EUROPEAN PATENT OFFICE
U.S. PATENT AND TRADEMARK OFFICE

CPC NOTICE OF CHANGES 268

DATE: JANUARY 1, 2018

PROJECT RP0159

The following classification changes will be effected by this Notice of Changes:

Action	**Subclass**	**Group(s)**
Symbols deleted:	G10K	11/1782
	G10K	11/1784
	G10K	11/1786
	G10K	11/1788
Symbols newly created:	G10K	11/1781
	G10K	11/17813
	G10K	11/17815
	G10K	11/17817
	G10K	11/17819
	G10K	11/17821
	G10K	11/17823
	G10K	11/17825
	G10K	11/17827
	G10K	11/1783
	G10K	11/17833
	G10K	11/17835
	G10K	11/17837
	G10K	11/1785
	G10K	11/17853
	G10K	11/17854
	G10K	11/17855
	G10K	11/17857
	G10K	11/17861
	G10K	11/1787
	G10K	11/17873
	G10K	11/17875
	G10K	11/17879
	G10K	11/17881
	G10K	11/17883
	G10K	11/17885
Title wording change:	G10K	subclass
	G10K	11/00
	G10K	11/16
Definitions Modified:	G10K	subclass
	G10K	11/00
	G10k	11/16
	G10K	11/178

CPC Form – v.4

CPC NOTICE OF CHANGES 268

DATE: JANUARY 1, 2018

PROJECT RP0159

Action	Subclass	Group(s)
Scheme Warnings To Be Added:	G10K	11/178
	G10K	11/1781
	G10K	11/1783
	G10K	11/1785
	G10K	11/1787
Scheme Notes To Be Added:	G10K	11/178
	G10K	11/17885

No other subclasses/groups are impacted by this Notice of Changes.

This Notice of Changes includes the following *[Check the ones included]:*

1. CLASSIFICATION SCHEME CHANGES
    ☒ A. New, Modified or Deleted Group(s)

    ☒ B. New, Modified or Deleted Warning Notice(s)

    ☒ C. New, Modified or Deleted Note(s)

    ☐ D. New, Modified or Deleted Guidance Heading(s)

2. DEFINITIONS (New or Modified)
    ☒ A. DEFINITIONS (Full definition template)

    ☐ B. DEFINITIONS (Definitions Quick Fix)

3. ☒ REVISION CONCORDANCE LIST (RCL)

4. ☒ CHANGES TO THE CPC-TO-IPC CONCORDANCE LIST (CICL)

5. ☐ CROSS-REFERENCE LIST (CRL)

1. CLASSIFICATION SCHEME CHANGES

    A. New, Modified or Deleted Group(s)

SUBCLASS G10K - SOUND-PRODUCING DEVICES (sound-producing toys A63H5/00; musical instruments or parts thereof, see the relevant subclass, e.g. G10D); ACOUSTICS NOT OTHERWISE PROVIDED FOR (systems using the reflection or reradiation of acoustic waves G01S15/00; generating seismic energy G01V1/02; signalling or calling arrangements, alarm arrangements G08B; piezo-electric electrostrictive or magnetostrictive elements in general H01L41/00; transmission systems using infrasonic, sonic, or ultrasonic waves H04B11/00; loudspeakers, microphones, gramophone pick-ups or like acoustic electromechanical transducers H04R)

Type*	Symbol	Indent Level Number of dots (e.g. 0, 1, 2)	Title (new or modified) "CPC only" text should normally be enclosed in {curly brackets}**	Transferred to#
M	G10K		SOUND-PRODUCING DEVICES (sound-producing toys A63H 5/00); METHODS OR DEVICES FOR PROTECTING AGAINST, OR FOR DAMPING, NOISE OR OTHER ACOUSTIC WAVES IN GENERAL; ACOUSTICS NOT OTHERWISE PROVIDED FOR	
M	G10K11/00	0	Methods or devices for transmitting, conducting or directing sound in general; Methods or devices for protecting against, or for damping, noise or other acoustic waves in general	
M	G10K11/16	1	Methods or devices for protecting against, or for damping, noise or other acoustic waves in general (G10K11/36 takes precedence)	
U	G10K11/175	2	using interference effects; Masking sound	
C	G10K11/178	3	by electro-acoustically regenerating the original acoustic waves in anti-phase	G10K11/178, G10K11/1781, G10K11/17813, G10K11/17815, G10K11/17817, G10K11/17819, G10K11/17821, G10K11/17823, G10K11/17825, G10K11/17827, G10K11/1783, G10K11/17833, G10K11/17835, G10K11/17837,

Type*	Symbol	Indent Level Number of dots (e.g. 0, 1, 2)	Title (new or modified) "CPC only" text should normally be enclosed in {curly brackets}**	Transferred to#
				G10K11/1785, G10K11/17853, G10K11/17854, G10K11/17855, G10K11/17857, G10K11/17861, G10K11/1787, G10K11/17873, G10K11/17875, G10K11/17879, G10K11/17881, G10K11/17883, G10K11/17885
N	G10K11/1781	4	{characterised by the analysis of input or output signals, e.g. frequency range, modes, transfer functions}	
N	G10K11/17813	5	{characterised by the analysis of the acoustic paths, e.g. estimating, calibrating or testing of transfer functions or cross-terms}	
N	G10K11/17815	6	{between the reference signals and the error signals, i.e. primary path}	
N	G10K11/17817	6	{between the output signals and the error signals, i.e. secondary path}	
N	G10K11/17819	6	{between the output signals and the reference signals, e.g. to prevent howling}	
D	G10K11/1782	4	{using single input}	<administrative transfer to G10K11/178>
N	G10K11/17821	5	{characterised by the analysis of the input signals only}	
N	G10K11/17823	6	{Reference signals, e.g. ambient acoustic environment}	
N	G10K11/17825	6	{Error signals}	
N	G10K11/17827	6	{Desired external signals, e.g. pass-through audio such as music or speech}	
N	G10K11/1783	4	{handling or detecting of non-standard events or conditions, e.g. changing modes under specific operating conditions}	
N	G10K11/17833	5	{by using a self-diagnostic function or a malfunction prevention function, e.g. detecting abnormal output levels}	
N	G10K11/17835	6	{using detection of abnormal input signals}	

CPC Form – v.4

Type*	Symbol	Indent Level Number of dots (e.g. 0, 1, 2)	Title (new or modified) "CPC only" text should normally be enclosed in {curly brackets}**	Transferred to#
N	G10K11/17837	5	{by retaining part of the ambient acoustic environment, e.g. speech or alarm signals that the user needs to hear}	
D	G10K11/1784	4	{using multiple inputs; single output}	<administrative transfer to G10K11/178>
N	G10K11/1785	4	{Methods, e.g. algorithms; Devices (G10K11/1781, G10K11/1783 take precedence)}	
N	G10K11/17853	5	{of the filter, e.g. leakage tuning}	
N	G10K11/17854	6	{the filter being an adaptive filter}	
N	G10K11/17855	5	{for improving speed or power requirements}	
N	G10K11/17857	5	{Geometric disposition, e.g. placement of microphones}	
D	G10K11/1786	4	{using multiple inputs; multiple outputs}	<administrative transfer to G10K11/178>
N	G10K11/17861	5	{using additional means for damping sound, e.g. using sound absorbing panels}	
N	G10K11/1787	4	{General system configurations}	
N	G10K11/17873	5	{using a reference signal without an error signal, e.g. pure feedforward}	
N	G10K11/17875	5	{using an error signal without a reference signal, e.g. pure feedback}	
N	G10K11/17879	5	{using both a reference signal and an error signal}	
D	G10K11/1788	4	{Structural details}	<administrative transfer to G10K11/178>
N	G10K11/17881	6	{the reference signal being an acoustic signal, e.g. recorded with a microphone}	
N	G10K11/17883	6	{the reference signal being derived from a machine operating condition, e.g. engine RPM or vehicle speed}	
N	G10K11/17885	5	{additionally using a desired external signal, e.g. pass-through audio such as music or speech}	

*N = new entries where reclassification into entries is involved; C = entries with modified file scope where reclassification of documents from the entries is involved; Q = new entries which are firstly populated with documents via administrative transfers from deleted (D) entries. Afterwards, the transferred documents into the Q entry will either stay or be moved to more appropriate entries, as determined by intellectual reclassification; E= existing entries with enlarged file scope, which receive documents from C or D entries, e.g. when a limiting reference is removed from the entry title; M = entries with no change to the file scope (no reclassification); D = deleted entries; F = frozen entries will be deleted once reclassification of documents from the entries is completed; U = entries that are unchanged.

NOTES:

- **No {curly brackets} are used for titles in CPC only <u>subclasses</u>, e.g. C12Y, A23Y; 2000 series symbol titles of groups found at the end of schemes (orthogonal codes); or the Y section titles. The {curly brackets} <u>are</u> used for 2000 series symbol titles found interspersed throughout the main trunk schemes (breakdown codes).
- For U groups, the minimum requirement is to include the U group located immediately prior to the N group or N group array, in order to show the N group hierarchy and improve the readability and understanding of the scheme. Always include the symbol, indent level and title of the U group in the table above.
- All entry types should be included in the scheme changes table above for better understanding of the overall scheme change picture. Symbol, indent level, and title are required for all types except "D" which requires only a symbol.
- #"Transferred to" column <u>must</u> be completed for all C, D, F, and Q type entries. F groups will be deleted once reclassification is completed.
- When multiple symbols are included in the "Transferred to" column, avoid using ranges of symbols in order to be as precise as possible.
- For administrative transfer of documents, the following text should be used: "< administrative transfer to XX>" or "<administrative transfer to XX and YY simultaneously>" when administrative transfer of the same documents is to more than one place.
- Administrative transfer to main trunk groups is assumed to be "invention information", unless otherwise indicated, and to 2000 series groups is assumed to be "additional information".

DATE: JANUARY 1, 2018

PROJECT RP0159

B. New, Modified or Deleted Warning notice(s)

SUBCLASS G10K - SOUND-PRODUCING DEVICES (sound-producing toys A63H5/00; musical instruments or parts thereof, see the relevant subclass, e.g. G10D); ACOUSTICS NOT OTHERWISE PROVIDED FOR (systems using the reflection or reradiation of acoustic waves G01S15/00 ; generating seismic energy G01V1/02; signalling or calling arrangements, alarm arrangements G08B; piezo-electric electrostrictive or magnetostrictive elements in general H01L41/00; transmission systems using infrasonic, sonic, or ultrasonic waves H04B11/00; loudspeakers, microphones, gramophone pick-ups or like acoustic electromechanical transducers H04R)

Type*	Location	Old Warning notice	New/Modified Warning notice
N	G10K11/178		Group G10K11/178 is impacted by reclassification into groups G10K11/1781 - G10K11/17885. All groups listed in this Warning should be considered in order to perform a complete search.
N	G10K11/1781		Groups G10K11/1781, G10K11/17813, G10K11/17815, G10K11/17817, G10K11/17819, G10K11/17821, G10K11/17823, G10K11/17825, G10K11/17827 are incomplete pending reclassification of documents from group G10K11/178. All groups listed in this Warning should be considered in order to perform a complete search.
N	G10K11/1783		Groups G10K11/1783, G10K11/17833, G10K11/17835 and G10K11/17837 are incomplete pending reclassification of documents from group G10K11/178. All groups listed in this Warning should be considered in order to perform a complete search.
N	G10K11/1785		Groups G10K11/1785, G10K11/17853, G10K11/17854, G10K11/17855, G10K11/17857 and G10K11/17861 are incomplete pending reclassification of documents from group G10K11/178. All groups listed in this Warning should be considered in order to perform a complete search.

CPC Form – v.4

Type*	Location	Old Warning notice	New/Modified Warning notice
N	G10K11/1787		Groups G10K11/1787, G10K11/17873, G10K11/17875, G10K11/17879, G10K11/17881, G10K11/17883 and G10K11/17885 are incomplete pending reclassification of documents from group G10K11/178. All groups listed in this Warning should be considered in order to perform a complete search.

*N = new warning, M = modified warning, D = deleted warning

NOTE: The "Location" column only requires the symbol PRIOR to the location of the warning. No further directions such as "before" or "after" are required.

C.   New, Modified or Deleted Note(s)

SUBCLASS G10K - SOUND-PRODUCING DEVICES (sound-producing toys A63H5/00; musical instruments or parts thereof, see the relevant subclass, e.g. G10D); ACOUSTICS NOT OTHERWISE PROVIDED FOR (systems using the reflection or reradiation of acoustic waves G01S15/00; generating seismic energy G01V1/02; signalling or calling arrangements, alarm arrangements G08B; piezo-electric electrostrictive or magnetostrictive elements in general H01L41/00; transmission systems using infrasonic, sonic, or ultrasonic waves H04B11/00; loudspeakers, microphones, gramophone pick-ups or like acoustic electromechanical transducers H04R)

Type*	Location	Old Note	New/Modified Note
N	G10K11/178		{When classifying in any of the groups G10K11/1781 - G10K11/17861, classification is also made in at least one subgroup of G10K11/1787.}
N	G10K11/17885		{When classifying in this group, classification is also made in the other appropriate groups under G10K11/1787.}

*N = new note, M = modified note, D = deleted note

NOTE: The "Location" column only requires the symbol PRIOR to the location of the note. No further directions such as "before" or "after" are required.

2. A. DEFINITIONS (Modified)

G10K

Limiting references

Delete: All of the rows in the existing Limiting references table, except for the following row; do not delete the row.

| Sound producing toys | A63H5/00 |

Insert: The following new Application-oriented references section.

Application-oriented references

Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:

Scaring devices, e.g. bird-scaring devices	A01M29/00
Hunting appliances	A01M31/00
Diagnosis using ultrasonic, sonic or infrasonic waves	A61B8/00
Vibration massage	A61H23/00
Devices for producing sleep by acoustical means	A61M21/00
Employing sonic or ultrasonic vibrations in chemical or physical processes	B01J19/10
Disintegrating devices using ultrasonic waves	B02C19/18
Spraying or atomising liquids using ultrasonic waves	B05B17/06
Acoustic devices used in vehicle signaling	B60Q5/00
Acoustic signal devices used on bicycles	B62J3/00
Fluid oscillators or pulse generators for fluid pressure systems	F15B21/12
Systems using the reflection or reradiation of acoustic waves	G01S15/00
Signaling or calling arrangements, alarm arrangements	G08B
Percussive musical instruments	G10D13/00

Informative references

Insert: The following four <u>new</u> rows in the *Informative references* table.

Piezo-electric, electrostrictive, or magnetostrictive elements, in general	H01L41/00
Transmission systems using infrasonic, sonic, or ultrasonic waves	H04B11/00
Loudspeakers, microphones, gramophone pick-ups, or the like, acoustic electromechanical transducers	H04R
Diaphragms for electromechanical transducers	H04R7/00

G10K11/00

Limiting references

Delete: The <u>entire</u> *Limiting references* section.

Informative references

Add: The following three <u>new</u> rows to the *Informative references* table.

Sound insulating materials	C04B26/00 - C04B38/00
Room acoustics	E04B1/99
Suppression of undesired vibrations	F16F7/00

G10K11/16

Limiting references

Delete: All of the rows in the existing *Limiting references* table, <u>except do not delete the following row</u>.

| Devices for manipulating acoustic surface waves | G10K11/36 |

Application-oriented references

Insert: The following <u>new</u> rows in the *Application-oriented references* table.

Sound insulation in boats or ships	B63B3/68
Sound insulation in aircraft	B64C1/40
Silencing jet engines	B64D33/06
Acoustic insulation for internal combustion engines	F02B77/13
Air-intakes for gas-turbine or jet-propulsion plants having provision for noise suppression	F02C7/045
Sound absorbing structures for jet-propulsion plants	F02K1/82
Intake silencers for internal-combustion engines	F02M35/00
Sound attenuation for pumps	F04D29/66
Means or arrangements for avoiding or reducing out-of-balance forces due to motion	F16F15/00
Suppressing noise in air-conditioning systems	F24F13/24
Arrangements for suppressing noise in direct-contact trickle coolers	F28C1/10
Silencers for weapons	F41A21/30

Insert: The following <u>new</u> *Informative references* section.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Sound insulation materials (see relevant places)	C04B26/00 – C04B38/00
Reduction of noise in permanent way	E01B19/00
Absorption of air-transmitted noise from road or railway traffic	E01F8/00
Noise insulation, absorption, or reflection in buildings	E04B1/74
Room acoustics	E04B1/99
Sound insulation in floors	E04F15/20
Gas-flow silencers or exhaust apparatus for machines or engines, in general, for internal combustion engines	F01N1/00
Suppression of undesired vibrations	F16F7/00
Preventing noise in valves	F16K47/02
Noise absorbers in pipes	F16L55/02
Surface acoustic wave resonators	H03H9/00

G10K11/178

Insert: The following <u>new</u> Definition statement section.

Definition statement

This place covers:

Acoustic active noise cancellation [ANC], i.e. issuing an acoustic wave field that destructively interferes with a pre-existing acoustic wave field, for the purposes of reducing or damping the pre-existing acoustic wave field.

The scheme has 4 main branches:

- G10K11/1781

The analysis of input signals, output signals, or relationships between them, which are used by the invention in a special way to achieve its goal is classified in G10K11/1781. For instance, if an application analyses a musical signal and turns off ANC if the music is very loud, G10K11/17827 should be assigned.

- G10K11/1783

The handling of specific non-standard conditions, e.g. detection of instabilities or other malfunctions in the device, or detection of specific signals that must not be cancelled, e.g. speech, sirens or warnings, is classified in G10K11/1783.

- G10K11/1785

Inventions about specific details, e.g. specific details of the adaptive filter, hardware or software implementations for lowering power requirements or improving speed, geometric placement of loudspeakers and microphones or combinations with other acoustic elements, are classified in G10K11/1785.

- G10K11/1787

The overall ANC circuit structure is classified in G10K11/1787, with the idea of having similar circuits together in one group. For instance, ANC in cars often involves a synthesizer using a reference signal based on engine parameters; as another example, systems in which music is to be played together with the ANC signal mostly have sub circuits that estimate and subtract the music signal from the error signal before the error signal is used to adapt the ANC signal.

Insert: The following new Relationships with other classification places section.

Relationships with other classification places

This group is a "function-oriented place" for acoustic active noise cancellation and covers active cancellation of acoustic noise by physical mixing of the pre-existing acoustic noise wave field with the generated acoustic wave field.

Noise cancellation in electronic or electroacoustic signals by mixing, processing or otherwise altering the signal inside the circuitry is classified elsewhere, even though the methods used might often be similar. For example, a phone cancelling or reducing noise that is part of a signal coming from a telephone network, e.g. line noise or echo noise, by filtering this signal, is not seen as acoustic noise cancellation within the scope of G10K11/178, but falls within the scope of H04M.

However, the mere application of ANC in telephones, e.g. a phone reducing or cancelling ambient noise around the user, by mixing an acoustic anti-noise signal into the signal coming from the network, to destructively interfere with the ambient acoustic noise, is seen as applying acoustic noise cancellation within the scope of G10K11/178.

Insert: The following <u>new</u> References sections.

References

Application-oriented References

Exhaust gas silencers for internal combustion engines characterised by using active interference effect	F01N1/065
Air-conditioners with means for suppressing noise	F24F13/24
Suppression of mechanical vibrations	F16F
Aircraft with means for silencing of exhaust or propulsion jets	B64D33/06
Air intakes for gas-turbine plants having provisions for noise suppression	F02C7/045
Intake silencers for internal combustion engines	F02M35/125
Earpieces with reduction of ambient noise	H04R1/1083
Substation equipment with measures to prevent eavesdropping	H04M1/19
Vibration damping devices for rotor craft	B64C27/001
Means for active and/or passive vibration damping or acoustical noise suppression in gradient magnet coil systems	G01R33/3854
Sound attenuation for non-positive displacement pumps	F04D29/663
Noise absorbers in pipes	F16L55/033
Electric external protective devices for the ears for active noise reduction	A61F2011/145

Informative References

Passive noise cancellation	G10K11/162 – G10K11/172
Circuits for combining the signals of two or more microphones	H04R3/005
Deaf-aid sets with arrangements for obtaining a desired directivity characteristic	H04R25/40
Adaptive networks and filters in general	H03H21/00
Protective devices for the ears	A61F11/06
Hearing devices using active noise cancelation	H04R2460/01
Deaf-aid sets with prevention of acoustic reaction	H04R25/45
Noise filtering for speech processing	G10L21/0208

Circuits for transducers, loudspeakers or microphones for preventing acoustic reaction	H04R3/02
Echo cancellers in two-way loudspeaking telephone systems	H04M9/082
Signal processing for reducing noise in signals on information storages	G11B20/24

Special rules of classification within this group

Delete: The existing Special Rules paragraphs

For further details, including details which may already be covered by specific subgroups of G10K 11/178, the Indexing Codes G10K 2210/00 and subcodes should be applied.
G10K 2210/00 covers "Details of active noise control [ANC], e.g.:
Applications, e.g. in aircos, jet engines, typewriters, dental equipment, synhrophasors or the like
Means (computational), e.g. algorithms, transfer functions, fuzzy logic, control strategies or the like;
Means (physical), e.g. actuator details, geometries, filters resonators or the like;
Miscellaneous, e.g. ageing, stability, howling, literature documents, mimicking sports cars or the like

Insert: In the Special Rules section, the following replacement text:

Classification in several subgroups is specifically encouraged in this scheme, especially in the general system configurations subgroup. For instance, a phone general device with active acoustic noise cancellation comprising a diagnostics function, and using a reference microphone, an error microphone and a desired music signal is classified under G10K11/17833, G10K11/17879 and G10K11/17885.

When classifying in G10K11/178, classifying additional information in the subgroups of G10K2210/00 is mandatory.

Insert: The following <u>new</u> Glossary of terms section:

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

plant	is interchangeably used to refer to both the primary path and the secondary path
primary path	is used to indicate the acoustic path from the noise source (rather than from the reference input) to the error microphone
feedforward	is used to indicate hybrid feedforward + feedback systems

Background

In acoustic anti-noise systems, an acoustic transducer (e.g. loudspeaker) generates an acoustic signal to compensate for an existing ambient noise signal, such that the total acoustic signal at a specific point or area (the so called "quiet zone") is minimized, by generating the noise signal in anti-phase.

To achieve this goal, a number of different input signals can be used:

- a reference signal (or "feedforward signal"), for detecting or predicting the noise to be canceled; this could be a microphone for recording the noise acoustically, or any other type of (non-acoustic) input that can be used to predict the noise;

- an error signal (or "feedback signal"), placed inside or close to the quiet zone, to continuously adapt the ANC output such that the quiet zone is truly quiet; and optionally,

- a desired external signal (e.g. "pass-through audio", music or speech), to be output by the acoustic transducer without being canceled by the ANC system.

In essence, the basic ANC system of Figure 1 predicts the noise in front of the loudspeaker from signal $x(n)$, by taking into account a time delay and acoustic distortions, and outputs it in anti-phase through the loudspeaker. Ideally, this completely cancels the noise. The input $e(n)$ is used to fine-tune the system, by adapting the ANC filtering such that $e(n)$ is minimized.
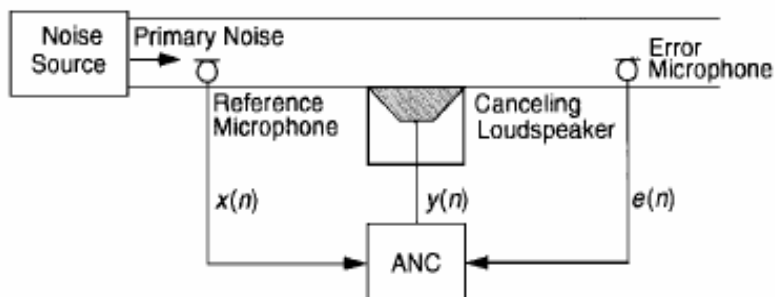
Figure 1. Combined feedforward and feedback ANC in a duct.

It is possible to do ANC with only a reference signal, only an error signal or with both reference and error signals. The desired external signal is an optional extension of the ANC system. ANC with only a reference signal (i.e. without an error signal) is called pure feedforward ANC.

The acoustic path from the reference microphone to the error microphone is referred to here as the primary path, often denoted by P(z). Feedforward (and hybrid) ANC systems usually model this path to predict the noise at the error microphone from the detected reference signal.

The electro-acoustic path through the loudspeaker to the error microphone is referred to here as the secondary path, often denoted by S(z). Feedback (and hybrid) ANC systems model this path to compensate for non-linear effects of the loudspeaker and error microphone and the specific acoustic environment between the two. Also, this path is modeled to be able to remove the desired external signal from the measured error signal.

The electro-acoustic path through the loudspeaker to the reference microphone is sometimes referred to as the leakage path. This path is modeled to be able to remove the anti-noise signal itself from the measured reference signal, e.g. to prevent howling. Also, this path can be modeled to compensate for non-linear effects of the loudspeaker and reference microphone and the specific acoustic environment between the two.

Basic adaptive control is often performed using a combined model W(z) = -P(z) / S(z), which is multiplied by the secondary path, S(z), to arrive at a signal approximating the true P(z). See Figure 2.
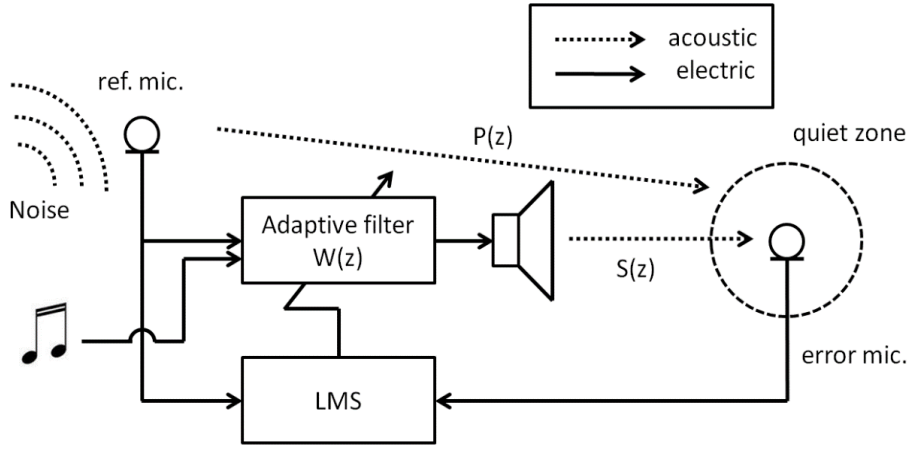
Figure 2. Adaptive feedforward ANC.

Often, the secondary path is also adaptively modeled to adapt to changes in the acoustic environment, such as movement of a telephone or head-phone with respect to the user's head.

The coupling through acoustic paths from the loudspeaker to the reference microphone is normally be kept as low as possible, so as to prevent howling (i.e. the ANC system detecting its own output as noise and worsening it). Confusingly, the word "feedback" is sometimes used for this coupling, in reference to the effect in musical performances.

Synonyms and Keywords

In patent documents, the following abbreviations are often used:

ANC	Active Noise Control
ANE	Active Noise Equalization
LMS	Least Mean Squares

3.   REVISION CONCORDANCE LIST (RCL)

Type*	From CPC Symbol (existing)	To CPC Symbol(s)
C	G10K11/178	G10K11/178, G10K11/1781, G10K11/17813, G10K11/17815, G10K11/17817, G10K11/17819, G10K11/17821, G10K11/17823, G10K11/17825, G10K11/17827, G10K11/1783, G10K11/17833, G10K11/17835, G10K11/17837, G10K11/1785, G10K11/17853, G10K11/17854, G10K11/17855, G10K11/17857, G10K11/17861, G10K11/1787, G10K11/17873, G10K11/17875, G10K11/17879, G10K11/17881, G10K11/17883, G10K11/17885
D	G10K11/1782	<administrative transfer to G10K11/178>
D	G10K11/1784	<administrative transfer to G10K11/178>
D	G10K11/1786	<administrative transfer to G10K11/178>
D	G10K11/1788	<administrative transfer to G10K11/178>

* C = entries with modified file scope where reclassification of documents from the entries is involved; Q = new entries which are firstly populated with documents via administrative transfers from deleted (D) entries. Afterwards, the transferred documents into the Q entry will either stay or be moved to more appropriate entries, as determined by intellectual reclassification; D = deleted entries.

NOTES:
- Only C, D, and Q type entries are included in the table above.
- When multiple symbols are included in the "To" column, avoid using ranges of symbols in order to be as precise as possible.
- For administrative transfer of documents, the following text should be used: "< administrative transfer to XX>" or "<administrative transfer to XX and YY simultaneously>" when administrative transfer of the same documents is to more than one place.
- Administrative transfer to main trunk groups is assumed to be "invention information", unless otherwise indicated, and to 2000 series groups is assumed to be "additional information".

4. CHANGES TO THE CPC-TO-IPC CONCORDANCE LIST (CICL)

CPC	**IPC**	**Action***
G10K11/1781	G10K11/178	NEW
G10K11/17813	G10K11/178	NEW
G10K11/17815	G10K11/178	NEW
G10K11/17817	G10K11/178	NEW
G10K11/17819	G10K11/178	NEW
G10K11/17821	G10K11/178	NEW
G10K11/17823	G10K11/178	NEW
G10K11/17825	G10K11/178	NEW
G10K11/17827	G10K11/178	NEW
G10K11/1783	G10K11/178	NEW
G10K11/17833	G10K11/178	NEW
G10K11/17835	G10K11/178	NEW
G10K11/17837	G10K11/178	NEW
G10K11/1785	G10K11/178	NEW
G10K11/17853	G10K11/178	NEW
G10K11/17854	G10K11/178	NEW
G10K11/17855	G10K11/178	NEW
G10K11/17857	G10K11/178	NEW
G10K11/17861	G10K11/178	NEW
G10K11/1787	G10K11/178	NEW
G10K11/17873	G10K11/178	NEW
G10K11/17875	G10K11/178	NEW
G10K11/17879	G10K11/178	NEW
G10K11/17881	G10K11/178	NEW
G10K11/17883	G10K11/178	NEW
G10K11/17885	G10K11/178	NEW
G10K11/1782		DELETE
G10K11/1784		DELETE
G10K11/1786		DELETE
G10K11/1788		DELETE

*Action column:
- For an (N) or (Q) entry, provide an IPC symbol and complete the Action column with "NEW."
- For an existing CPC main trunk entry or indexing entry where the existing IPC symbol needs to be changed, provide an updated IPC symbol and complete the Action column with "UPDATED."
- For a (D) CPC entry or indexing entry complete the Action column with "DELETE." IPC symbol does not need to be included in the IPC column.
- For an (N) 2000 series CPC entry which is positioned within the main trunk scheme (breakdown code) provide an IPC symbol and complete the action column with "NEW".
- For an (N) 2000 series CPC entry positioned at the end of the CPC scheme (orthogonal code), with no IPC equivalent, complete the IPC column with "CPCONLY" and complete the action column with "NEW".

NOTES:
- F symbols are not included in the CICL table above.

CPC Form – v.4

- E and M symbols are not included in the CICL table above unless a change to the existing IPC is desired.