 may be provided with a memory or storage device 159 for storing input command signals therein. As soon as the command signals have been input from the programmer 200 through the connector 300 to the programming port 120, the programmer 200 can be disconnected from the amplifier 100 because the input commands are stored in the storage device 159. Alternatively, the storage device can be provided in the signal processing circuit 154.

Programming information is input from the portable programmer 200 through the connector 300 and the programming port 120 to the control circuit 158. This programming information may comprise signal processing function programs and program data for defining function parameters, parameter modification requests, new parameters, and other suitable control information.

The control circuit 158 preferably comprises a programmable microprocessor for performing an interface function between the command signals input from the portable programmer 200 and the signal processing circuit 154. In an alternative embodiment, the control circuit and the signal processing circuit of the amplifier may be formed by a digital signal processor, described in U.S. patent application Ser. No. 08/336,481 mentioned above. If such a digital signal processor is provided in the amplifier 100, both signal processing functions and function parameters can be changed by inputting control information from the portable programmer 200 to the amplifier 100.

The elements of the signal processing circuit 154 are preferably provided with a memory or storage device for storing a set parameter value so that the set parameter value is not changed or deleted upon an off-on operation of the amplifier. For example, a conventional digitally programmable resistor can be used for one or more of the circuit elements. As is known, such a digitally programmable resistor stores a set resistance to provide a desired non-

volatility. In addition, other known storage means such as an on board logic circuit or programmable gate array can be used to store the set parameter values.

In the programmer circuit 250, a microprocessor 252 is provided and has an output end connected to the connector 300. The keypad 230 and display 220 are connected to an input end of the microprocessor 252. A memory or storage device 254 may be provided in the portable programming circuit. The microprocessor 252 receives information from the keypad 230 and may store the input information in the memory 254. The memory may also store previously set parameter values, a menu and plurality of groups of parameter values, signal processing function programs and program data and other suitable control information. The microprocessor 252 also controls the display screen 220 to display parameter values and various read and input information.

The operation of the preferred embodiment of the invention will be described in the following paragraphs. At least one audio signal input device such as those described above is connected to the input port 114 of the amplifier 100. At least one output device or load such as a loudspeaker 400 is connected to the output port 118.

A programming operation can be conducted while the amplifier is powered through the AC adapter 119 and functioning or while the amplifier 100 is not operating and receiving power. However, it is preferable to perform the amplifier programming operation while the amplifier 100 is receiving and outputting signals to hear the effects of parameter modifications.

The connector 300 is inserted into the programming port 120 of the amplifier 100 to connect the portable programmer 200 to the amplifier 100. A user can select a diagnostic mode by activating an appropriate key on the keypad 230. In the diagnostic mode, a parameter value for each of the signal processing circuit elements is read by the microprocessor 252 and displayed on the display 220 for operator verification. The microprocessor 252 converts the read data to a numerical value so that each parameter is displayed numerically.

The microprocessor 252 may preferably be programmed to request that a user confirm a read parameter value or change the parameter to a desired value by using an appropriate key on the keypad 230.

The information input via the keypad 230 is converted to control signals by the microprocessor 252. These control signals are preferably digital control signals for modifying the control elements of the signal processing circuit 154.

Once all of the signal processing function programs and/or function parameter values have been input to the programmer 200 and the microprocessor 252 has converted the input control information to control signals, the user can actuate a send key on the keypad 230 to transmit the new signal processing function and/or parameter information to input port 120 of the amplifier.

If a storage device 159 is provided, the input command signals are stored in 159 which allows the programmer 200 to be immediately removed after transmission of the command signals.

The control signals are transmitted from the input port 120 or storage device 159 to the control circuit 158. The control circuit 158 then sends control signals to the signal processing circuit to modify the performance characteristics of various control elements of the signal processing circuit 154 to achieve a desired modification of a signal processing function and/or function parameters.

As discussed above, the signal processing circuit elements are preferably provided with storage means for storing the

set parameters to maintain the set parameters despite power up and power down of the amplifier 100.

If the user dislikes the sound produced by the modification of the signal processing function and/or function parameters, the user can modify any one or all of the parameters of the signal processing circuit elements by either individually changing each parameter or selecting the previously set groups of parameter values which are stored in the memory 254. Preferably, the user can select a menu mode in which the programmer displays on the display screen 220 a menu of various groups of previously set parameters. The user can then select one of the groups by actuating an appropriate key on the keypad 230. Then, the stored group of parameter values is input to the amplifier as described above.

Although the present invention has been described in relation to particular embodiments thereof, many other variations and modifications and other uses will become apparent to those skilled in the art. It is preferred, therefore, that the present invention be limited not by the specific disclosure herein, but only by the appended claims.

What is claimed is:

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.

2. The amplifier of claim 1, further comprising a control circuit for receiving the programming signal and converting the programming signal to a control signal to be sent to the signal processing circuit for modifying at least one of the signal processing function and the signal processing function parameter defined in said signal processing circuit.

3. The amplifier of claim 2, wherein the signal processing circuit comprises a storage device for storing at least one of the signal processing function and the signal processing function parameter produced by the control circuit.

4. The amplifier of claim 2, wherein the control circuit comprises a programmable microprocessor.

5. The amplifier of claim 1, further comprising a storage device for storing said at least one programming signal.

6. The amplifier of claim 1, further comprising an amplifier housing, the signal processing circuit and power amplifier being located in said amplifier housing.

7. The amplifier of claim 1, further comprising a control panel, wherein said programming signal input port is provided on the control panel.

8. The amplifier of claim 1, wherein the signal processing circuit further comprises a plurality of electronic components and a non-volatile storage means for storing a set performance characteristics.

9. The amplifier of claim 1, wherein the external programmer comprises:

an input/output port for sending and receiving control information;
 a data input device for allowing input of programming information to the programmer; and
 a controller for receiving the input programming information, generating programming signals from the input programming information and transmitting the programming signals through the input/output port to the amplifier for modifying at least one of a signal processing function and a signal processing function parameter of the amplifier.

10. The amplifier of claim 9, wherein the external programmer further comprises a display screen for displaying input programming information and information read by the controller.

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.

12. The amplifier of claim 9, wherein the data input device comprises a keypad having a plurality of keys.

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.

14. The amplifier of claim 9, wherein the controller comprises a connector for removably connecting the programmer to the amplifier.

15. The amplifier programmer of claim 9, wherein said programmer is a standard computer.

16. The amplifier programmer of claim 9, wherein said programmer stores in groups said at least one of a signal processing function and a signal processing function parameter according to the time of day during which said amplifier is to operate.

17. The amplifier programmer of claim 9, wherein said programmer stores in groups said at least one of a signal processing function and a signal processing function parameter according to the type of event for which said amplifier is to operate.

18. The amplifier of claim 1, wherein said amplifier executes operation according to said at least one of a signal processing function and a signal processing function parameter after said external programmer is disconnected from said amplifier.

19. The amplifier of claim 1, wherein said external programmer is a standard computer.

20. The amplifier of claim 1, wherein said digital signal processor receives and stores at least one of a signal processing function and a signal processing function parameter for a crossover function.

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

22. The amplifier of claim 1, wherein said digital signal processor receives and stores at least one of a signal processing function and a signal processing function parameter which automatically vary the operation of said amplifier according to the time of day.

23. The amplifier of claim 1, wherein said digital signal processor receives and stores at least one of a signal processing function and a signal processing function parameter for a volume control function.

24. The amplifier of claim 1, wherein said digital signal processor receives and stores at least one of a signal processing function and a signal processing function parameter for an equalizing function.

25. The amplifier of claim 1, wherein said digital signal processor receives and stores at least one of a signal processing function and a signal processing function parameter for a compression function.

26. The amplifier of claim 1, wherein said digital signal processor receives and stores at least one of a signal processing function and a signal processing function parameter for a level threshold function.

* * * * *

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Inventor : Dennis Fink
Title : APPARATUS AND METHOD FOR PROGRAMMING
AN AMPLIFIER
Assignee : Crest Audio Inc.

Enclosed herewith please find the following documents in the above-identified application for United States Letters Patent:

☒ Abstract
☒ 20 Pages of Specification
☒ 20 Numbered Claims Calculated as 20 Claims for Fee Purposes
☒ 1 Sheets of Drawing Containing Figures 1 to 3. (Informal)
☒ Declaration and Power of Attorney
☒ Priority is Claimed under 35 U.S.C. §119:
Convention Date _____ for _____ Appln. S.N. _____
☒ Certified Priority Application
☒ Verified Statement Claiming Small Entity Status under 37 C.F.R. §1.27.
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P/214-26

APPARATUS AND METHOD FOR PROGRAMMING AN AMPLIFIER

ABSTRACT OF THE DISCLOSURE

An apparatus and method for programming an amplifier includes an amplifier and a portable programmer that is removably connectable to the amplifier. The portable programmer includes a microprocessor, a keypad, and a display screen. The amplifier includes a programming input port, a signal processing circuit, a power amplifier and a control circuit. When the portable programmer is connected to the amplifier, information relating to parameter of various signal processing circuit elements can be read and modified through the programmer. The information input via the keypad and displayed on the display screen is transmitted from the programmer via the microprocessor to the signal processing control circuit to change signal processing functions and/or signal process function parameters of at least one of the signal processing circuit elements. As a result, processing of a signal transmitted through the amplifier is changed so that a sound produced by the signal can be modified. The signal processing circuit elements remain programmed when the programmer is removed and/or power is disconnected.



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APPARATUS AND METHOD FOR PROGRAMMING AN AMPLIFIER

I. BACKGROUND OF THE INVENTION

A. Field Of the Invention

5 The present invention relates to an apparatus
and method for programming a signal processing circuit of
an amplifier, and more particularly, to an amplifier and
a portable amplifier programmer capable of being
removably connected to the amplifier to read and/or
change various parameters of an amplifier signal
10 processing circuit to thereby modify a signal output from
the amplifier.

B. Description of the Prior Art

15 Amplifiers typically have an input port for
being connected to an input device such as a musical
instrument, a sound system, a public address system, etc.
and for receiving audio signals from the input device.
The amplifier is also connected to and drives a load or
output device such as a loudspeaker. The amplifier
includes a signal processing circuit for modifying and
20 amplifying input signals and transmitting the modified
signals as output signals to the load.

The signal processing circuits include several
resistive elements, capacitive elements, switching
elements, operational amplifiers and other suitable
25 devices which are selected to modify an input signal in a
desired manner. The various elements of the signal
processing circuit define a plurality of sound processing
parameters such as a frequency and an amplitude of a

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cross-over function, relative levels and routing in a mixer, response times, ratios and thresholds in a compressor and frequency, gain and bandwidth in an equalizer.

5 Thus, when an input signal is transmitted through the various elements of the signal processing circuit, the resultant output signal will have a desired frequency and amplitude in accordance with a signal processing function set in the amplifier.

10 Users of amplifiers and sound systems often want to modify the signal processing parameters to alter a sound produced by the signals output from the amplifiers. However, it is difficult and time consuming to change the signal processing functions and function
15 parameters in conventional amplifiers for reasons discussed below.

A conventional amplifier 10 is shown in Fig. 3. The amplifier is mounted within an amplifier housing 12 and includes an input port 14 and an output port 16. A
20 load such as a loudspeaker 20 is connected to the output port 16 so that the amplifier 10 drives the loudspeaker 20. A signal processing circuit 30 of the amplifier 10 is located within the amplifier housing 12. The signal processing circuit 30 includes a plurality of signal
25 processing circuit elements which may include a plurality of switches 32, resistors 34 and capacitors 36 and other suitable signal modifying devices (not shown). The signal processing function and function parameters of the amplifier 10 are determined by the plurality of signal
30 processing circuit elements.

The signal processing function and parameters of the amplifier 10 can only be modified by setting one of the switches 32 or removing and/or replacing one or

more of the resistors 34 and capacitors 36. However, the amplifier housing 12 must be opened and a signal processing circuit support (not shown) must be removed from the amplifier housing 12 before any of the switches
5 32, resistors 34 or capacitors 36 can be modified or replaced. After modifying the circuit elements, the signal processing circuit support must be re-inserted into the amplifier housing 12 and the amplifier housing 12 must be closed.

10 The opening and closing of the amplifier housing 12 and removal of the signal processing circuit support is time consuming and does not allow a user to immediately sound check the results of the modification of the signal processing parameters. Instead, the signal
15 processing circuit support must be reinserted in the amplifier housing 12 to be plugged back into the signal path before the amplifier 10 can be operated. In addition, the modification, removal and/or replacement of the various circuit elements to modify the parameters is
20 a time consuming and difficult process because the signal processing control circuit elements are typically plug-in or solderable components. Also, because anyone is capable of opening the amplifier housing 12 and modifying the signal processing circuit 30, there is no way to
25 prevent an unauthorized modification of the amplifier signal processing parameters.

The conventional amplifier 10 may include a controller 40 for receiving input command signals for modifying the signal processing parameters. The
30 controller 40 can be connected to either manually controllable knobs 50 located on an amplifier control plate (not shown) or to a network 60 comprised of several interconnected amplifiers. If the controller 40 is

connected to the knobs 50, any person can make unauthorized modifications to the signal processing parameters by simply turning one of the knobs 50. Also, to repeat the desired settings in a number amplifiers
5 connected in a network, all of the knobs of each of the amplifiers must be individually and manually set to be at the exact same values. If the controller 40 is connected to the network 60, a computer or similar input device must be provided to input control signals through the
10 network 60 to the controller 40 which increases the cost and complexity of the amplifier system.

Also, the presence of the controller 40 in the amplifier 10 introduces noise into the signal path caused by a digital/analog converter required for the controller
15 40. Further, the amplifier 10 must be provided with a battery backup or other suitable device to provide non-volatility required in digitally controlled systems.

SUMMARY OF THE INVENTION

A preferred embodiment of the present invention provides an amplifier and amplifier programmer capable of
20 being removably connected to the amplifier to quickly and easily change signal processing functions and/or parameters of the amplifier without providing a conventional controller in the amplifier and without
25 modifying signal processing circuit elements. The preferred embodiment of the present invention includes a portable amplifier programmer that is capable of receiving input information and transmitting the input information to an amplifier signal processing circuit to
30 modify signal processing functions and/or parameters.

Another feature of the preferred embodiment relates to an amplifier having a data port for being connected to the portable amplifier programmer and receiving control signals from the programmer.

5 The amplifier also includes a control circuit connected between the data port and a signal processing circuit for performing an interface function between the command signals input from the portable programmer and the signal processing circuit. The control circuit electrically
10 isolates the control elements from the programmer port. It also provides the optional connections required when programming elements over a network.

The control circuit may be preferably located outside of the signal path but connected to the signal processing circuit within the amplifier housing. The
15 control circuit isolates the incoming command signals from the signal processing circuit elements to allow the parameters of the signal processing circuit elements to be modified as desired.

20 In an alternative embodiment, the control circuit and the signal processing circuit of the amplifier may be formed by a digital signal processor described in U.S. Patent Application No. ~~08/133,488~~ ^{08/144,829 which is a continuation}
~~application of U.S. Patent Application No. 08/133,488~~ ^{Attorney}
~~ocket No. P/214-257~~, entitled "DIGITAL SIGNAL PROCESSOR
25 FOR AMPLIFIER," filed on November 9, 1994, in the name of the same Applicant as in the present application, the disclosure of which is hereby incorporated by reference. If such a digital signal processor is provided in the amplifier, both signal processing functions and function
30 parameters can be changed by inputting control information from the portable programmer to the amplifier.

The signal processing circuit elements are preferably provided with a memory or storage device for storing a set parameter value so that the set parameter value is not changed or deleted upon an off-on operation of the amplifier. For example, a conventional digitally programmable resistor can be used for one or more of the circuit elements. As is known, such a digitally programmable resistor stores a set resistance to provide a desired non-volatility. In addition, other known storage means such as an on board logic circuit or programmable gate array can be used to store the set parameter values.

The portable amplifier programmer according to the preferred embodiment includes a microprocessor, a keypad, a display screen and a connecting member for connecting the portable amplifier programmer to an amplifier to download signal processing parameters to the amplifier control circuit.

The keypad can be used to input either a desired modification to an output signal or a desired parameter value for a specific signal processing circuit element. An example of the input desired signal modification is a boost of 5 dB in the output signal is desired. The desired signal modification may be preferably displayed on the display screen. The microprocessor receives the desired signal modification and determines which control elements in the signal processing circuit must be modified and to what extent the performance characteristics of the selected control elements must be modified. The microprocessor then generates control signals for modifying the control elements and outputs the control signals to the amplifier to modify the signal processing parameters of the

amplifier. More specifically, the control signals are transmitted from the microprocessor through the input port of the amplifier to the control circuit. The control circuit then sends the control signals to the signal processing circuit to modify the signal processing parameters.

When the keypad is used to input a parameter value for one or more of the signal processing circuit elements, the input desired parameter values are received by the microprocessor and converted to a command signal to be downloaded to the control circuit through the portable programmer.

Thus, the microprocessor is programmed to convert the input desired signal modification or desired parameter into a preferably digital command signal for changing the parameters of the amplifier signal processing circuit elements to produce the desired signal modification or desired circuit element parameter value.

If a digital signal processor is provided in the amplifier, programs and program data for defining a plurality of signal processing functions and function parameters may be entered into the portable programmer and downloaded from the portable programmer to the amplifier.

The signal processing circuit may preferably have a memory or storage means for storing the information input from the portable amplifier programmer so that the portable amplifier programmer can be disconnected from the amplifier after inputting the desired signal modification or signal processing function and parameter program.

The programmer is also capable of reading the previously set parameters and functions stored in the

signal processing circuit. A portable programmer user can select a reading mode wherein the programmer sends an inquiry signal to the signal processing circuit and outputs to the programmer a set value for each of the
5 signal processing circuit elements. The parameter values for each of the circuit elements may be preferably displayed in numerical form on the programmer display.

The microprocessor in the portable programmer is capable of receiving the previously set parameters of
10 the circuit elements and transfers these parameter values to the display screen to enable a portable programmer operator to decide if a given parameter value should be changed. The keypad can be used to scroll through the parameter values for each of the circuit elements so that
15 each of the parameters for the circuit elements is displayed on the display screen. Because the portable amplifier programmer can read a parameter for each of the circuit elements, the programmer can prompt a portable programmer user to accept or change a parameter for each
20 of the plurality of signal processing circuit elements.

The portable amplifier programmer may preferably include a memory or suitable storage device for storing a plurality of preset signal processing parameters and desired parameter values input through the
25 keypad. The preset signal processing parameters may be stored in a plurality of different groups each of which contains a desired parameter for each of the signal processing circuit elements. For example, if a desired operation of a stereo sound system or public address
30 system varies according to the time of day or the type of event being conducted, the signal processing parameters of an amplifier can be modified by selecting a preset group for that particular time of day or type of event.

Thus, the user of the portable amplifier programmer only has to select a single group from a menu and the programmer will input that stored group to the control circuit of the amplifier.

5 The embodiments of the present invention provide several advantages. Because the programmer can be quickly and easily connected via a data port in the amplifier, there is no need to open the amplifier housing and remove a signal processing circuit support to change
10 the circuit parameters. Also, there is no need to physically modify the circuit elements by setting a switch or removing and/or replacing a capacitor, resistor, operational amplifier or other suitable circuit element. In addition, the amplifier programmer allows
15 changes in the signal processing circuitry of the amplifier to be made while the amplifier is in operation to thereby allow the results achieved by the modification of the signal processing parameters to be evaluated immediately.

20 Further, because the programmer contains a microprocessor, this eliminates the need for a microprocessor in the amplifier. Accordingly, the complexity and noise produced by a analog/digital converter required with the microprocessor located within
25 the amplifier is eliminated. Also, if a plurality of amplifiers are provided in a network, a substantial savings in amplifier cost is achieved because only one microprocessor is necessary and provided in the portable amplifier programmer instead of a microprocessor being
30 provided in each amplifier.

 An improved security feature is provided by the preferred embodiment of the invention. Because the parameters of the signal processing circuit elements

cannot be changed without using the portable amplifier programmer, no unauthorized modification of the signal processing circuit elements is possible.

Further, non-volatility is achieved without
5 battery backup, RAM or ROM so that when the control signals for the signal processing circuit elements in the amplifier are input from the programmer, the circuit elements remain programmed whether the power to the amplifier is on or off. In addition, the amplifier
10 circuitry can be programmed by either the portable programmer or a standard computer which is connected to a network of amplifiers which allows for maximum flexibility.

Also, the programmer can easily download the
15 same parameter settings via the network to a number of amplifiers ensuring identical setup. This eliminates the need to independently and manually change the knobs on each of a plurality of amplifiers.

Other features and advantages of the present
20 invention will become apparent from the following description of the invention which refers to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a schematic view showing a
25 preferred embodiment of a portable amplifier programmer and amplifier of the present invention;

Figure 2 is a schematic view of the control circuit of the programmer and amplifier shown in Fig. 1:
and

30 Figure 3 is a schematic view of a conventional amplifier circuit having a conventional signal processing parameter programmer.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

An amplifier 100 according to one aspect of a preferred embodiment of the invention is shown in Fig. 1. The amplifier includes an amplifier housing 110 which
5 includes a control panel 112 having a plurality of control elements and ports. Input ports 114 for receiving connectors from one or more input devices are provided on the control panel 112. Also, a plurality of control knobs 116 for controlling gain, volume, an
10 equalizer circuit, a level threshold, etc. are provided on the control panel 112 as is conventional. A plurality of output ports 118 and an AC power connector 119 are also provided on the control panel 112.

The control panel 112 also includes a
15 programming port 120 for receiving a connector from the portable amplifier programmer described below. This programming port may also be connected to a data bus of a network of interconnected amplifiers. The network is connected to a computer or other similar device and
20 control information can be input from the computer to the amplifier via the programming port 120.

A preferred embodiment of a portable amplifier programmer 200 is also shown in Fig. 1. The programmer 200 is removably connectable to the amplifier 100 through
25 a connector 300 which is connected to the programming port 120 of the amplifier 100 and an output port 210 of the portable programmer 200. The programmer 200 preferably includes a display screen 220 for displaying parameter values, desired signal modifications and other
30 suitable information. The portable programmer 200 also includes an input device such as keypad 230 for entering parameter and signal modification information, signal processing function programs and program data.

The portable programmer 200 allows a user to modify parameters of amplifier circuit elements inside the amplifier, modify signal processing functions set by the signal processing circuit, read back previously set parameter values and store a group of input parameter values for future use as will be explained in greater detail below.

Fig. 2 shows an amplifier circuit 150 of the amplifier 100 shown in Fig. 1 and an operational circuit 250 of the portable programmer 200.

The amplifier circuit 150 of the amplifier 100 includes an input interface 152 connected to the input port 116. The input interface 152 provides audio signals from an input device (not shown) such as a musical instrument, public address system, sound system, etc. to a signal processing circuit 154 which is connected to a power amplifier 156. The amplifier circuit 150 is connected to a load 400 such as a loudspeaker.

The signal processing circuit 154 and power amplifier 156 are preferably located within the amplifier housing 110. The amplifier housing 110 also has a control circuit 158 located therein. The control circuit is preferably connected to the programming port 120 and the signal processing circuit 154.

The amplifier circuit 150 may be provided with a memory or storage device 159 for storing input command signals therein. As soon as the command signals have been input from the programmer 200 through the connector 300 to the programming port 120, the programmer 200 can be disconnected from the amplifier 100 because the input commands are stored in the storage device 159. Alternatively, the storage device can be provided in the signal processing circuit 154.

Programming information is input from the portable programmer 200 through the connector 300 and the programming port 120 to the control circuit 158. This programming information may comprise signal processing function programs and program data for defining function parameters, parameter modification requests, new parameters, and other suitable control information.

The control circuit 158 preferably comprises a programmable microprocessor for performing an interface function between the command signals input from the portable programmer 200 and the signal processing circuit 154. In an alternative embodiment, the control circuit and the signal processing circuit of the amplifier may be formed by a digital signal processor, described in U.S. Patent Application No. *08/336,481 Attorney Docket No. 2-211-284* mentioned above. If such a digital signal processor is provided in the amplifier 100, both signal processing functions and function parameters can be changed by inputting control information from the portable programmer 200 to the amplifier 100.

The elements of the signal processing circuit 154 are preferably provided with a memory or storage device for storing a set parameter value so that the set parameter value is not changed or deleted upon an off-on operation of the amplifier. For example, a conventional digitally programmable resistor can be used for one or more of the circuit elements. As is known, such a digitally programmable resistor stores a set resistance to provide a desired non-volatility. In addition, other known storage means such as an on board logic circuit or programmable gate array can be used to store the set parameter values.

In the programmer circuit 250, a microprocessor 252 is provided and has an output end connected to the connector 300. The keypad 230 and display 220 are connected to an input end of the microprocessor 252. A
5 memory or storage device 254 may be provided in the portable programming circuit. The microprocessor 252 receives information from the keypad 230 and may store the input information in the memory 254. The memory may also store previously set parameter values, a menu and
10 plurality of groups of parameter values, signal processing function programs and program data and other suitable control information. The microprocessor 252 also controls the display screen 220 to display parameter values and various read and input information.

15 The operation of the preferred embodiment of the invention will be described in the following paragraphs. At least one audio signal input device such as those described above is connected to the input port 114 of the amplifier 100. At least one output device or
20 load such as a loudspeaker 400 is connected to the output port 118.

A programming operation can be conducted while the amplifier is powered through the AC adapter 119 and functioning or while the amplifier 100 is not operating
25 and receiving power. However, it is preferable to perform the amplifier programming operation while the amplifier 100 is receiving and outputting signals to hear the effects of parameter modifications.

The connector 300 is inserted into the
30 programming port 120 of the amplifier 100 to connect the portable programmer 200 to the amplifier 100. A user can select a diagnostic mode by activating an appropriate key on the keypad 230. In the diagnostic mode, a parameter

value for each of the signal processing circuit elements is read by the microprocessor 252 and displayed on the display 220 for operator verification. The microprocessor 252 converts the read data to a numerical value so that each parameter is displayed numerically.

The microprocessor 252 may preferably be programmed to request that a user confirm a read parameter value or change the parameter to a desired value by using an appropriate key on the keypad 230.

The information input via the keypad 230 is converted to control signals by the microprocessor 252. These control signals are preferably digital control signals for modifying the control elements of the signal processing circuit 154.

Once all of the signal processing function programs and/or function parameter values have been input to the programmer 200 and the microprocessor 252 has converted the input control information to control signals, the user can actuate a send key on the keypad 230 to transmit the new signal processing function and/or parameter information to input port 120 of the amplifier.

If a storage device 159 is provided, the input command signals are stored in 159 which allows the programmer 200 to be immediately removed after transmission of the command signals.

The control signals are transmitted from the input port 120 or storage device 159 to the control circuit 158. The control circuit 158 then sends control signals to the signal processing circuit to modify the performance characteristics of various control elements of the signal processing circuit 154 to achieve a desired modification of a signal processing function and/or function parameters.

As discussed above, the signal processing circuit elements are preferably provided with storage means for storing the set parameters to maintain the set parameters despite power up and power down of the amplifier 100.

5 If the user dislikes the sound produced by the modification of the signal processing function and/or function parameters, the user can modify any one or all of the parameters of the signal processing circuit elements by either individually changing each parameter or selecting the previously set groups of parameter values which are stored in the memory 254. Preferably, the user can select a menu mode in which the programmer displays on the display screen 220 a menu of various groups of previously set parameters. The user can then select one of the groups by actuating an appropriate key on the keypad 230. Then, the stored group of parameter values is input to the amplifier as described above.

15 Although the present invention has been described in relation to particular embodiments thereof, many other variations and modifications and other uses will become apparent to those skilled in the art. It is preferred, therefore, that the present invention be limited not by the specific disclosure herein, but only by the appended claims.

WHAT IS CLAIMED IS:

- Sub B1*
- 5 1. An amplifier comprising:
an input port for receiving an input signal;
a signal processing circuit for receiving the
input signal from the input port and modifying the input
signal;
- 10 a power amplifier for amplifying the input
signal received from the signal processing circuit and
outputting a modified signal to an output device; and
a programming signal input device for receiving
at least one programming signal from an external
programmer removably connected to the programming signal
input device for modifying at least one of a signal
processing function and a signal processing function
parameter defined in said signal processing circuit.
- 5 2. The amplifier of claim 1, further
comprising a control circuit for receiving the
programming signal and converting the programming signal
to a control signal to be sent to the signal processing
circuit for modifying at least one of the signal
processing function and the signal processing function
parameter defined in said signal processing circuit.
- 5 3. The amplifier of claim 1, further
comprising a storage device for storing said at least one
programming signal.
- 4 4. The amplifier of claim 1, further
comprising an amplifier housing, the signal processing
circuit and power amplifier being located in said
amplifier housing.

Sub 2

~~5.~~ The amplifier of claim 1, further comprising a control panel, wherein said programming signal input device is provided on the control panel.

~~6.~~ The amplifier of claim 1, wherein the signal processing circuit comprises a plurality of electronic components each having a non-volatile storage means for storing a set performance characteristic.

5 ~~7.~~ The amplifier of claim 2, wherein the signal processing circuit comprises a plurality of electronic components each having a storage device for storing at least one of the signal processing function and signal processing function parameter value set by the control circuit.

~~8.~~ The amplifier of claim 1, wherein the control circuit comprises a programmable microprocessor.

~~9.~~ The amplifier of claim 1, wherein the signal processing circuit comprises a digital signal processor.

Sub 3

5 10. An amplifier programmer comprising:
an input/output port for sending and receiving control information;
an data input device for allowing input of programming information to the programmer; and
a controller for receiving the input programming information, generating control signals from the input programming information and transmitting the control signals through the input/output port to an
10 amplifier for modifying at least one of a signal

processing function and signal processing function
parameter of the amplifier.

11. The amplifier programmer of claim 10,
further comprising a display screen for displaying input
programming information and information read by the
controller.

12. The amplifier programmer of claim 10,
further comprising a storage device for storing the input
programming information and previously selected control
signals.

13. The amplifier programmer of claim 10,
wherein the data input device comprises a keypad having a
plurality of keys.

Sub 34

14. The amplifier programmer of claim 10,
wherein the controller comprises a microprocessor for
receiving programming information from at least one of
the input device and a control circuit of an amplifier.

15. The amplifier programmer of claim 10,
wherein the controller comprises a connector for
removably connecting the programmer to an amplifier.

Sub 35

16. A method of programming an amplifier
comprising the steps of:
providing the amplifier with a programming
signal input port;
connecting an external programmer to the
programming signal input port;

inputting programming information to the
external programmer; and

10 transmitting the programming information from
the external programmer to the amplifier for changing at
least one of a signal processing function and a signal
processing function parameter defined in the amplifier.

~~17. The method of claim 16, further comprising
the step of displaying the control information on the
external programmer.~~

Sub B6
~~18. The method of claim 16, further comprising
the step of converting the input programming information
to control signals for modifying performance
characteristics of at least one signal processing control
5 element contained in the amplifier.~~

~~19. The method of claim 16, wherein the step
of inputting programming information comprises the step
of inserting at least one of a signal processing function
program, a signal processing function parameter data, a
5 desired signal characteristic modification value and a
desired signal processing function parameter value.~~

~~20. The method of claim 16, further comprising
the step of storing the input control information.~~

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Fig 1

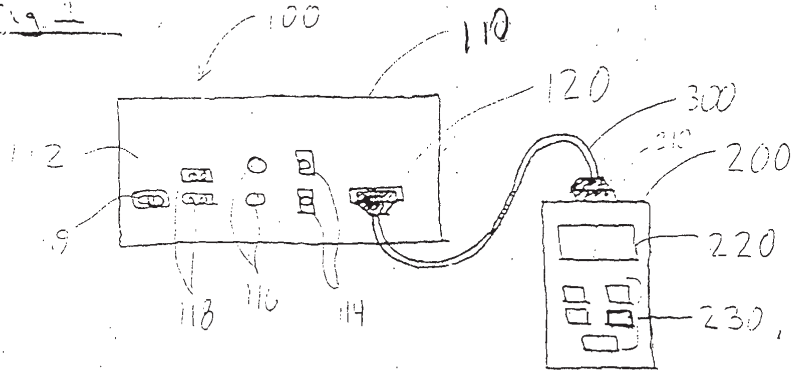


Fig 2

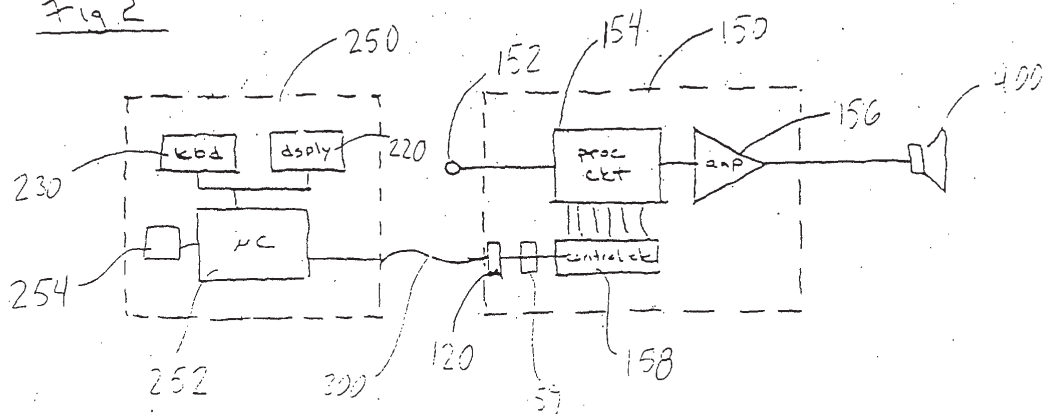


Fig B
PRIOR ART

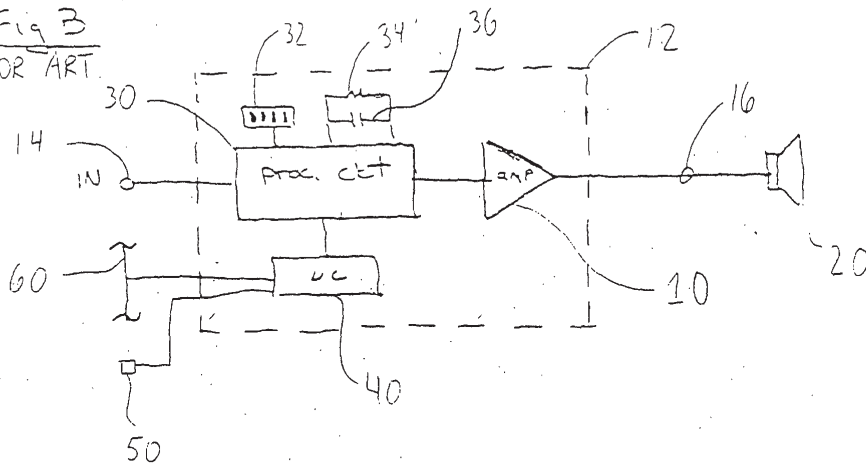


Fig 1

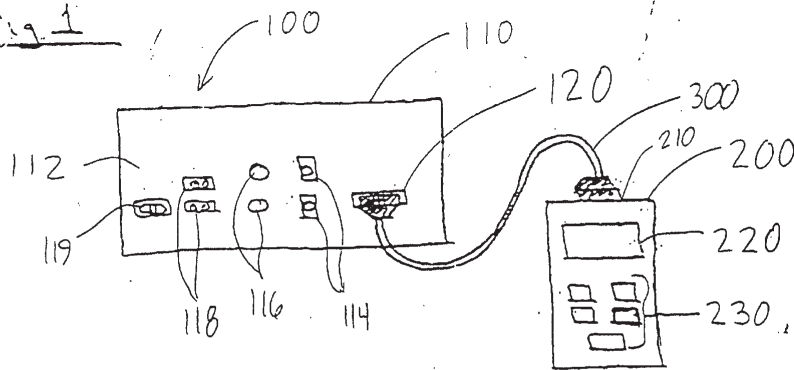


Fig 2

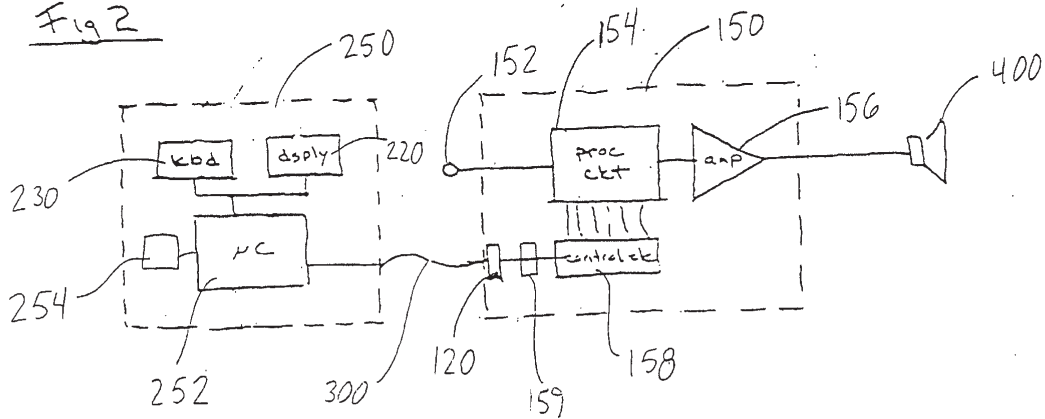
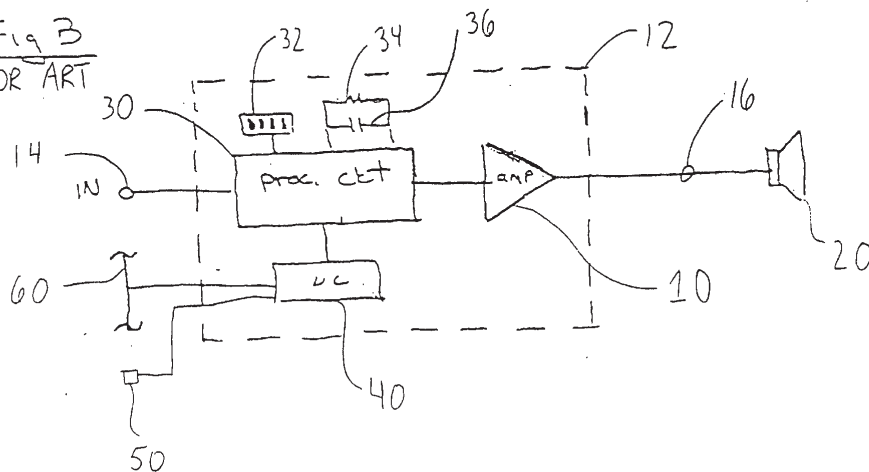


Fig 3
PRIOR ART




NOV-09-94 WED 16:06
11/09/94 17:39

ANA HOTEL BUS CTR
FAX 212 0881

FAX NO. 415 3 8751
OSTROLENK, FABER

P. 03
040

UNITED STATES OF AMERICA COMBINED DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION		OFGS FILE NO. P/214-26	
As a below named inventor, I hereby declare that: my residence, post office address and citizenship are as stated below next to my name; that I verily believe that I am the original, first and sole inventor (if only one name is listed below) or a joint inventor (if plural inventors are named) of the subject matter which is claimed and for which a patent is sought on the invention entitled:			
APPARATUS AND METHOD FOR PROGRAMMING AN AMPLIFIER			
the specification of which <input checked="" type="checkbox"/> is attached hereto. <input type="checkbox"/> was filed on _____ as United States patent application Serial Number _____ <input type="checkbox"/> was filed on _____ as PCT international patent application No. _____ and was amended on _____ (if any).			
I hereby state that I have reviewed and understood the contents of the above identified specification, including the claims, as amended by any amendment referred to above.			
I acknowledge the duty to disclose all information known to be material to patentability in accordance with Title 37, Code of Federal Regulations, §1.56.			
I hereby claim foreign priority benefits under Title 35, United States Code §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:			
Prior Foreign Application(s)			
COUNTRY	APPLICATION NUMBER	DATE OF FILING (day, month, year)	PRIORITY CLAIMED UNDER 35 U.S.C. 119
			YES ___ NO ___
			YES ___ NO ___
			YES ___ NO ___
<input type="checkbox"/> CONTINUED ON PAGE 2			
(12) I hereby appoint OSTROLENK, FABER, GERB & SOFFEN, and the members of the firm, Marvin C. Soffen - Reg. No. 17,542; Samuel H. Weiper - Reg. No. 18,510; Jerome M. Berliner - Reg. No. 18,633; Robert C. Faber - Reg. No. 24,322; Edward A. Melman - Reg. No. 24,755; Stanley H. Richerslein - Reg. No. 22,400; Steven I. Weisburd - Reg. No. 27,409; Max Moskowitz - Reg. No. 30,576; Stephen A. Soffen - Reg. No. 31,063; James A. Finder - Reg. No. 30,173; William O. Gray, III - Reg. No. 30,944; and Louis C. Dujmich - Reg. No. 30,625, as attorneys with full power of substitution and revocation to prosecute this application, to transact all business in the Patent & Trademark Office connected therewith and to receive all correspondence.			
SEND CORRESPONDENCE TO: <u>OSTROLENK, FABER, GERB & SOFFEN</u> <u>1180 AVENUE OF THE AMERICAS</u> <u>NEW YORK, NEW YORK 10036-3403</u> DIRECT TELEPHONE CALLS TO: (212) 382-0700			
I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.			
FULL NAME OF SOLE OR FIRST INVENTOR Dennis FINK		INVENTOR'S SIGNATURE 	
RESIDENCE 25 Foley Road, Warwick, NY 10990		DATE 9 Nov 94	
POST OFFICE ADDRESS SAME AS ABOVE		COUNTRY OF CITIZENSHIP U.S.A.	
FULL NAME OF SECOND JOINT INVENTOR (IF ANY)		INVENTOR'S SIGNATURE	
RESIDENCE		DATE	
POST OFFICE ADDRESS		COUNTRY OF CITIZENSHIP	
FULL NAME OF THIRD JOINT INVENTOR (IF ANY)		INVENTOR'S SIGNATURE	
RESIDENCE		DATE	
POST OFFICE ADDRESS		COUNTRY OF CITIZENSHIP	

TRAN06116

NOV-09-94 WED 16:05
11/09/94 17:38

ANA HOTEL BUS CTR
FAX 212 0681

FAX NO. 415 743 8751
OSTROLENK, FABER

P.02
039

Serial or Patent No.: _____ OFCS File No. P/214-26
Filing or Issue Date: _____
Applicant or Patentee: Dennis Fink

For: APPARATUS AND METHOD FOR PROGRAMMING AN AMPLIFIER

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS
37 CFR 1.9(f) and 1.27(c) - SMALL BUSINESS CONCERN

I hereby declare that with regard to the small business concern identified below I am
☐ the owner of the small business concern
☒ an official of the small business concern empowered to act on behalf of same
NAME OF CONCERN: Crest Audio, Inc.
ADDRESS OF CONCERN: 100 Eisenhower Drive, Paramus, New Jersey 07652

I hereby declare that the above identified small business concern qualifies as a small business concern as defined in 13 CFR 1.21.3-18, and reproduced in 37 CFR 1.9(d), for purposes of paying reduced fees under 35 USC §41(a) and (b) in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns the affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.

I hereby declare that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the invention entitled APPARATUS AND METHOD FOR PROGRAMMING AN AMPLIFIER by inventor Dennis Fink described in

☒ U.S. Patent Application filed herewith
☐ U.S. Patent Application Serial No. _____ filed _____
☐ U.S. Patent No. _____ issued _____

If the rights held by the above identified small business concern are not exclusive, each individual, concern or organization having the rights to the invention is listed below* and no rights to the invention are held by any person, other than the inventor, who could not qualify as a small business concern under 37 CFR 1.9(c) or by any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a non-profit organization under 37 CFR 1.9(e). *NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. 37 CFR 1.27.

NAME: _____
ADDRESS: _____
☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NON-PROFIT ORGANIZATION
NAME: _____
ADDRESS: _____
☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NON-PROFIT ORGANIZATION

I acknowledge the duty to file in this patent application or patent, notification of any change of status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. 37 CFR 1.29(b).

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 USC §1001, and that such willful false statements may jeopardize the validity of the patent application, any patent issuing thereon, or any patent to which this verified statement is directed.

NAME OF PERSON SIGNING: John Lee, President
ADDRESS OF PERSON SIGNING: Crest Audio, Inc., 100 Eisenhower Drive, Paramus, NJ 07652

SIGNATURE: _____ DATE: Nov 9, 1994

Application Assignment Record

According to the application transmittal letter, an assignment recording ownership was filed with this application; however, a copy of this record was not located in the original file history record obtained from the United States Patent and Trademark Office. Upon your request, we will attempt to obtain the assignment documents from the Assignment Recordation Branch of the United States Patent and Trademark Office or from a related application case (if applicable). Please note that additional charges will apply for this service.

This page is not part of the official USPTO record. It has been determined that content identified on this document is missing from the original file history record.

08/337157

P/214-26

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of



Dennis FINK

Date: November 9, 1994

Serial No.:

Group Art Unit: Unknown

Filed Concurrently Herewith

Examiner: Unknown

For APPARATUS AND METHOD FOR PROGRAMMING AN AMPLIFIER

Hon. Commissioner of Patents
and Trademarks
Washington, D.C. 20231

INFORMATION DISCLOSURE STATEMENT

Sir:

Pursuant to 37 C.F.R. 1.56, the attention of the Patent and Trademark Office is hereby directed to the references listed on the attached PTO-1449. One copy of each reference is attached. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the references be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

This Information Disclosure Statement is being filed within three months of the U.S. filing date and before the mailing date of a first Office Action on the merits. No certification or fee is required.

EXPRESS MAIL CERTIFICATE

Respectfully submitted,

I hereby certify that this correspondence is being deposited with the United States Postal Service as Express Mail Post Office to Addressee (mail label #RB885681445US) in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on November 9, 1994:

DOROTHY JENKINS

Name of Person Mailing Correspondence

Dorothy Jenkins

Signature

November 9, 1994

Date of Signature

Joseph R. Keating

Joseph R. Keating

Registration No.: 37,368

OSTROLENK, FABER, GERB & SOFFEN


1180 Avenue of the Americas

New York, New York 10036-8403

Telephone: (212) 382-0700

JRK:cfc

APPLICANT'S ART CITATION (Use several sheets if necessary)		Application		OPGS File No. P/214-26	
		Applicant Dennis FINK			
		Filing Date November 9, 1994		Group Art Unit Unknown	



U.S. PATENT DOCUMENTS												
Examiner Initial	Document Number							Date	Name	Class	Sub-class	Filing Date If Appropriate
<i>JSK</i>	5	0	5	9	9	2	3	10/91	Petty et al.			
<i>JSK</i>	5	0	0	6	8	1	2	4/91	Erickson			
<i>JSK</i>	4	8	6	8	5	1	6	9/89	Henderson et al.			
<i>JSK</i>	4	5	4	7	7	4	0	10/85	Nilsson			
<i>JSK</i>	4	5	1	0	4	5	4	4/85	Sherman			
<i>JSK</i>	5	1	2	7	0	5	9	6/92	Elion et al.			
<i>JSK</i>	4	3	3	5	3	8	4	6/82	Roos			
<i>JSK</i>	4	7	8	5	4	1	9	11/88	Huffman			
<i>JSK</i>	4	5	5	6	8	4	1	12/85	Carlson			
<i>JSK</i>	3	9	7	4	4	3	8	8/76	Alves, III			
<i>JSK</i>	5	3	3	9	3	6	2	8/94	Harris			
<i>JSK</i>	5	2	8	5	5	0	0	2/94	Mantz			
<i>JSK</i>	4	9	8	7	3	8	5	1/91	Engelmann			

FOREIGN PATENT DOCUMENTS													
	Document Number							Date	Country	Class	Sub-class	Translation	
	Yes	No											
<i>JSK</i>	5	4	1	0	6	4	8	1/79	Japan				

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)									

Examiner <i>James S. Mullins</i>	Date Considered <i>5/9/95</i>
----------------------------------	-------------------------------

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP § 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to the applicant.



**UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

SERIAL NUMBER	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
---------------	-------------	----------------------	---------------------

08/337,157 11/09/94 FINK

D P21426

EXAMINER
MULLINS, J

E5M1/0517

OSTROLENK FABER GERB & SOFFEN
1180 AVENUE OF THE AMERICAS
NEW YORK NY 10036-8403

ART UNIT PAPER NUMBER

2515

DATE MAILED: 05/17/95

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

☒ This application has been examined ☐ Responsive to communication filed on _____ ☐ This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), _____ days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- | | |
|---|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited by Examiner, PTO-892. | 2. <input checked="" type="checkbox"/> Notice of Draftsman's Patent Drawing Review, PTO-948. |
| 3. <input checked="" type="checkbox"/> Notice of Art Cited by Applicant, PTO-1449. | 4. <input type="checkbox"/> Notice of Informal Patent Application, PTO-152. |
| 5. <input type="checkbox"/> Information on How to Effect Drawing Changes, PTO-1474. | 6. <input type="checkbox"/> _____ |

Part II SUMMARY OF ACTION

1. ☒ Claims 1-20 are pending in the application.
Of the above, claims _____ are withdrawn from consideration.
2. ☐ Claims _____ have been cancelled.
3. ☐ Claims _____ are allowed.
4. ☒ Claims 1-20 are rejected.
5. ☐ Claims _____ are objected to.
6. ☐ Claims _____ are subject to restriction or election requirement.
7. ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. ☐ Formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice of Draftsman's Patent Drawing Review, PTO-948).
10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on _____, has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed _____, has been ☐ approved; ☐ disapproved (see explanation).
12. ☐ Acknowledgement is made of the claim for priority under 35 U.S.C. 119. The certified copy has ☐ been received ☐ not been received ☐ been filed in parent application, serial no. _____; filed on _____.
13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other _____

EXAMINER'S ACTION

Serial Number: 08/337,157

-2-

Art Unit: 2515

The disclosure is objected to because of the following informalities: The serial number of the application referenced on pages 5 and 13 should be submitted by the next response.

Claims 8 and 1-15 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 8, "the control circuit" and in claim 10 "the amplifier" do not have antecedent basis.

In claims 14 and 15, the recitation "an amplifier" is effectively claiming the amplifier twice. See claim 10, last line.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1-20 are rejected under 35 U.S.C. § 102(b) as being clearly anticipated by either Feistel or Barclay et al.

Serial Number: 08/337,157

-3-

Art Unit: 2515

Claims 1-20 are rejected under 35 U.S.C. § 102(e) as being clearly anticipated by Harris.

Claims 1-3 and 5-20 are rejected under 35 U.S.C. § 102(b) as being anticipated by either Miyake et al., Hamilton or Henegar. Note Fig. 1 of Miyake et al. and block 19 of Henegar. Note the digitally controlled amplifier of Fig. 1 of Hamilton.

Claims 10, 11, 13 and 15-20 are rejected under 35 U.S.C. § 102(b) as being anticipated by Oiwa. Note Figs 1-5.

Muellner, Sasaki and Back are cited of interest to further show relevant art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mr. James B. Mullins whose telephone number is (703) 308-4912.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956.

JBM

May 10, 1995

James B. Mullins
JAMES B. MULLINS
EXAMINER
GROUP ART UNIT 252-2575

TO SEPARATE, HOLD TOP AND BOTTOM EDGES, SNAP-APART AND DISCARD CARBON

FORM PTO-892 (REV. 2-92)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		SERIAL NO. 08/337,157	GROUP/ART UNIT 2515	ATTACHMENT TO PAPER NUMBER 3						
NOTICE OF REFERENCES CITED				APPLICANT(S) FINK								
U.S. PATENT DOCUMENTS												
*	DOCUMENT NO.			DATE	NAME	CLASS	SUB- CLASS	FILING DATE IF APPROPRIATE				
A	3	7	6	9	6	0	6	10/73	HENEGAR	330	66	—
B	4	0	0	0	4	2	5	12/76	OIWA	330	66	—
C	4	0	7	9	3	3	4	3/78	HAMILTON	330	279	—
D	4	2	2	3	2	2	2	9/80	FEISTEL	330	51	—
E	4	4	9	4	2	1	2	11/85	MUELLNER	330	278X	—
F	4	9	2	4	1	9	2	5/90	SASAEI	330	279	—
G	5	0	1	5	9	6	9	5/91	BARCLAY ET AL.	330	2X	—
H	5	0	4	5	8	0	2	9/91	MIYARE ET AL.	330	2	—
I	5	1	5	3	5	2	8	12/92	BACK	330	279X	—
J												
K												
FOREIGN PATENT DOCUMENTS												
*	DOCUMENT NO.			DATE	COUNTRY	NAME	CLASS	SUB- CLASS	PERTINENT SHTS. DWG.	PP. SPEC.		
L												
M												
N												
O												
P												
Q												
OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)												
R												
S												
T												
U												
EXAMINER					DATE							
JAMES B. MULLINS					5/10/95							
* A copy of this reference is not being furnished with this office action. (See Manual of Patent Examining Procedure, section 707.05 (a).)												

08/337157

NOTICE OF DRAFTSPERSON'S PATENT DRAWING REVIEW

PTO Draftpersons review all originally filed drawings regardless of whether they are designated as formal or informal. Additionally, patent Examiners will review the drawings for compliance with the regulations. Direct telephone inquiries concerning this review to the Drawing Review Branch, 703-305-8404.

The drawings filed (insert date) 11/9/94, are
 A. ☒ not objected to by the Draftsperson under 37 CFR 1.84 or 1.152.
 B. ☒ objected to by the Draftsperson under 37 CFR 1.84 or 1.152 as indicated below. The Examiner will require submission of new, corrected drawings when necessary. Corrected drawings must be submitted according to the instructions on the back of this Notice.

1. DRAWINGS. 37 CFR 1.84(a): Acceptable categories of drawings:

Black ink. Color.

☐ Not black solid lines. Fig(s) _____☐ Color drawings are not acceptable until petition is granted.

2. PHOTOGRAPHS. 37 CFR 1.84(b)

☐ Photographs are not acceptable until petition is granted.

3. GRAPHIC FORMS. 37 CFR 1.84(d)

☐ Chemical or mathematical formula not labeled as separate figure.

Fig(s) _____

☐ Group of waveforms not presented as a single figure, using common vertical axis with time extending along horizontal axis.

Fig(s) _____

☐ Individuals waveform not identified with a separate letter designation adjacent to the vertical axis. Fig(s) _____

4. TYPE OF PAPER. 37 CFR 1.84(e)

☐ Paper not flexible, strong, white, smooth, nonshiny, and durable. Sheet(s) _____☐ Erasures, alterations, overwritings, interlineations, cracks, creases, and folds not allowed. Sheet(s) _____

5. SIZE OF PAPER. 37 CFR 1.84(f): Acceptable paper sizes:

21.6 cm. by 35.6 cm. (8 1/2 by 14 inches)

21.6 cm. by 33.1 cm. (8 1/2 by 13 inches)

21.6 cm. by 27.9 cm. (8 1/2 by 11 inches)

21.0 cm. by 29.7 cm. (DIN size A4)

☐ All drawing sheets not the same size. Sheet(s) _____☐ Drawing sheet not an acceptable size. Sheet(s) _____

6. MARGINS. 37 CFR 1.84(g): Acceptable margins:

Paper size

21.6 cm. X 35.6 cm. (8 1/2 X 14 inches)	21.6 cm. X 33.1 cm. (8 1/2 X 13 inches)	21.6 cm. X 27.9 cm. (8 1/2 X 11 inches)	21 cm. X 29.7 cm. (DIN size A4)
T 5.1 cm. (2")	2.5 cm. (1")	2.5 cm. (1")	2.5 cm.
L .64 cm. (1/4")	.64 cm. (1/4")	.64 cm. (1/4")	2.5 cm.
R .64 cm. (1/4")	.64 cm. (1/4")	.64 cm. (1/4")	1.5 cm.
B .64 cm. (1/4")	.64 cm. (1/4")	.64 cm. (1/4")	1.0 cm.

Margins do not conform to chart above.

Sheet(s) _____

Fig. ☒ Top (T) ☒ Left (L) ☒ Right (R) ☒ Bottom (B)

7. VIEWS. 37 CFR 1.84(h)

REMINDER: Specification may require revision to correspond to drawing changes.

☐ All views not grouped together. Fig(s) _____☐ Views connected by projection lines. Fig(s) _____☐ Views contain center lines. Fig(s) _____

Partial views. 37 CFR 1.84(h)(2)

☐ Separate sheets not linked edge to edge.

Fig(s) _____

☐ View and enlarged view not labeled separately.

Fig(s) _____

☐ Long view relationship between different parts not clear and unambiguous. 37 CFR 1.84(h)(2)(ii)

Fig(s) _____

Sectional views. 37 CFR 1.84(h)(3)

☐ Hatching not indicated for sectional portions of an object.

Fig(s) _____

☐ Hatching of regularly spaced oblique parallel lines not spaced sufficiently. Fig(s) _____☐ Hatching not at substantial angle to surrounding axes or principal lines. Fig(s) _____☐ Cross section not drawn same as view with parts in cross section with regularly spaced parallel oblique strokes.

Fig(s) _____

☐ Hatching of juxtaposed different elements not angled in a different way. Fig(s) _____

Alternate position. 37 CFR 1.84(h)(4)

☐ A separate view required for a moved position.

Fig(s) _____

Modified forms. 37 CFR 1.84(h)(5)

☐ Modified forms of construction must be shown in separate views. Fig(s) _____

8. ARRANGEMENT OF VIEWS. 37 CFR 1.84(i)

☐ View placed upon another view or within outline of another.

Fig(s) _____

☐ Words do not appear in a horizontal, left-to-right fashion when page is either upright or turned so that the top becomes the right side, except for graphs. Fig(s) _____

9. SCALE. 37 CFR 1.84(k)

☐ Scale not large enough to show mechanism without crowding when drawing is reduced in size to two-thirds in reproduction.

Fig(s) _____

☐ Indication such as "actual size" or "scale 1/2" not permitted.

Fig(s) _____

☐ Elements of same view not in proportion to each other.

Fig(s) _____

10. CHARACTER OF LINES, NUMBERS, & LETTERS. 37 CFR 1.84(l)

☒ Lines, numbers & letters not uniformly thick and well defined, clean, durable, and black (except for color drawings).Fig(s) 1-3

11. SHADING. 37 CFR 1.84(m)

☐ Shading used for other than shape of spherical, cylindrical, and conical elements of an object, or for flat parts.

Fig(s) _____

☐ Solid black shading areas not permitted. Fig(s) _____

12. NUMBERS, LETTERS, & REFERENCE CHARACTERS. 37 CFR 1.84(p)

☒ Numbers and reference characters not plain and legible. 37 CFR 1.84(p)(1) Fig(s) 1-3☐ Numbers and reference characters used in conjunction with brackets, inverted commas, or enclosed within outlines. 37 CFR 1.84(p)(1) Fig(s) _____☐ Numbers and reference characters not oriented in same direction as the view. 37 CFR 1.84(p)(1) Fig(s) _____☐ English alphabet not used. 37 CFR 1.84(p)(2)

Fig(s) _____

☒ Numbers, letters, and reference characters do not measure at least .32 cm. (1/8 inch) in height. 37 CFR(p)(3)Fig(s) 1-3

13. LEAD LINES. 37 CFR 1.84(q)

☐ Lead lines cross each other. Fig(s) _____☐ Lead lines missing. Fig(s) _____☐ Lead lines not as short as possible. Fig(s) _____

14. NUMBERING OF SHEETS OF DRAWINGS. 37 CFR 1.84(t)

☐ Number appears in top margin. Fig(s) _____☐ Number not larger than reference characters.

Fig(s) _____

☐ Sheets not numbered consecutively, and in Arabic numerals, beginning with number 1. Sheet(s) _____

15. NUMBER OF VIEWS. 37 CFR 1.84(u)

☐ Views not numbered consecutively, and in Arabic numerals, beginning with number 1. Fig(s) _____☐ View numbers not preceded by the abbreviation Fig.

Fig(s) _____

☐ Single view contains a view number and the abbreviation Fig.☐ Numbers not larger than reference characters.

Fig(s) _____

16. CORRECTIONS. 37 CFR 1.84(w)

☐ Corrections not durable and permanent. Fig(s) _____

17. DESIGN DRAWING. 37 CFR 1.152

☐ Surface shading shown not appropriate. Fig(s) _____☐ Solid black shading not used for color contrast.

Fig(s) _____

ATTACHMENT TO PAPER NO. 3REVIEWER TangDATE 12/21/94

PTO Copy



\$450.00 - 217-Rep 255

P/214-26

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application of:

Dennis FINK

Serial No.: RULE 62 CONTINUATION OF
08/337,157

Group Art Unit: 2515

Filed: November 16, 1995

Examiner: J. Mullins

For: APPRATUS AND METHOD FOR PROGRAMMING AN AMPLIFIER

Hon. Commissioner of Patents and Trademarks
Washington, D.C. 20231

PETITION AND FEE FOR AUTOMATIC EXTENSION OF TIME
UNDER 37 CFR 1.17, 1.136(a) AND 35 USC 41(a)8

Sir:

Applicant(s) hereby petition(s) the Commissioner of Patents and Trademarks to extend the time for filing a response to the outstanding Office Action by three months. Enclosed is our Check No. 53746 which includes the amount of \$450.00 for the petition fee in accordance with 37 CFR 1.17 computed as:

____ Response within first month
____ not small entity (\$110) ____ small entity (\$55)
____ Response within second month
____ not small entity (\$380) ____ small entity (\$190)
XX Response within third month
____ not small entity (\$900) _XX_ small entity (\$450)

You are authorized to charge to our Deposit Account No. 15-0700 any additional amounts owing.

If this petition is inadequate to avoid abandonment, the Commissioner of Patents and Trademarks is petitioned, under 37 C.F.R. §1.136(a), to extend the time by the number of months which will avoid abandonment under 37 C.F.R. §1.135. The fee under 37 C.F.R. § 1.17 should be charged to our Deposit Account No. 15-0700.

EXPRESS MAIL CERTIFICATE

Respectfully submitted,

I hereby certify that this correspondence is being deposited with the United States Postal Service as Express Mail Post Office to Addressee (mail label #TB353746547 US) in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on November 16, 1995
Dorothy Jenkins

Name of Person Mailing Correspondence

Dorothy Jenkins

Signature

November 16, 1995

Date of Signature

JRK:asa

Joseph R. Keating
Joseph R. Keating
Registration No.: 37,368
OSTROLENK, FABER, GERB & SOFFEN, LLP
1180 Avenue of the Americas
New York, New York 10036-8403
Telephone: (212) 382-0700



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

SERIAL NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
08/337,157	11/09/94	FINK	D P21426

OSTROLENK FABER GERB & SOFFEN
1180 AVENUE OF THE AMERICAS
NEW YORK NY 10036-8403

MULLINS, J.	
EXAMINER	
ART UNIT	PAPER NUMBER
2515	5

DATE MAILED: 01/23/96

NOTICE OF ABANDONMENT

This application is abandoned in view of:

1. ☒ Applicant's failure to respond to the Office letter, mailed 5/17/95.
 2. ☐ Applicant's letter of express abandonment which is in compliance with 37 C.F.R. 1.138.
 3. ☐ Applicant's failure to timely file the response received _____ within the period set in the Office letter.
 4. ☐ Applicant's failure to pay the required issue fee within the statutory period of 3 months from the mailing date of _____ of the Notice of Allowance.
 - ☐ The issue fee was received on _____.
 - ☐ The issue fee has not been received in Allowed Files Branch as of _____.
- In accordance with 35 U.S.C. 151, and under the provisions of 37 C.F.R. 1.316(b), applicant(s) may petition the Commissioner to accept the delayed payment of the issue fee if the delay in payment was unavoidable. The petition must be accompanied by the issue fee, unless it has been previously submitted, in the amount specified by 37 C.F.R. 1.17(l), and a verified showing as to the causes of the delay.
- If applicant(s) never received the Notice of Allowance, a petition for a new Notice of Allowance and withdrawal of the holding of abandonment may be appropriate in view of *Delgar Inc. v. Schuyler*, 172 U.S.P.Q. 513.
5. ☐ Applicant's failure to timely correct the drawings and/or submit new or substitute formal drawings by _____ as required in the last Office action.
 - ☐ The corrected and/or substitute drawings were received on _____.
 6. ☐ The reason(s) below.

James B. Mullins
JAMES B. MULLINS
EXAMINER
GROUP ART UNIT 2515

3

PATENT APPLICATION FEE DETERMINATION RECORD Effective October 1, 1994					Application or Docket Number 337157	
CLAIMS AS FILED - PART I						
(Column 1)		(Column 2)		SMALL ENTITY		OR
FOR	NUMBER FILED	NUMBER EXTRA		RATE	FEE	
				RATE	FEE	
BASIC FEE				365.00		730.00
TOTAL CLAIMS		20	minus 20 = *	x\$11=		x\$22=
INDEPENDENT CLAIMS		3	minus 3 = *	x38=		x76=
MULTIPLE DEPENDENT CLAIM PRESENT				+120=		+240=
* If the difference in column 1 is less than zero, enter "0" in column 2				TOTAL	365	TOTAL
CLAIMS AS AMENDED - PART II						
(Column 1)		(Column 2)		(Column 3)		
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA			
	Total	*	Minus	**	=	
	Independent	*	Minus	***	=	
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM					
	TOTAL ADDIT. FEE					
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA			
	Total	*	Minus	**	=	
	Independent	*	Minus	***	=	
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM					
	TOTAL ADDIT. FEE					
AMENDMENT C	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA			
	Total	*	Minus	**	=	
	Independent	*	Minus	***	=	
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM					
	TOTAL ADDIT. FEE					

1ST EXAMINER	DATE
2ND EXAMINER	DATE

APPLICATION NUMBER	18/337157	TYPE APPL	1	FILING DATE	MONTH	DAY	YEAR	SPECIAL HANDLING	GROUP ART UNIT	CLASS	SHEETS OF DRAWING
					11	09	94	0	2502	330	1
TOTAL CLAIMS	-20	SMALL ENTITY?	2	FILING FEE	-365	FOREIGN LICENSE		ATTORNEY DOCKET NUMBER			
						X		P21426			
INDEPENDENT CLAIMS	-3										

CONTINUITY DATA

CONT. STATUS			PARENT APPLICATION			PCT APPLICATION			CONTINUITY DATA			PARENT PATENT			PARENT FILING		
CODE	STATUS	CODE	SERIAL NUMBER	SERIAL NUMBER	SERIAL NUMBER	P	C	T	/	SERIAL NUMBER	NUMBER	DATE	MONTH	DAY	YEAR		
						P	C	T	/								
						P	C	T	/								
						P	C	T	/								
						P	C	T	/								
						P	C	T	/								

PCT/FOREIGN APPLICATION DATA

[illegible]

PATENT APPLICATION SERIAL NO. **08/558344**

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE
FEE RECORD SHEET

~~280 MM 01/05/96 08558344~~
280 MM 01/05/96 08558344

~~1 201 375.00 CK P/214-33~~
1 101 375.00 CK P/214-33

~~270 MM 12/20/95 08558344~~

~~1 201 375.00 CK P/214-33~~

MM27073 01/05/96 08558344

15-0700 270 101 375.00CH P/214-33

PTO-1556
(5/87)



375,00-201-A12wc
08/558344

OFGS File: P/214-33

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:

Dennis FINK

Serial No.: RULE 62 CONTINUATION OF
08/337,157

Group Art Unit: 2515

Filed: November 16, 1995

Examiner: J. Mullins

For: APPARATUS AND METHOD FOR PROGRAMMING AN AMPLIFIER

Hon. Commissioner of Patents and Trademarks
Box FWC
Washington, DC 20231

REQUEST FOR FILE WRAPPER CONTINUING APPLICATION
UNDER 37 C.F.R. §1.62

Sir:

This is a request for the filing of a Continuation application, under the provisions of 37 C.F.R. §1.62, of pending application Serial No. 08/337,157, filed on November 9, 1994, by Dennis FINK entitled "APPARATUS AND METHOD FOR PROGRAMMING AN AMPLIFIER".

The following information is furnished pursuant to 37 C.F.R. §1.62(h):

1. Title as originally filed and as last amended:
"APPARATUS AND METHOD FOR PROGRAMMING AN AMPLIFIER".
2. Name of applicant as originally filed and as last amended: Dennis FINK.
3. Current correspondence address of applicant:
Ostrolenk, Faber, Gerb & Soffen, LLP, 1180 Avenue of the Americas, New York, New York 10036-8403.
4. Amend the Specification by inserting at page 1, after line 1, the paragraph:

a1 This is a Continuation of Application Serial No.
08/337,157, filed on November 9, 1994. *now abandoned*

5. It is recognized that the filing of this Request will be considered to be a request to expressly abandon the prior application as of the filing date granted to the continuing application.

6. The filing fee is calculated as follows:
BASIC Filing Fee:\$ 750.00
Number of Claims in Excess of 20: _____ x \$22
Number of Independent Claims over 3: _____ x \$78
One or more multiple dependent claims:\$
TOTAL FILING FEE:\$ 750.00
OR
TOTAL FILING FEE REDUCED 50% FOR SMALL ENTITY\$ 375.00

7. Check No. 53742, which includes the amount of \$375.00 in payment of the filing fee, is enclosed herewith.

8. The Patent and Trademark Office is hereby authorized to charge any additional fees or to credit any refund at any time during the prosecution of this application, to Deposit Account No. 15-0700.

EXPRESS MAIL CERTIFICATE

I hereby certify that this correspondence is being deposited with the United States Postal Service as Express Mail Post Office to Addressee (mail label #TB353746547 US) in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on November 16, 1995

Dorothy Jenkins
Name of Person Mailing Correspondence
Dorothy Jenkins
Signature
November 16, 1995
Date of Signature

JRK:asa

FORM 137220

Respectfully submitted,

Joseph R. Keating / Philip H. M... Reg No 34,751
Joseph R. Keating
Registration No.: 37,368
OSTROLENK, FABER, GERB & SOFFEN, LLP
1180 Avenue of the Americas
New York, New York 10036-8403
Telephone: (212) 382-0700



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

SERIAL NUMBER	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
---------------	-------------	----------------------	---------------------

08/558,344 11/16/95 FINK

E5M1/0214

OSTROLENK FABER GERB & SOFFEN
1180 AVENUE OF THE AMERICAS
NEW YORK NY 10036-8403

D P/214-33

EXAMINER

MULLINS, J

ART UNIT

PAPER NUMBER

7

2515

DATE MAILED:

02/14/96

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

☒ This application has been examined ☐ Responsive to communication filed on _____ ☐ This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), _____ days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- | | |
|---|---|
| 1. <input type="checkbox"/> Notice of References Cited by Examiner, PTO-892. | 2. <input type="checkbox"/> Notice of Draftsman's Patent Drawing Review, PTO-948. |
| 3. <input type="checkbox"/> Notice of Art Cited by Applicant, PTO-1449. | 4. <input type="checkbox"/> Notice of Informal Patent Application, PTO-152. |
| 5. <input type="checkbox"/> Information on How to Effect Drawing Changes, PTO-1474. | 6. <input type="checkbox"/> _____ |

Part II SUMMARY OF ACTION

1. ☒ Claims 1-20 are pending in the application.
Of the above, claims _____ are withdrawn from consideration.
2. ☐ Claims _____ have been cancelled.
3. ☐ Claims _____ are allowed.
4. ☒ Claims 1-20 are rejected.
5. ☐ Claims _____ are objected to.
6. ☐ Claims _____ are subject to restriction or election requirement.
7. ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. ☐ Formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice of Draftsman's Patent Drawing Review, PTO-948).
10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on _____, has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed _____, has been ☐ approved; ☐ disapproved (see explanation).
12. ☐ Acknowledgement is made of the claim for priority under 35 U.S.C. 119. The certified copy has ☐ been received ☐ not been received ☐ been filed in parent application, serial no. _____; filed on _____.
13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other

EXAMINER'S ACTION

PTOL-326 (Rev. 2/93)

Serial Number: 08/558,344

-2-

Art Unit: 2515

The disclosure is objected to because of the following informalities: The serial number of the application referenced on pages 5 and 13 should be submitted by the next response.

Claims 8 and 1-15 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 8, "the control circuit" and in claim 10 "the amplifier" do not have antecedent basis.

In claims 14 and 15, the recitation "an amplifier" is effectively claiming the amplifier twice. See claim 10, last line.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1-20 are rejected under 35 U.S.C. § 102(b) as being clearly anticipated by either Feistel or Barclay et al.

Serial Number: 08/558,344

-3-

Art Unit: 2515

Claims 1-20 are rejected under 35 U.S.C. § 102(e) as being clearly anticipated by Harris.

Claims 1-3 and 5-20 are rejected under 35 U.S.C. § 102(b) as being anticipated by either Miyake et al., Hamilton or Henegar. Note Fig. 1 of Miyake et al. and block 19 of Henegar. Note the digitally controlled amplifier of Fig. 1 of Hamilton.

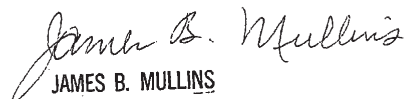
Claims 10, 11, 13 and 15-20 are rejected under 35 U.S.C. § 102(b) as being anticipated by Oiwa. Note Figs 1-5.

Muellner, Sasaki and Back are cited of interest to further show relevant art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mr. James B. Mullins whose telephone number is (703) 308-4912.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956.

JBM
February 9, 1996


JAMES B. MULLINS
EXAMINER
GROUP ART UNIT 252-2515

FORM PTO-892 (REV. 2-92)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		SERIAL NO. 08/558,344	GROUP/ART UNIT 2515	ATTACHMENT TO PAPER NUMBER 7		
NOTICE OF REFERENCES CITED				APPLICANT(S) FINIK				
U.S. PATENT DOCUMENTS								
•	A	DOCUMENT NO.	DATE	NAME	CLASS	SUB-CLASS	FILING DATE IF APPROPRIATE	
	B							
	C							
	D							
	E							
	F							
	G							
	H							
	I							
	J							
	K							
FOREIGN PATENT DOCUMENTS								
•	L	DOCUMENT NO.	DATE	COUNTRY	NAME	CLASS	SUB-CLASS	PERTINENT SHTS. DWG. PP. SPEC.
	M							
	N							
	O							
	P							
	Q							
OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)								
	R							
	S							
	T							
	U							
EXAMINER James B. Mullins				DATE 2/9/94				
* A copy of this reference is not being furnished with this office action. (See Manual of Patent Examining Procedure, section 707.05 (a).)								

TO SEPARATE, HOLD TOP AND BOTTOM EDGES, SNAP-APART AND DISCARD CARBON

FORM PTO-892 (REV. 2-92)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		SERIAL NO. 08/558344	GROUP/ART UNIT 2515	ATTACHMENT TO PAPER NUMBER 7			
NOTICE OF REFERENCES CITED				APPLICANT(S) FINK					
U.S. PATENT DOCUMENTS									
		DOCUMENT NO.	DATE	NAME	CLASS	SUB-CLASS	FILING DATE IF APPROPRIATE		
A									
B									
C									
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F									
G									
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FOREIGN PATENT DOCUMENTS									
		DOCUMENT NO.	DATE	COUNTRY	NAME	CLASS	SUB-CLASS	PERTINENT SHTS. DWG	PP. SPEC.
L									
M									
N									
O									
P									
Q									
OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)									
R									
S									
T									
U									
EXAMINER James B. Mullins				DATE 2/9/96					
* A copy of this reference is not being furnished with this office action. (See Manual of Patent Examining Procedure, section 707.05 (a).)									



25.00 576 A/N
Receipt

P/214-33

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re: Patent Application of

Dennis FINK

Date: May 13, 1996

Serial No. 08/558,344

Group Art Unit: 2515

Filed: November 16, 1995

Examiner: J. Mullins

For: APPARATUS AND METHOD FOR PROGRAMMING AN
AMPLIFIER

Hon. Commissioner of Patents
and Trademarks
Washington, D.C. 20231

Att: Application Branch

RECEIVED
JUN 13 1996
GROUP 2515

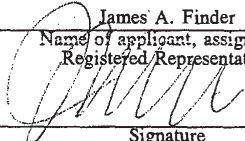
REQUEST FOR DUPLICATE FILING RECEIPT


Sir:

We respectfully request a duplicate filing receipt for
this case. Enclosed is our check no. 57541 in payment of
the required fee.

I hereby certify that this correspondence is being
deposited with the United States Postal Service with
sufficient postage as first class mail in an envelope
addressed to: Commissioner of Patents and Trade-
marks, Washington, D.C. 20231, on May 13, 1996:

Respectfully submitted,

James A. Finder
Name of applicant, assignee or
Registered Representative

Signature
May 13, 1996
Date of Signature


James A. Finder
Registration No.: 30,173
OSTROLENK, FABER, GERB & SOFFEN, LLP
1180 Avenue of the Americas
New York, New York 10036-8403
Telephone: (212) 382-0700

JAF:rk

290 50 03/21/96 01:55:14A
1 576 25.00 00

#220-126

P/214-33

#10

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

Dennis FINK

Serial No.: 08/558,344

Filed: November 16, 1995

For:

APPARATUS AND METHOD FOR PROGRAMMING AN AMPLIFIER

New York, New York

Date: July 15, 1996

Group Art Unit: 2515

Examiner: J. Mullins



Hon. Commissioner of Patents
and Trademarks
Washington, D.C. 20231

RECEIVED
JUL 31 1996

GROUP 2500

INFORMATION DISCLOSURE STATEMENT

Sir:

Pursuant to 37 C.F.R. 1.56, the attention of the Patent and Trademark Office is hereby directed to the references listed on the attached PTO-1449. One copy of each reference is attached. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the references be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

This Information Disclosure Statement is being submitted before either of a final action, under 37 C.F.R. § 1.113 and a notice of allowance under 37 C.F.R. §1.113 and, accordingly, a check (No. _____) in the amount of \$220.00 is enclosed to cover the required fee.

The Examiner's attention is directed to co-pending U.S. Patent Application No. 08/546,839 filed October 23, 1995. The identification of the above U.S. Patent Application is not to be construed as a waiver of secrecy as to that application now or upon issuance of the present application as a patent. The Examiner is respectfully requested to consider the cited application and the prior art references cited therein during examination.

020 JJ 07/29/96 08558344

1 126

220.00 CK

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on July 15, 1996:

James A. Finder, Esq.

Name of applicant, assignee or
Registered Representative

Signature

July 15, 1996

Date of Signature

Respectfully submitted,

James A. Finder

Registration No.: 30,173

OSTROLENK, FABER, GERB & SOFFEN, LLP

1180 Avenue of the Americas

New York, New York 10036-8403

Telephone: (212) 382-0700

JAF:apm
Enclosures

A circular postmark from the U.S. Patent & Trademark Office. The outer ring contains the text "MAIL ROOM" at the top and "U.S. PATENT & TRADEMARK OFFICE" at the bottom. The center of the stamp features the date "JUL 19 1996" in a large, bold font. Above the date, the words "Filed Date" are visible. To the left of the date, the number "2" is printed. The stamp is slightly faded and has a textured appearance.

Other Prior Art

According to the information contained in form PTO-1449 or PTO-892, there are one or more other prior art/non-patent literature documents missing from the original file history record obtained from the United States Patent and Trademark Office. Upon your request we will attempt to obtain these documents from alternative resources. Please note that additional charges will apply for this service.

P/214-33

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

Dennis Fink

Date: July 15, 1996

Serial No.: 08/558,344

Group Art Unit: 2515

Filed: November 16, 1995

Examiner: J.B. Mullins

For: APPARATUS AND METHOD FOR PROGRAMMING AN AMPLIFIER

AMENDMENT TRANSMITTAL LETTER - FEE COMPUTATION

Hon. Commissioner of Patents and Trademarks
Washington, D.C. 20231

Transmitted herewith is an amendment in the above-identified application.

XX "Small Entity" status (37 C.F.R. §1.9 & §1.27) established
XX previously by enclosed verified statement.

OFGS Check No. 59059, which includes the fee of \$226.00 calculated below, is attached.

NO. CLAIMS AFTER AMENDMENT	HIGHEST NO. PREVIOUSLY PAID FOR	EXTRA PRESENT	RATE	ADDIT. FEE
TOTAL 37 MINUS 20	* = 17	x (\$11 SE or \$22)	\$187.00	
INDEP. 4 MINUS 3	** = 1	x (\$39 SE or \$78)	\$ 39.00	
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				x (\$125 SE or \$250) \$
* not less than 20 ** not less than 3				TOTAL \$226.00

In the event the actual fee is greater than the payment submitted or is inadvertently not enclosed or if any additional fee during the prosecution of this application is not paid, the Patent Office is authorized to charge the underpayment to Deposit Account No. 15-0700.

If this communication is filed after the shortened statutory time period had elapsed and no separate Petition is enclosed, the Commissioner of Patents and Trademarks is petitioned, under 37 C.F.R. §1.136(a), to extend the time for filing a response to the outstanding Office Action by the number of months which will avoid abandonment under 37 C.F.R. §1.135. The fee under 37 C.F.R. § 1.17 should be charged to our Deposit Account No. 15-0700.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on July 15, 1996:

James A. Finder
Name of Registered Representative

Signature
July 15, 1996
Date of Signature

Respectfully submitted,

James A. Finder
Registration No.: 30,173
OSTROLENK, FABER, GERB & SOFFEN, LLP
1180 Avenue of the Americas
New York, New York 10036
Telephone: (212) 382-0700

TRAN165162

39- 202
187 203

Gr 2515

P/214-33



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Re Patent Application of New York, New York
Dennis Fink Date: July 15, 1996
Serial No.: 08/558,344 Group Art Unit: 2515
Filed: November 16, 1995 Examiner: J.B. Mullins
For: APPARATUS AND METHOD FOR PROGRAMMING AN AMPLIFIER

9/B

Hon. Commissioner of Patents
and Trademarks
Washington, D.C. 20231

AMENDMENT PURSUANT TO 37 CFR § 115

Sir:

In response to the Office Action mailed February 14, 1996, please reconsider the above-identified application amended as follows:

RECEIVED
JUL 19 1996
GROUP 2500

IN THE SPECIFICATION:

At page 5, lines 23-24, change "U.S. Patent Application No. _____ (Attorney Docket No. P/214-25)" to: --U.S. Patent Application No. 08/546,839 which is a continuation application of U.S. Patent Application No. 08/336,481--.

At page 13, lines 15-16, change "No. _____ (Attorney Docket No. P/214-25)" to: --No. 08/336,481--.

IN THE CLAIMS:

Please cancel claim 9 without prejudice.

Please amend the claims as follows:

- (Amended) 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 [for receiving]
the input signal from the input port and [modifying] modifies the

input signal.

AMDTV162373

a power amplifier for amplifying the modified input signal received from the signal processing circuit and outputting [a modified] an amplified signal to an output device;

an external programmer; and

5 a programming signal input [device] port for receiving at least one programming signal from [an] the external programmer, the external programmer being removably [connected] connectable to the programming signal input [device] port for modifying at least one of a signal processing function and a
10 signal processing function parameter defined in said signal processing circuit.

B2
7. ~~6.~~ (Amended) The amplifier of claim 1, further comprising a control panel, wherein said programming signal input [device] port is provided on the control panel.

~~8.~~
8. (Amended) The amplifier of claim 1, wherein the signal processing circuit further comprises a plurality of electronic components and [each having] a non-volatile storage means for storing a set performance characteristics.

3. *2.*
7. (Amended) The amplifier of claim ~~2~~, wherein the signal processing circuit comprises [a plurality of electronic components each having] a storage device for storing at least one of the signal processing function and the signal processing
5 function parameter [value set] produced by the control circuit.

4.
8. (Amended) The amplifier of claim [1] 2, wherein the control circuit comprises a programmable microprocessor.

per CT
B3
10. (Amended) An amplifier programmer comprising:
an input/output port for sending and receiving control information;

[an] a data input device for allowing input of programming information to the programmer; and

B3
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C
a controller for receiving the input programming information, generating [control] programming signals from the input programming information and transmitting the [control] programming signals through the input/output port to an amplifier for modifying at least one of a signal processing function and a signal processing function parameter of the amplifier.

B4
14. (Amended) The amplifier programmer of claim 10, wherein the controller comprises a microprocessor for receiving programming information from at least one of the input device and a control circuit of [an] the amplifier.

5
B5
10
16. (Amended) A method of programming an amplifier comprising the steps of:
providing the amplifier with a programming signal input port;
connecting an external programmer to the programming signal input port;
inputting programming information to the external programmer; [and]
transmitting the programming information from the external programmer to the amplifier [for]; and
changing at least one of a signal processing function and a signal processing function parameter defined in the amplifier.

B6
18. (Amended) The method of claim 16, further comprising the step of converting the input programming information [to control signals] into at least one programming signal for modifying the performance characteristics of at least one signal processing control element contained in the amplifier.

19. (Amended) The method of claim 16, wherein the step of inputting programming information comprises the step of inserting at least one of a signal processing function program, a signal processing function parameter data, a [desired] signal

5 characteristic modification value and a [desired] signal processing function parameter value.

20. (Amended) The method of claim 16, further comprising the step of storing the input [control] programming information.

B6
cont.
[Please add the following claims:]

--21. The amplifier of claim 1, wherein said amplifier executes operation according to said at least one of a signal processing function and a signal processing function parameter after said external programmer is disconnected from said amplifier.--

--22. The amplifier of claim 1, wherein said amplifier executes operation according to said at least one of a signal processing function and a signal processing function parameter after said external programmer is deactivated.--

--23. The amplifier of claim 1, wherein said at least one of a signal processing function and a signal processing function parameter of said amplifier cannot be modified after said external programmer is disconnected from said amplifier.--

--24. The amplifier of claim 1, wherein said at least one of a signal processing function and a signal processing function parameter of said amplifier cannot be modified after said external programmer is deactivated.--

for
--25. The amplifier of claim 1, wherein said external programmer is taken from the group consisting of: a personal computer; a networked computer; and a hand held embedded computer controller.--

--26. The amplifier of claim 1, wherein said digital signal processor receives and stores at least one of a signal

processing function and a signal processing function parameter
from the group consisting of: a crossover function; a volume
5 control function; an equalizing function; a compression
function; and a level threshold function.--

--27. The amplifier of claim 1, wherein said digital
signal processor receives and stores a combination of at least
two signal processing functions from the group consisting of: a
crossover function; a volume control function; an equalizing
5 function; a compression function; and a level threshold
function.--

~~28~~
--28. The amplifier of claim 1, wherein said digital
signal processor receives and stores at least one of a signal
processing function and a signal processing function parameter
which automatically vary the operation of said amplifier
5 according to the time of day.--

29
--29. The amplifier programmer of claim 10, wherein
said programmer is taken from the group consisting of: a
personal computer; a networked computer; and a hand held
embedded computer controller.--

30
--30. The amplifier programmer of claim 10, wherein
said programmer stores in groups said at least one of a signal
processing function and a signal processing function parameter
according to at least one of a time of day, during which said
amplifier is to operate, and a type of event, for which said
5 amplifier is to operate.--

--31. An amplifier comprising:
an input port for receiving an input signal;
a signal processing circuit comprising an analog signal
processor capable of receiving and storing at least one 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.--

--32. The amplifier of claim 31, wherein said amplifier executes operation according to said at least one signal processing function parameter after said external programmer is disconnected from said amplifier.--

--33. The amplifier of claim 31, wherein said amplifier executes operation according to said at least one signal processing function parameter after said external programmer is deactivated.--

--34. The amplifier of claim 31, wherein said at least one signal processing function parameter of said amplifier cannot be modified after said external programmer is disconnected from said amplifier.--

--35. The amplifier of claim 31, wherein said at least one signal processing function parameter of said amplifier cannot be modified after said external programmer is deactivated.--

--36. The amplifier of claim 31, wherein said external programmer is taken from the group consisting of: a personal computer; a networked computer; and a hand held embedded computer controller.--

5 --37. The amplifier of claim 31, wherein said signal processing circuit receives and stores at least one signal processing function parameter for the group of signal processing functions consisting of: a crossover function; a volume control function; an equalizing function; a compression function; and a level threshold function.--

*Ok
Cancel*

--38. The amplifier of claim 31, wherein said digital signal processor receives and stores at least one signal processing function parameter which automatically varies the operation of said amplifier according to the time of day.--

REMARKS

Reconsideration and allowance of this application are respectfully requested. Claim 9 has been canceled. Claims 1, 5-8, 10, 14, 16, and 18-20 have been amended and claims 21-38 have been added and are submitted for the Examiner's consideration.

Applicant submits that the amendments to claims 1, 5-8, 10, 14, 16, and 18-20 and added claims 21-38 are fully supported by the specification and claims as originally filed and, therefore, no new matter has been added.

In the Office Action, the Examiner objected to the disclosure because the references to pending U.S. patent applications in the disclosure required updating. In response, Applicant has updated the U.S. patent application numbers referenced in the disclosure as required by the Examiner. Accordingly, no new matter has been added.

The Examiner rejected claims 8 and 14-15 under 35 U.S.C. §112 for inconsistent reliance of antecedent bases. In response, Applicant has amended claims 8 and 14-15 to provide the proper antecedent basis. Accordingly, Applicant submits that the Examiner's 35 U.S.C. §112 rejection has been overcome and should be withdrawn.

The Examiner rejected claims 1-20 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,223,272 to Feistel or U.S. Patent No. 5,015,969 to Barclay et al.

Conventional amplifiers having signal processing circuits are comprised of analog and digital components on a printed circuit board. The signal processing function parameters, for example, crossover frequency and amplitude, can be changed by adjusting control knobs provided on an amplifier housing which are operatively connected to the components of the signal processing circuit. Alternatively, the signal processing function parameters may be modified by signals input via a computer or similar device under program control.

However, with the conventional amplifiers as discussed above, the signal processing function is fixed by the circuit design of the signal processing circuit and cannot be easily changed. Although the user can change the signal processing function parameters as described above, it is often necessary or desirable to change the signal processing function or even combine several different signal processing functions in the signal processing circuit. This is not possible with conventional amplifiers.

Accordingly, the present invention provides an amplifier and amplifier programmer being removably connected to the amplifier to quickly and easily change signal processing functions and/or parameters of the amplifier without modifying signal processing circuit elements. The preferred embodiment of the present invention includes a portable amplifier programmer that is capable of receiving input information and transmitting the input information to an amplifier signal processing circuit to modify signal processing functions and/or parameters.

The Feistel reference and the Barclay reference disclose amplifiers comprising microprocessor controlled signal processing circuits where the parameters of the signal processing circuits are modified by the output data of the microprocessor.

Specifically, the Feistel reference shows that an audio signal may be modified by a digital filter where "the various parameters defining the transfer function ... can be chosen on the basis of either frequency or response time." (emphasis added, Col. 2, lines 23-26). The parameters are adjusted by

turning knobs or wheels (Col. 5, lines 32, 43 and 64); by physically replacing electrical components (Col. 6, lines 4-8); or by keyboard entry into a microprocessor (Col. 6, lines 19-29).

However, the Feistel reference does not disclose:

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;

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 connected to the programming signal input port as recited in amended claim 1 of the instant application. Indeed, the Feistel reference discloses a filter circuit in which only the filter function parameters can be modified as opposed to a digital signal processor capable of modifying the signal processing function of an amplifier as recited in Applicant's amended claims 1, 10 and 16. Further, the Feistel reference does not disclose an external programmer which is removably connected to the amplifier via a programming signal input port as recited in amended claim 1.

Similarly, the Barclay reference discloses a signal processing circuit (digital attenuator) where the gain parameter of the attenuator is set by a microprocessor in light of junction temperature data and/or signal fidelity data which is presented to the microprocessor via a feedback loop. As discussed above with respect to the Feistel reference, the Barclay reference does not disclose (i) a digital signal processor capable of receiving at least one of a signal processing function and a signal processing function parameter or (ii) an external programmer being removably connected to a programming signal input port as claimed by Applicant.

Therefore, the Examiner's 35 U.S.C. §102(b) rejection of amended claims 1, 10 and 16 in view of the Feistel reference or the Barclay reference cannot stand because anticipation of a

claim can be found only if the prior art reference discloses every element of the claim. Ex parte Luck, 28 USPQ2d 1875, 1876 (Bd. App. 1993). Accordingly, Applicant respectfully requests that the Examiner's 35 U.S.C. §102(b) rejection of claims 1, 10 and 16 in view of the Feistel reference or the Barclay reference be withdrawn.

The Examiner rejected claims 1-20 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 5,339,362 to Harris. The Harris reference discloses a controller which is connected to a remote data access terminal (RDAT), where the controller passes commands from the RDAT to a digital signal processor and/or signal processing card(s). The RDAT is not removably connected to the controller (indeed, the RDAT must always be connected to the controller for the system to operate) and the signal processing card(s) are not capable of receiving at least one of a signal processing function and a signal processing function parameter as recited in claims 1, 10 and 16.

Therefore, as was discussed above with reference to the Feistel reference and the Barclay reference, the Examiner's 35 U.S.C. §102(e) rejection of amended claims 1, 10 and 16 in view of the Harris reference cannot stand because anticipation of a claim can be found only if the prior art reference discloses every element of the claim. Ex parte Luck, 28 USPQ2d 1875, 1876 (Bd. App. 1993). Accordingly, Applicant respectfully requests that the Examiner's 35 U.S.C. §102(e) rejection of claims 1, 10 and 16 in view of the Harris reference be withdrawn.

The Examiner rejected claims 1-3 and 5-20 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,045,802 to Miyake, U.S. Patent No. 4,079,334 to Hamilton or U.S. Patent No. 3,769,606 to Henegar.

The Miyake reference discloses a microprocessor controlled frequency response equalizer where the "base characteristic," "treble characteristic" and "peak characteristics" of the equalizer (comprising a plurality of band pass filters) can be "set." (Col. 1, lines 26-31; and Col. 2, lines 52-65). The "characteristics" of the band pass filters are

nothing more than the parameters (corner frequencies and gains) of the equalizer.

The Hamilton reference discloses a microprocessor controlled signal processing circuit comprising discrete operational amplifiers having reactive feedforward and feedback impedances for creating fixed signal processing functions such as "sustain," "wah-wah" and "fuzz." (Col. 1, lines 4-38). The feedforward and feedback impedances are altered by switching means operatively connected to the impedances and the operational amplifiers. The adjustment of the impedances is no more than adjusting the parameters of the fixed functions of the signal processing circuit.

The Henegar reference discloses that a digital word alters the "filtering range" of either a first order or a second order analog filter circuit (Fig. 5). As in the circuit of the Hamilton reference, the Henegar reference shows that feedforward and feedback impedances are altered by switching means operatively connected to the impedances and an operational amplifier. Again, the adjustment of the impedances is no more than adjusting the parameters of the fixed function provided by the first order or second order analog filter. It is noted that the function of the circuit of the Henegar reference may be altered by manual processes. Specifically, the filter circuit may be changed from a first order filter to a second order filter by manually changing the "slab" which orients the analog circuit components. (Col. 6, lines 54-58).

However, as discussed above with respect other cited references, neither the Miyake reference, the Hamilton reference nor the Henegar reference disclose (i) a digital signal processor capable of receiving at least one of a signal processing function and a signal processing function parameter or (ii) an external programmer being removably connected to a programming signal input port as claimed by Applicant.

Therefore, the Examiner's 35 U.S.C. §102(b) rejection of amended claims 1, 10 and 16 in view of the Miyake reference, the Hamilton reference or the Henegar reference cannot stand

because anticipation of a claim can be found only if the prior art reference discloses every element of the claim. Ex parte Luck, 28 USPQ2d 1875, 1876 (Bd. App. 1993). Accordingly, Applicant respectfully requests that the Examiner's 35 U.S.C. §102(b) rejection of claims 1, 10 and 16 in view of the Miyake reference, the Hamilton reference or the Henegar reference be withdrawn.

The Examiner rejected claims 10, 11, 13 and 15-20 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,000,475 to Oiwa. The Oiwa reference discloses that a manipulation unit (the front control panel of an amplifier) may be "detachably directly coupled" to the amplifier unit. When the manipulation unit is "detached," a cable means is extended between the amplifier and the manipulation unit so that fidelity of the audible signal may be adjusted by knobs and switches at a location beyond arms length from the amplifier. (Figs. 1-4; Col. 3, lines 6-10; and Col. 4, lines 18-21). In fact, the manipulation unit cannot be disconnected from the amplifier without replacing the manipulation unit connection with a simplified manipulation unit because, without some connection to the amplifier, the amplifier will not function. (Col. 6, lines 32-36). Further, the adjustment of the knobs and switches of the manipulation unit merely change the parameters of the fixed functions of the amplifier.

However, as discussed above with respect other cited references, the Oiwa reference does not disclose (i) a digital signal processor capable of receiving at least one of a signal processing function and a signal processing function parameter or (ii) an external programmer being removably connected to a programming signal input port as claimed by Applicant.

Therefore, the Examiner's 35 U.S.C. §102(b) rejection of amended claims 10 and 16 in view of the Oiwa reference cannot stand because anticipation of a claim can be found only if the prior art reference discloses every element of the claim. Ex parte Luck, 28 USPQ2d 1875, 1876 (Bd. App. 1993). Accordingly, Applicant respectfully requests that the Examiner's 35 U.S.C.

§102(b) rejection of claims 10 and 16 in view of the Oiwa reference be withdrawn.

None of the reference cited by the Examiner teach or suggest all the limitations recited new independent claim 31. Namely, the cited references do not recite an external programmer being removably connected to a programming signal input port as claimed by Applicant. Therefore, a 35 U.S.C. §§ 102, 103 rejection of new claim 31 in view of the cited art would be improper because anticipation of a claim can be found only if the prior art reference discloses every element of the claim. Ex parte Luck, 28 USPQ2d 1875, 1876 (Bd. App. 1993). Accordingly, Applicant submits that claim 31 recites a patentable combination.

Further, claims 32-38 all depend on claim 31 and contain all of the limitations of claim 31 as well as other limitation(s) which, for the reasons articulated above, also define patentable combinations.

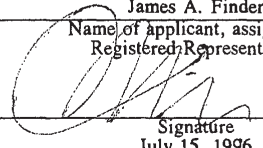
Still further, claims 2-5, 7, 8, and 21-28 all depend on claim 1 and contain all of the limitations of claim 1 as well as other limitation(s) which, for the reasons articulated above, also define patentable combinations. Therefore, Applicant respectfully requests that the Examiner's 35 U.S.C. §102 rejections of claims 2-5, 7 and 8 be withdrawn.

Still further, claims 11-15 and 29-30 all depend on claim 10 and contain all of the limitations of claim 10 as well as other limitation(s) which, for the reasons articulated above, also define patentable combinations. Therefore, Applicant respectfully requests that the Examiner's 35 U.S.C. §102 rejections of claims 11-15 be withdrawn.


Still further, claims 17-20 all depend on claim 16 and contain all of the limitations of claim 16 as well as other limitation(s) which, for the reasons articulated above, also define patentable combinations. Therefore, Applicant respectfully requests that the Examiner's 35 U.S.C. §102 rejections of claims 17-20 be withdrawn.

The Examiner may contact the undersigned to discuss any still outstanding matters. Early and favorable action is earnestly solicited.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on July 15, 1996

James A. Finder
Name of applicant, assignee or
Registered Representative

Signature
July 15, 1996
Date of Signature

Respectfully submitted,


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JAF:MBD



\$190-2

Gr 2515
P/214-33

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
In re Patent Application of:

Dennis [redacted] Date: July 15, 1996
Serial No.: 08/558,344 Group Art Unit: 2515 # 8/2
Filed: November 16, 1995 Examiner: J.B. Mullins
For: APPARATUS AND METHOD FOR PROGRAMMING AN AMPLIFIER

Hon. Commissioner of Patents and Trademarks
Washington, D.C. 20231

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JUL 31 1996
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PETITION AND FEE FOR AUTOMATIC EXTENSION OF TIME
UNDER 37 CFR 1.17, 1.136(a) AND 35 USC 41(a)8

Sir:

Applicant hereby petitions the Commissioner of Patents and Trademarks to extend the time for filing a response to the outstanding Office Action by two (2) months. Enclosed is our check No. [redacted] which includes the amount of \$190.00 for the petition fee in accordance with 37 CFR 1.17 computed as:

- ☐ Response within first month
 - ☐ not small entity (\$110) ☐ small entity (\$55)
- ☒ Response within second month
 - ☒ small entity (\$190)
- ☐ Response within third month
 - ☐ not small entity (\$900) ☐ small entity (\$450)
- ☐ Response within fourth month
 - ☐ not small entity (\$1,400) ☐ small entity (\$700)

You are authorized to charge to our Deposit Account No. 15-0700 any additional amounts owing.

If this petition is inadequate to avoid abandonment, the Commissioner of Patents and Trademarks is petitioned, under 37 C.F.R. §1.136(a), to extend the time by the number of months which will avoid abandonment under 37 C.F.R. §1.135. The fee under 37 C.F.R. § 1.17 should be charged to our Deposit Account No. 15-0700.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231 on July 15, 1996. 08558344

James A. Finder
Name of applicant, assignee or Registered Representative
[Signature]
Signature
July 15, 1996
Date of Signature

Respectfully submitted,

[Signature]
1 216 190.00 CK

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Patent and Trademark Office

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Washington, D.C. 20231

APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
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08/558,344 11/16/95 FINK

D P/214-33

EXAMINER
MULLINS, J

ESM1/0917

OSTROLENK FABER GERB & SOFFEN
1180 AVENUE OF THE AMERICAS
NEW YORK NY 10036-8403

ART UNIT PAPER NUMBER

DATE MAILED: 2515

09/17/96

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

OFFICE ACTION SUMMARY

☒ Responsive to communication(s) filed on 7/19/96

☒ This action is FINAL.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 D.C. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-8, 10-38 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☒ Claim(s) 1-8 is/are allowed.

☒ Claim(s) 10-38 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of Reference Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 10

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

-- SEE OFFICE ACTION ON THE FOLLOWING PAGES --

Serial Number: 08/558,344

-2-

Art Unit: 2515

The following is a quotation of the first paragraph of 35 U.S.C. § 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The specification is objected to under 35 U.S.C. § 112, first paragraph, as the specification, as originally filed, does not provide support for the invention as is now claimed. More specifically, the limitations as specified in claims 21-30 and 32-38 do not find support in the original disclosure.

Claims 21-30 and 32-38 are rejected under 35 U.S.C. § 112, first paragraph, for the reasons set forth in the objection to the specification.

Claims 25-27, 29, 30, 36 and 37 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. These claims recite alternative structure and accordingly are deemed to be indefinite. "Markush"-type claims 25-26, 29, 36 and 37 are deemed to be improper in this instance since they recite alternative structure.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

Serial Number: 08/558,344

-3-

Art Unit: 2515

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 10-15, 29 and 30 are rejected under 35 U.S.C.

§ 102(b) as being anticipated by either Feistel, Barclay et al. or Miyake et al. All the references show a controller for modifying at least a signal processing function parameter of an amplifier. Feistel modifies the parameters of resistors and capacitors; Barclay et al. modify the attenuation of an audio input signal, which is input at terminals 12; and Miyake et al. modify the frequency characteristic of an audio signal by varying the gain of amplifiers 14₁-14_n. Thus, it is deemed that the references show all that is claimed.

Claims 10-20 and 29-38 are rejected under 35 U.S.C. § 102(e) as being anticipated by Harris. RDATA 16, read as an input data device, is connected to the controller 12 via hardware or RF link (col. 3, lines 26-28) and thus, is removably connected to the controller; however, this is not an issue, insofar as claims 10-15, 29 and 30 are concerned, since such limitation is not present in the claims. Controller 12 may be read as the recited

Serial Number: 08/558,344

-4-

Art Unit: 2515

"controller" and will accomplish the function as recited in the claims.

Applicant's arguments have been carefully considered; however, they are not persuasive since it is deemed that the claims can be read directly on the references.

Claims 1-8 are allowable over the prior art of record.

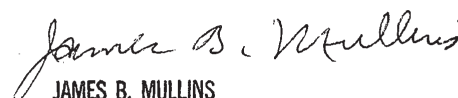
Applicant's amendment necessitated the new grounds of rejection. Accordingly, **THIS ACTION IS MADE FINAL**. See M.P.E.P. § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. § 1.136(a).

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 C.F.R. § 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL ACTION.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mr. James B. Mullins whose telephone number is (703) 4912.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956.

JBM
September 6, 1996


JAMES B. MULLINS
EXAMINER
GROUP ART UNIT 252 2515



Corres. and Mail
BOX AF

RESPONSE UNDER 37 CFR §1.116
EXPEDITED PROCEDURE
EXAMINING GROUP 2515
P/214-33

#12/c
12/30/96

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of New York, New York
Dennis Fink Date: December 17, 1996
Serial No.: 08/558,344 Group Art Unit: 2515
Filed: November 16, 1995 Examiner: J.B. Mullins
For: APPARATUS AND METHOD FOR PROGRAMMING AN AMPLIFIER

Assistant Commissioner of Patents
and Trademarks
Washington, D.C. 20231

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DEC 27 1996

AMENDMENT PURSUANT TO 37 CFR § 1.116

Sir:

In response to the Office Action mailed September 17, 1996, please reconsider the above-identified application amended as follows:

IN THE CLAIMS:

Please cancel claims 16-20, 22-24 and 31-38 without prejudice.

Please amend the claims as follows:

9. (Twice Amended) [An amplifier programmer comprising:] The amplifier of claim 1, wherein the external programmer comprises:

an input/output port for sending and receiving control information;

a data input device for allowing input of programming information to the programmer; and

a controller for receiving the input programming information, generating programming signals from the input programming information and transmitting the programming signals through the input/output port to an amplifier for modifying at

least one of a signal processing function and a signal processing function parameter of the amplifier.

^{10.}
~~11.~~ (Amended) The amplifier [programmer] of claim ~~10~~,^{9.}
wherein the external programmer further comprises [further comprising] a display screen for displaying input programming information and information read by the controller.

^{11.}
~~12.~~ (Amended) The amplifier [programmer] of claim ~~10~~,^{9.}
wherein the external programmer further comprises [further comprising] a storage device for storing the input programming information and previously selected control signals.

^{12.}
~~13.~~ (Amended) The amplifier [programmer] of claim ~~10~~,^{9.}
wherein the data input device comprises a keypad having a plurality of keys.

^{13.}
~~14.~~ (Twice Amended) The amplifier [programmer] of claim ~~10~~,^{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.

^{14.}
~~15.~~ (Amended) The amplifier [programmer] of claim ~~10~~,^{9.}
wherein the controller comprises a connector for removably connecting the programmer to the amplifier.

^{19.}
~~25.~~ (Amended) The amplifier of claim 1, wherein said external programmer is [taken from the group consisting of: a personal computer; a networked computer; and a hand held embedded computer controller] a standard computer.

^{20.}
~~26.~~ (Amended) The amplifier of claim 1, wherein said digital signal processor receives and stores at least one of a signal processing function and a signal processing function parameter [from the group consisting of:] for a crossover

5 function[, a volume control function; an equalizing function; a
compression function; and a level threshold function].

21.
27. (Amended) The amplifier of claim 1, wherein said
22 digital signal processor receives and stores a combination of at
ent least two signal processing functions [from the group consisting
of: a crossover function; a volume control function; an
5 equalizing function; a compression function; and a level
threshold function].

15.
29. The amplifier programmer of claim *9.*
10. wherein said
programmer [is taken from the group consisting of: a personal
computer; a networked computer; and a hand held embedded
computer controller] a standard computer.

16.
30. The amplifier programmer of claim *9.*
10. wherein said
programmer stores in groups said at least one of a signal
processing function and a signal processing function parameter
according to [at least one of a] the time of day[,] during which
5 said amplifier is to operate[, and a type of event, for which
said amplifier is to operate].

Please add the following new claims:

23.
31. The amplifier of claim 1, wherein said digital
signal processor receives and stores at least one of a signal
processing function and a signal processing function parameter
for a volume control function.

24.
40. The amplifier of claim 1, wherein said digital
signal processor receives and stores at least one of a signal
processing function and a signal processing function parameter
for an equalizing function.

25.
41. The amplifier of claim 1, wherein said digital
signal processor receives and stores at least one of a signal

processing function and a signal processing function parameter for a compression function.

4 cont.
²⁶
~~42~~. The amplifier of claim 1, wherein said digital signal processor receives and stores at least one of a signal processing function and a signal processing function parameter for a level threshold function.

¹⁷
~~43~~. The amplifier programmer of claim ⁹~~10~~, wherein said programmer stores in groups said at least one of a signal processing function and a signal processing function parameter according to the type of event for which said amplifier is to operate.--

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REMARKS

Reconsideration and allowance of this application are respectfully requested. Claims 16-20, 22-24 and 31-38 have been canceled; claims 10-15, 25-27 and 29 have been amended; and claims 39-43 have been added.

Pursuant to 37 CFR §1.116(a), Applicant submits that the amendments made hereinabove merely cancel claims, adopt the Examiner's suggestions and remove issues for appeal and, therefore, the above amendments are proper and should be entered.

At page 2 of the Office Action, the Examiner objected to the specification under 35 U.S.C. § 112, first paragraph, for failing to provide an adequate written description of the invention. Consequently, the Examiner rejected claims 21-30 and 32-38 under 35 U.S.C. §112, first paragraph. Applicant has canceled claims 22-24 and 32-38 and, therefore the Examiner's rejection of those claims is moot. However, Applicant respectfully traverses the Examiner's §112 rejection of claims 21 and 25-30.

Support for the invention of claim 21 may be found at page 4 lines 19-25 of the originally filed specification which recites that "the present invention provides an amplifier and amplifier programmer capable of being removably connected to the

amplifier to quickly and easily change signal processing functions and/or parameters of the amplifier."

Support for amended claims 25 and 29 may be found at page 10, lines 9-13 of the originally filed specification which recite that "the amplifier circuitry can be programmed by either the portable programmer or a standard computer."

Support for amended claim 26 and new claims 39-42 may be found at page 1, line 26 through page 2, line 4 of the originally filed specification which recites that "various elements of the signal processing circuit define a plurality of sound processing parameters such as a frequency and an amplitude of a cross-over function, relative levels and routing in a mixer, response times, ratios and thresholds in a compressor and frequency, gain and bandwidth in an equalizer."

Support for amended claims 27, 28, 30 and new claim 43 and may be found at page 8, line 25 through page 9, line 4 of the originally filed specification which recites that "if a desired operation of a stereo sound system or public address system varies according to the time of day or the type of event being conducted, the signal processing parameters of an amplifier can be modified by selecting a preset group for that particular time of day or type of event. Thus, the user of the portable amplifier programmer only has to select a single group from a menu and the programmer will input that stored group to the control circuit of the amplifier."

Applicant submits that for the forgoing reasons claims 21, 25-30 and new claims 39-43 are supported by the specification as originally filed and, therefore, the Examiner's 35 U.S.C. §112 first paragraph, rejection of claims 21 and 25-30 should be withdrawn.

At page 2 of the Office Action, the Examiner rejected claims 25-27, 29, 30, 36 and 37 under 35 U.S.C. §112, second paragraph, as improperly reciting alternative structure. In response, Applicant has amended claims 25-27, 29, 30 and has added claims 39-43. Specifically, claims 39-42 have been added to recite individual processing functions previously recited as a

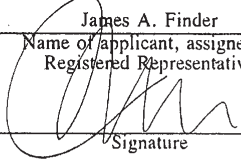
group in claim 26. Further, claim 43 has been added to recite that "the programmer stores in groups said at least one of a signal processing function and a signal processing function parameter according to the type of event for which said amplifier is to operate" as a separate claim from claim 30. Claims 36 and 37 have been canceled.

Applicant submits that for the forgoing reasons claims 25-27, 29, 30 and new claims 39-43 are definite and the Examiner's 35 U.S.C. §112, second paragraph, rejection of claims 25-27, 29 and 30 should be withdrawn.

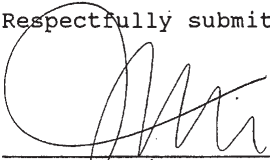
At page 3 of the Office Action, the Examiner rejected claims 10-15, 29 and 30 under 35 U.S.C. §102(b) as being anticipated by either the Feistel, Barclay or Miyake references. Further, the Examiner rejected claims 10-20 and 29-38 under 35 U.S.C. §102(e) as being anticipated by Harris. In response, Applicant has amended claim 10 to depend from claim 1, an allowed claim. Claims 11-15, 29-30 and new claim 43 depend from claim 10 and, therefore, claims 10-15, 29-30 and new claim 43 should also be allowed for the reasons that claim 1 is allowed.

In light of the amendments made hereinabove, Applicant believes that the instant claims are in condition for allowance. The Examiner is invited to contact the undersigned to discuss any still outstanding matters. Early and favorable action is earnestly solicited.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on December 17, 1996

James A. Finder
Name of applicant, assignee or
Registered Representative

Signature
December 17, 1996
Date of Signature

Respectfully submitted,


James A. Finder
Registration No.: 30,173
OSTROLENK, FABER, GERB & SOFFEN, LLP.
1180 Avenue of the Americas
New York, New York 10036-8403
Telephone: (212) 382-0700

JAF/MBD

AMDTVI83098

6



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO
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08/558,344 11/16/95 FINK

D P/214-33

EXAMINER

E5M1/0107

OSTROLENK FABER GERB & SOFFEN
1180 AVENUE OF THE AMERICAS
NEW YORK NY 10036-8403

ART UNIT INSPECTION NUMBER

DATE MAILED: 2515

01/07/97

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

NOTICE OF ALLOWABILITY

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance and Issue Fee Due or other appropriate communication will be mailed in due course.

☒ This communication is responsive to AMENDMENT FILED 12/19/96

☒ The allowed claim(s) is/are 1-8, 10-15, 21, 25-30, 39-43

☐ The drawings filed on _____ are acceptable.

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

A SHORTENED STATUTORY PERIOD FOR RESPONSE to comply with the requirements noted below is set to EXPIRE **THREE MONTHS** FROM THE "DATE MAILED" of this Office action. Failure to timely comply will result in ABANDONMENT of this application. Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

☐ Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL APPLICATION, PTO-152, which discloses that the oath or declaration is deficient. A SUBSTITUTE OATH OR DECLARATION IS REQUIRED.

☒ Applicant MUST submit NEW FORMAL DRAWINGS

☐ because the originally filed drawings were declared by applicant to be informal.

☒ including changes required by the Notice of Draftperson's Patent Drawing Review, PTO-948, attached hereto or to Paper No. 3

☐ including changes required by the proposed drawing correction filed on _____, which has been approved by the examiner.

☐ including changes required by the attached Examiner's Amendment/Comment.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the reverse side of the drawings. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftperson.

☐ Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Any response to this letter should include, in the upper right hand corner, the APPLICATION NUMBER (SERIES CODE/SERIAL NUMBER). If applicant has received a Notice of Allowance and Issue Fee Due, the ISSUE BATCH NUMBER and DATE of the NOTICE OF ALLOWANCE should also be included.

Attachment(s)

☐ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s): _____

☐ Notice of Draftperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

☐ Interview Summary, PTO-413

☒ Examiner's Amendment/Comment

☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material.

☐ Examiner's Statement of Reasons for Allowance

James B. Mullins
JAMES B. MULLINS
EXAMINER
GROUP ART. UNIT 2515

Serial Number: 08/558,344


-2-

Art Unit: 2515

Part III EXAMINER'S AMENDMENT

1. An Examiner's Amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 C.F.R. § 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the Issue Fee.
2. The application has been amended as follows:
In claim 10, line 11, "an" has been changed to --the-- in order to correct an obvious error.
3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mr. James B. Mullins whose telephone number is (703) 308-4912.

JBM
January 6, 1997


JAMES B. MULLINS
EXAMINER
GROUP ART UNIT 252-2515



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

Address: Box ISSUE FEE
ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, D.C. 20231

NOTICE OF ALLOWANCE AND ISSUE FEE DUE

ESM1/0107

OSTROLENK FABER GERB & SOFFEN
1180 AVENUE OF THE AMERICAS
NEW YORK NY 10036-8403

APPLICATION NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT	DATE MAILED
08/558,344	11/16/95	026	MULLINS, J	2515 01/07/97
First Named Applicant	FINK, DENNIS			

TITLE OF INVENTION APPARATUS AND METHOD FOR PROGRAMMING AN AMPLIFIER

ATTY'S DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPLN. TYPE	SMALL ENTITY	FEE DUE	DATE DUE
2 P/214-33	330-065.000	128	UTILITY	NO	\$1290.00	04/07/97

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED.

THE ISSUE FEE MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED.

HOW TO RESPOND TO THIS NOTICE:

- I. Review the SMALL ENTITY status shown above.
If the SMALL ENTITY is shown as yes, verify your current SMALL ENTITY status:
 - A. If the status is changed, pay twice the amount of the FEE DUE shown and notify the Patent and Trademark Office of the change in status, or
 - B. If the status is the same, pay the FEE DUE shown above.
- II. Part B of this notice should be completed and returned to the Patent and Trademark Office (PTO) with your ISSUE FEE. Even if the ISSUE FEE has already been paid by charge to deposit account, Part B should be completed and returned. If you are charging the ISSUE FEE to your deposit account, section "6b" of Part B should be completed.
- III. All communications regarding this application must give application number and batch number. Please direct all communication prior to issuance to Box ISSUE FEE unless advised to the contrary.

If the SMALL ENTITY is shown as NO:

- A. Pay FEE DUE shown above, or
- B. File verified statement of Small Entity Status before, or with, payment of 1/2 the FEE DUE shown above.

IMPORTANT REMINDER: Patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

3. PATENT AND TRADEMARK OFFICE COPY



OFGS File No. P/214-33

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent application of:

Dennis Fink Date: March 11, 1997
Serial No.: 08/558,344 Group Art Unit: 2515
Filed: November 16, 1995 Examiner: J. Mullins
Notice of Allowance: 01/07/97 Batch No.: I20
For: APPARATUS AND METHOD FOR PROGRAMMING AN AMPLIFIER

Hon. Commissioner of Patents
and Trademarks
Washington, DC 20231

Attention: **Official Draftsman**

FORMAL DRAWINGS

Sir:

Responsive to Paper No. 3 attached to the Office Action dated May 17, 1995, and referred to in the Notice of Allowance dated January 7, 1997, enclosed herewith please find one (1) sheet of formal drawings containing Figures 1-3 for the above-identified application.

It is respectfully requested that these drawings be substituted for the originally filed drawings.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on March 11, 1997:

James A. Finder

Name of Applicant, assignee or
Registered Representative

Signature

March 11, 1997

Date of Signature

Respectfully submitted,

James A. Finder
Registration No.: 30,173
OSTROLENK, FABER, GERB & SOFFEN, LLP
1180 Avenue of the Americas
New York, New York 10036-8403
Telephone: (212) 382-0700

JAF/MBD:kat
Enclosure

5652544

08/558,344

FIG. 1

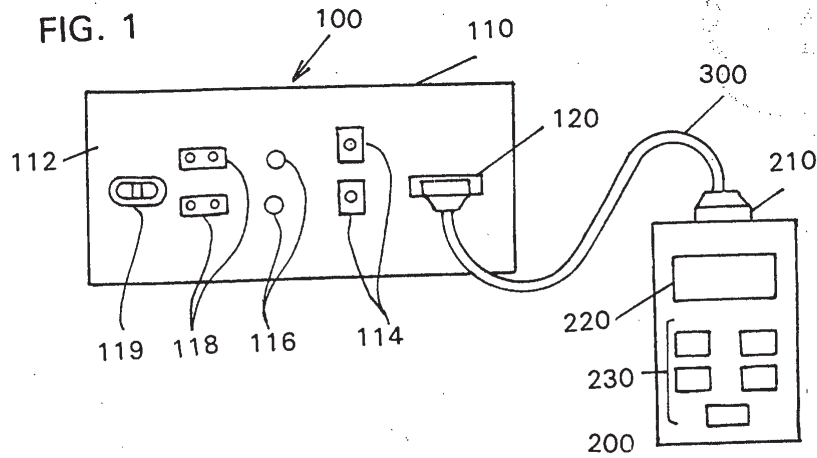


FIG. 2

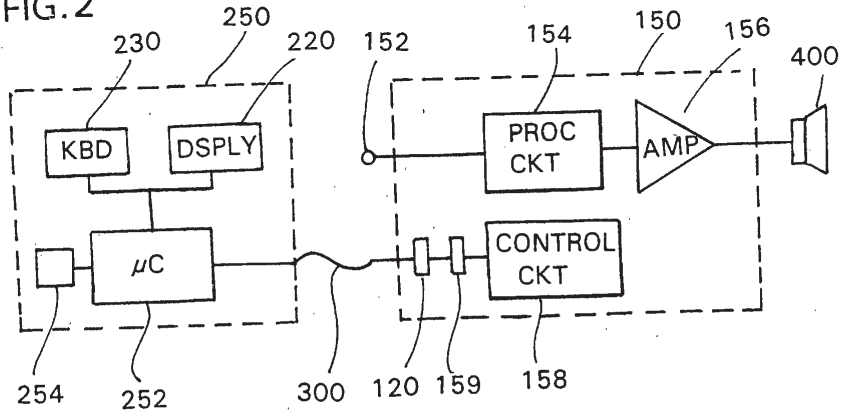
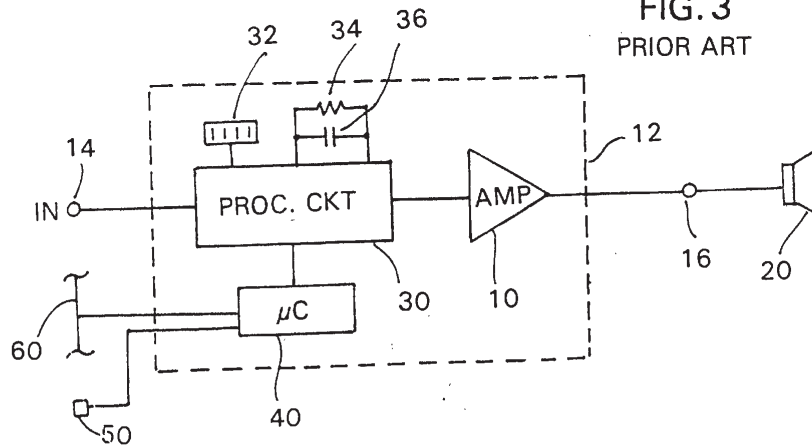


FIG. 3
PRIOR ART



APPROVED BY DRAFTSMAN
08/558,344

PART B—ISSUE FEE TRANSMITTAL

MAILING INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE. Blocks 2 through 6 should be completed where appropriate. All further correspondence including the issue Fee Receipt, the Patent, advance orders and notification of maintenance fees will be mailed to addresses entered in Block 1 unless you direct otherwise, by: (a) specifying a new correspondence address in Block 3 below, or (b) providing the PTO with a separate "FEE ADDRESS" for maintenance fee notifications with the payment of issue Fee or thereafter. See reverse for Certificate of Mailing, below.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending on the needs of the individual case. Any comments on the amount of time required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, D.C. 20231.

DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Box Issue Fee, Assistant Commissioner for Patents, Washington D.C. 20231

1. CORRESPONDENCE ADDRESS

ESM1/0107

OSTROLENK FABER GERB & SOFFEN
1180 AVENUE OF THE AMERICAS
NEW YORK NY 10036-8403

2. INVENTOR(S) ADDRESS CHANGE (Complete only if there is a change)

INVENTOR'S NAME

Street Address

City, State and Zip Code

CO-INVENTOR'S NAME

Street Address

City, State and Zip Code

☐ Check if additional changes are enclosed

APPLICATION NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT	DATE MAILED
08/558,344	11/16/95	026	MULLINS, J	2515 01/07/97
First Named Applicant	FINK, DENNIS			

TITLE OF INVENTION APPARATUS AND METHOD FOR PROGRAMMING AN AMPLIFIER

ATTY'S DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPLN. TYPE	SMALL ENTITY	FEE DUE	DATE DUE
2	P/214-33	330-065.000	I20	UTILITY	NO YES \$1200.00 465.00	04/07/97

3. Correspondence address change (Complete only if there is a change)

4. For printing on the patent front page, list the names of not more than 3 registered patent attorneys or agents OR, alternatively, the name of a firm having as a member a registered attorney or agent. If no name is listed, no name will be printed.

OSTROLENK, FABER, GERB & SOFFEN, LLP

2 _____

3 _____

5. ASSIGNMENT DATA TO BE PRINTED ON THE PATENT. (print or type)

(1) NAME OF ASSIGNEE:

Crest Audio Inc.

(2) ADDRESS: (CITY & STATE OR COUNTRY)

Paramus, New Jersey

A. ☐ This application is NOT assigned.

☒ Assignment previously submitted to the Patent and Trademark Office.

☐ Assignment is being submitted under separate cover. Assignment should be directed to Box ASSIGNMENTS.

PLEASE NOTE: Unless an assignee is identified in Block 5, no assignee data will appear on the patent. Inclusion of assignee data is only appropriate when an assignment has been previously submitted to the PTO or is being submitted under separate cover. Completion of this form is NOT a substitute for filing an assignment.

6a. The following fees are enclosed:

☒ Issue Fee ☐ Advance Order - # of Copies 10

6b. The following fees should be charged to:

DEPOSIT ACCOUNT NUMBER

(ENCLOSE A COPY OF THIS FORM)

☐ Issue Fee ☐ Advance Order - # of Copies

☐ Any Deficiencies in Enclosed Fees

The COMMISSIONER OF PATENTS AND TRADEMARKS is requested to apply the issue Fee to the application identified above.

(Authorized Signatory)

James A. FINDER-RN:30,173

(Date)

3/12/97

NOTE: The Issue Fee will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the Patent and Trademark Office.

Certificate of Mailing

Note: If this certificate of mailing is used, it can be used to transmit the Issue Fee. This certificate cannot be used for any other accompanying papers.

Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing.

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to:

Box ISSUE FEE
Assistant Commissioner for Patents
Washington D.C. 20231

810 BL 03/26/97 08558344
1 342 645.00 CK
1 561 30.00 CK

on: March 12, 1997

(Date)

James A. FINDER

(Name of person making deposit)

March 12, 1997

(Signature)

March 12, 1997

(Date)

1. TRANSMIT THIS FORM WITH FEE

Transaction History Date 1997-07-29

Date information retrieved from USPTO Patent

Application Information Retrieval (PAIR)
system records at www.uspto.gov

PTO UTILITY GRANT

Paper Number 15

The
United
States
of
America



The Commissioner of Patents
and Trademarks

Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

Grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America for the term set forth below, subject to the payment of maintenance fees as provided by law.

If this application was filed prior to June 8, 1995, the term of this patent is the longer of seventeen years from the date of grant of this patent or twenty years from the earliest effective U.S. filing date of the application, subject to any statutory extension.

If this application was filed on or after June 8, 1995, the term of this patent is twenty years from the U.S. filing date, subject to an statutory extension. If the application contains a specific reference to an earlier filed application or applications under 35 U.S.C. 120, 121 or 365(c), the term of the patent is twenty years from the date on which the earliest application was filed, subject to any statutory extension.

Bruce Lehman
Commissioner of Patents and Trademarks

Pandra Morta
Attest

Form PTO-1584 (Rev. 2/97)



UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

PAYOR NUMBER
2352

P75M

OSTROLENK FABER GERB & SOFFEN
1180 AVENUE OF THE AMERICAS
NEW YORK NY 10036-8403

DATE PRINTED

02/02/09

MAINTENANCE FEE REMINDER

According to the records of the U.S. Patent and Trademark Office (USPTO) the maintenance fee for the patent(s) listed below (for which the above address is on record as the fee address under 37 CFR 1.363) has not been paid within the six-month period set forth in 37 CFR 1.362(d). THE MAINTENANCE FEE MAY STILL BE PAID WITH THE APPLICABLE SURCHARGE SET FORTH IN 37 CFR 1.20(h), WITHIN THE SIX-MONTH GRACE PERIOD SET FORTH IN 37 CFR 1.362(e).

Unless payment of the maintenance fee and the applicable surcharge is received in the USPTO within the six-month grace period, THE PATENT WILL EXPIRE AS OF THE END OF THE GRACE PERIOD. 35 U.S.C. 41(b).

The total payment due is the amount required on the date the fee is paid (and not necessarily the amount indicated below). All USPTO fees (including maintenance fees) are subject to change. Customers should refer to the USPTO Web site (www.uspto.gov) or call the Maintenance Fee Branch at 571-272-6500 for the most current fee amounts for the correct entity status before submitting payment. The total payment due indicated below is based on the entity status according to current Office records (shown below).

Timely payment of the total payment due is required in order to avoid expiration of the patent. A maintenance fee payment can be timely made using the certificate of mailing or transmission procedure set forth in 37 CFR 1.8.

PATENT NUMBER	FEE MAINT. AMT SURCHG	U.S. APPL NUMBER	PATENT ISSUE DATE	APPL. FILING DATE	PAY- MENT YEAR	TOTAL ATTORNEY SMALL ENTITY?	PYMT DUE	DOCKET NUMBER
5652544	4110 130	08558344	07/29/97	11/16/95	12	NO	4240	P/214-33

The maintenance fee and the applicable surcharge can be paid quickly and easily over the Internet at www.uspto.gov by electronic funds transfer (EFT), credit card, or USPTO deposit account payment methods. The mailing address for all maintenance fee payments not electronically submitted over the Internet is: U.S. Patent and Trademark Office, P.O. Box 979070, St. Louis, MO 63197-9000.

Direct any questions about this notice to: Mail Stop M Correspondence, Director of the United States Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450.

NOTE: This notice was automatically generated based on the amount of time that elapsed since the date a patent was granted. It is possible that the patent term may have ended or been shortened due to a terminal disclaimer that was filed in the application. Also, for any patent that issued from an application filed on or after June 8, 1995 containing a specific reference to an earlier filed application or applications under 35 U.S.C. 120, 121, or 365(c), the patent term ends 20 years from the date on which the earliest such application was filed, unless the term was adjusted or extended under 35 U.S.C. 154 or 156. Patentee should determine the relevant patent term for a patent before paying the maintenance fee.

MF4401 (7/2007)

PATENT APPLICATION FEE DETERMINATION RECORD					Application or Docket Number	
Effective October 1, 1995						
CLAIMS AS FILED - PART I						
(Column 1)		(Column 2)		SMALL ENTITY		OR
FOR	NUMBER FILED	NUMBER EXTRA		RATE	FEE	
BASIC FEE					375.00	OR
TOTAL CLAIMS		minus 20 = *		x\$11=		OR
INDEPENDENT CLAIMS		minus 3 = *		x39=		OR
MULTIPLE DEPENDENT CLAIM PRESENT				+125=		OR
				TOTAL		OR
<small>* If the difference in column 1 is less than zero, enter "0" in column 2</small>						
CLAIMS AS AMENDED - PART II						
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE	ADDITIONAL FEE
	Total	Minus	**	=	x\$11=	OR
	Independent	Minus	***	=	x39=	OR
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				+125=	OR
					TOTAL ADDIT. FEE	OR
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE	ADDITIONAL FEE
	Total	Minus	**	=	x\$11=	OR
	Independent	Minus	***	=	x39=	OR
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				+125=	OR
					TOTAL ADDIT. FEE	OR
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY
AMENDMENT C	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE	ADDITIONAL FEE
	Total	Minus	**	=	x\$11=	OR
	Independent	Minus	***	=	x39=	OR
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				+125=	OR
					TOTAL ADDIT. FEE	OR

PATENT APPLICATION FEE DETERMINATION RECORD Effective October 1, 1995					Application or Docket Number	
CLAIMS AS FILED - PART I (Column 1) (Column 2)						
FOR	NUMBER FILED	NUMBER EXTRA				
BASIC FEE						
TOTAL CLAIMS	minus 20 =		*			
INDEPENDENT CLAIMS	minus 3 =		*			
MULTIPLE DEPENDENT CLAIM PRESENT						
* If the difference in column 1 is less than zero, enter "0" in column 2						
CLAIMS AS AMENDED - PART II (Column 1) (Column 2) (Column 3)						
AMENDMENT A	B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	SMALL ENTITY RATE	OTHER THAN SMALL ENTITY RATE
	Total	* 37	Minus	** 30	= 17	= 17
	Independent	* 4	Minus	*** 3	= 1	= 1
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM					
	TOTAL ADDIT. FEE 226					
AMENDMENT B	C	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	SMALL ENTITY RATE	OTHER THAN SMALL ENTITY RATE
	Total	* 26	Minus	** 37	=	=
	Independent	* 2	Minus	*** 4	=	=
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM					
	TOTAL ADDIT. FEE					
AMENDMENT C		CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	SMALL ENTITY RATE	OTHER THAN SMALL ENTITY RATE
	Total	*	Minus	**	=	=
	Independent	*	Minus	***	=	=
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM					
	TOTAL ADDIT. FEE					

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
 ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."
 *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."
 The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Form PTO 1130
(REV 2/94)

U.S. DEPARTMENT OF COMMERCE
Patent and Trademark Office

PACE DATA ENTRY CODING SHEET

1ST EXAMINER

2ND EXAMINER

DATE

DATE

APPLICATION NUMBER

08/558344

TYPE APPL

2

FILING DATE

11/16/95

SPECIAL HANDLING

φ

GROUP ART UNIT

2515

CLASS

33φ

SHEETS OF DRAWING

11

TOTAL CLAIMS

-2φ

INDEPENDENT CLAIMS

+3

SMALL ENTITY?

φ

FILING FEE

-75φ

FOREIGN LICENSE

N

ATTORNEY DOCKET NUMBER

P/214-33

CONTINUITY DATA

CONT STATUS CODE	PARENT APPLICATION SERIAL NUMBER	PCT APPLICATION SERIAL NUMBER	PARENT PATENT NUMBER	PARENT FILING DATE
φ 2	φ 8337	157		11/09/94
2				

PCT/FOREIGN APPLICATION DATA

FOREIGN PRIORITY CLAIMED	COUNTRY CODE	PCT/FOREIGN APPLICATION SERIAL NUMBER	FOREIGN FILING DATE

Table of Contents

1. US5652544A Apparatus and method for programming an amplifier
-

Family 1/1

1 record(s) per family

Record 1/1 US5652544A Apparatus and method for programming an amplifier

Title: Apparatus and method for programming an amplifier

Title - DWPI: Amplifier with portable programmer receives input via keypad which is transmitted from programmer via microprocessor to signal processing controller which changes signal processing functions or function parameters

Priority Number: US1994337157A

Priority Date: 1994-11-09

Application Number: US1995558344A

Application Date: 1995-11-16

Publication Date: 1997-07-29

IPC Class Table:

IPC	Section	Class	Subclass	Class Group	Subgroup
H03G000300	H	H03	H03G	H03G0003	H03G000300

IPC Class Table - DWPI:

IPC - DWPI	Section - DWPI	Class - DWPI	Subclass - DWPI	Class Group - DWPI	Subgroup - DWPI
H03F000100	H	H03	H03F	H03F0001	H03F000100

Assignee/Applicant: Crest Audio Inc.,Paramus,NJ,US

JP F Terms:

JP FI Codes:

Assignee - Original: Crest Audio Inc.

Any CPC Table:

Type	Invention	Additional	Version	Office
Current	H03G 3/00	-	20130101	EP

ECLA: H03G000300

Abstract:

An apparatus and method for programming an amplifier includes an amplifier and a portable programmer that is removably connectable to the amplifier. The portable programmer includes a microprocessor, a keypad, and a display screen. The amplifier includes a programming input port, a signal processing circuit, a power amplifier and a control circuit. When the portable programmer is connected to the amplifier, information relating to parameter of various signal processing circuit elements can be read and modified through the programmer. The information input via the keypad and displayed on the display screen is transmitted from the programmer via the microprocessor to the signal processing control circuit to change signal processing functions and/or signal process function parameters of at least one of the signal processing circuit elements. As a result, processing of a signal transmitted through the amplifier is changed so that a sound produced by the signal can be modified. The signal processing circuit elements remain programmed when the programmer is removed and/or power is disconnected.

Language of Publication: EN**INPADOC Legal Status Table:**

Gazette Date	Code	INPADOC Legal Status Impact
2009-02-02	REMI	-
Description: MAINTENANCE FEE REMINDER MAILED		
2009-01-23	FPAY	+
Description: FEE PAYMENT		
2004-11-26	FPAY	+
Description: FEE PAYMENT		
2001-01-04	FPAY	+
Description: FEE PAYMENT		

Post-Issuance (US):**Reassignment (US) Table:****Maintenance Status (US):**

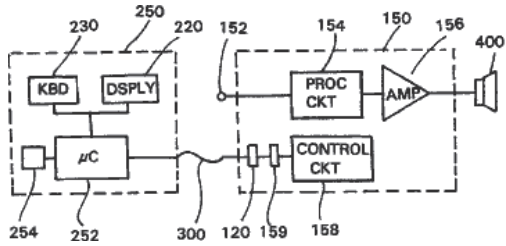
Litigation (US): 2013-09-27 2013 Crest Audio, Inc. QSC Audio Products, LLC S.D. Missouri
3:13cv00610

Opposition (EP):

License (EP):

EPO Procedural Status:

Front Page Drawing:



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USPTO Maintenance Report

Patent Bibliographic Data				10/24/2013 09:46 AM	
Patent Number:	5652544		Application Number:	08558344	
Issue Date:	07/29/1997		Filing Date:	11/16/1995	
Title:	APPARATUS AND METHOD FOR PROGRAMMING AN AMPLIFIER				
Status:	4th, 8th and 12th year fees paid			Entity:	LARGE
Window Opens:	N/A	Surcharge Date:	N/A	Expiration:	N/A
Fee Amt Due:	Window not open	Surchg Amt Due:	Window not open	Total Amt Due:	Window not open
Fee Code:					
Surcharge Fee Code:					
Most recent events (up to 7):	02/02/2009 01/23/2009 11/26/2004 01/08/2001 01/04/2001		Maintenance Fee Reminder Mailed. Payment of Maintenance Fee, 12th Year, Large Entity. Payment of Maintenance Fee, 8th Year, Large Entity. Payor Number Assigned. Payment of Maintenance Fee, 4th Year, Large Entity. --- End of Maintenance History ---		
Address for fee purposes:	OSTROLENK FABER LLP 1180 AVENUE OF THE AMERICAS NEW YORK NY 10036-8403				