

SECTION G — PHYSICS

G10 MUSICAL INSTRUMENTS; ACOUSTICS

Note(s)

1. This class covers all sound-emitting devices, in general, whether or not they may be considered as being musical.
2. In this class, the following expression is used with the meaning indicated:
 - "musical instrument" does not exclude devices emitting a single sound signal.
3. The following Class Index is given in place of subclass indexes, to show the grouping of the elaborations belonging to different subclasses, under the following three fundamental types:
 - wind instruments;
 - string instruments;
 - percussion instruments,

which relate clearly to the majority of instruments.

4. There are of course some instruments of which the principle of operation belongs less clearly to one of the three types mentioned in Note (3). They correspond to groups G10D 17/00 or G10K 7/00, G10K 9/00 or G10K 15/04, all the other groups normally finding a definite place.

Class index

ACOUSTICS; OPERATIONS ON SOUND WAVES

Speech analysis or synthesis; speech recognition; audio analysis or processing.....G10L
 Methods or devices for transmission of sound or protection against sound, not otherwise provided for....G10K 11/00, G10K 13/00
 Acoustics not otherwise provided for.....G10K 15/00

WIND INSTRUMENTS

General features; details or accessories.....G10D 7/00, G10D 9/00
 Organs, harmoniums or similar instruments.....G10B 1/00, G10B 3/00
 Accordions, concertinas or similar instruments; other types of instruments.....G10D 11/00, G10D 7/00
 Whistles; horns.....G10K 5/00, G10K 9/00

STRINGED INSTRUMENTS

General features; details or accessories.....G10D 1/00, G10D 3/00
 Pianos, harpsichords, spinets or similar stringed musical instruments with one or more keyboards; tools
 and methods for the manufacture or maintenance thereof.....G10C 1/00, G10C 3/00, G10C 9/00
 Other instruments.....G10D 1/00

PERCUSSION INSTRUMENTS

Bells, rattles or similar instruments.....G10K 1/00, G10K 3/00
 Other instruments.....G10D 13/00

OTHER PARTICULAR DEVICES; DEVICES USING UNDEFINED PRINCIPLES; COMBINATIONS OF INSTRUMENTS; MUSIC ACCESSORIES

Electrophonic musical instruments.....G10H
 Automatic musical instruments.....G10F
 Sirens; devices with vibrators.....G10K 7/00, G10K 9/00
 Combinations: of pianos with other instruments; of other instruments.....G10C 5/00, G10D 15/00
 Music accessories.....G10G

INSTRUMENTS NOT OTHERWISE PROVIDED FOR.....G10D 17/00

G10B **ORGANS; HARMONIUMS OR LIKE WIND-ACTUATED MUSICAL INSTRUMENTS** (mouth organs G10D 7/12; accordions G10D 11/00; aspects of automatic actuation G10F 1/12; combinations of microphones, pick-ups or amplifiers with musical instruments G10H; electronic organs G10H 7/00)

1/00 **General design**

- 1/02 • of organs
- 1/04 • • electrically operated
- 1/06 • • fluid operated
- 1/08 • of harmoniums

3/00 **Details or accessories**

- 3/02 • Blowers

- 3/04 • Reservoirs
- 3/06 • Valves; Sleeves
- 3/08 • Pipes, e.g. open pipes or reed pipes
- 3/10 • Actions, e.g. coupler
- 3/12 • Keys or keyboards; Manuals
- 3/14 • Pedals or pedal boards
- 3/16 • Swell chambers; Accentuating means
- 3/18 • Tremolo-producing devices

G10B

- 3/20 • Transposing devices
- 3/22 • Details specially adapted for electrically-operated organs, e.g. contacts therein

G10C **PIANOS, HARPSICHORDS, SPINETTS OR SIMILAR STRINGED MUSICAL INSTRUMENTS WITH ONE OR MORE KEYBOARDS** (non-musical aspects of toy pianos A63H 5/00; aspects of automatic actuation G10F; combinations of microphones, pick-ups or amplifiers with musical instruments G10H)

- 1/00 General design**
 - 1/02 • of upright pianofortes
 - 1/04 • of grand pianofortes
 - 1/06 • of harpsichords, spinets or similar stringed instruments
- 3/00 Details or accessories**
 - 3/02 • Cases
 - 3/04 • Frames; Bridges; Bars
 - 3/06 • Resonating means, e.g. resonant strings, soundboards; Fastenings of the resonating means
 - 3/08 • Arrangements of strings
 - 3/10 • Tuning pins or straining devices
 - 3/12 • Keyboards; Keys
 - 3/14 • • for actuation by the feet
 - 3/16 • Actions
- 3/18 • • Hammers
- 3/20 • • involving the use of hydraulic, pneumatic, or electromagnetic means
- 3/22 • • for grand pianofortes
- 3/24 • • for reciprocating of tremolo
- 3/26 • Pedals or pedal mechanisms for half-blow or similar sound-modifying
- 3/28 • Transposing devices
- 3/30 • Couplers, e.g. for playing octaves
- 5/00 Combinations with other musical instruments, e.g. with bells or xylophones**
- 9/00 Methods or tools specially adapted for the manufacture or maintenance of musical instruments covered by this subclass**

G10D **STRINGED MUSICAL INSTRUMENTS; WIND-ACTUATED MUSICAL INSTRUMENTS; ACCORDIONS OR CONCERTINAS; PERCUSSION MUSICAL INSTRUMENTS; MUSICAL INSTRUMENTS NOT OTHERWISE PROVIDED FOR** (automatic musical instruments G10F; combinations of musical instruments with microphones, pick-ups or amplifiers G10H; sound-producing devices not regarded as musical instruments G10K)

Note(s) [2010.01]

1. This subclass covers certain stringed musical instruments that can optionally include a keyboard, e.g. zithers.
2. This subclass does not cover pianos, harpsichords, spinets or similar stringed instruments provided by design with one or more keyboards, which are covered by subclass G10C.

- 1/00 General design of stringed musical instruments, e.g. violins, harps, mandolins, guitars, banjos or zithers**
 - 1/02 • of violins, violas, violoncellos, basses
 - 1/04 • of harps, lyres
 - 1/06 • of mandolins
 - 1/08 • of guitars
 - 1/10 • of banjos
 - 1/12 • of zithers, e.g. autoharp
- 3/00 Details of, or accessories for, stringed musical instruments, e.g. slide-bars**
 - 3/02 • Resonating means, horns, or diaphragms
 - 3/04 • Bridges, mutes, or capo-tastos
 - 3/06 • Fingerboards
 - 3/08 • • in the form of keyboards
 - 3/10 • Strings
 - 3/12 • Anchoring devices for strings, e.g. tail pieces or hitchpins
 - 3/14 • Tuning devices, e.g. pegs, pins or friction discs
 - 3/16 • Bows; Guides for bows; Plectra or like playing means
 - 3/18 • Chin-rests, hand-rests or guards as part of the instrument
- 7/00 General design of wind-actuated musical instruments, e.g. flutes, ocarinas, oboes, clarinets, bagpipes, saxophones, trumpets or mouth-organs** (accordions or concertinas G10D 11/00; organs or harmoniums G10B; whistles G10K)
 - 7/02 • of the type wherein an air current is directed against a ramp edge, e.g. flutes or recorders
 - 7/04 • • Ocarinas
 - 7/06 • of the type with a beating reed [Rohrblatt] or reeds, e.g. oboes, clarinets, bassoons or bagpipes
 - 7/08 • • Saxophones
 - 7/10 • of the type with a cupped mouthpiece, e.g. cornets, orchestral trumpets or trombones
 - 7/12 • of the type with free reeds [Zunge], e.g. mouth-organs or trumpets for children
- 9/00 Details of, or accessories for, wind-actuated musical instruments**
 - 9/02 • Mouthpieces; Reeds
 - 9/04 • Valves; Valve controls
 - 9/06 • Mutes
- 11/00 Accordions, concertinas or the like; Keyboards therefor**
 - 11/02 • Actions
- 13/00 Percussion musical instruments, e.g. drums, tambourines, timpani, castanets, cymbals, triangles, gongs or plates; Details or accessories**

13/02	• Drums; Tambourines	15/00	Combinations of different musical instruments (combinations with pianos, harpsichords, spinets or similar stringed instruments with one or more keyboards G10C 5/00)
13/04	• Timpani		
13/06	• Castanets, cymbals, triangles or other single-toned percussion musical instruments (bells G10K 1/00)		
13/08	• Multi-toned musical instruments, with sonorous bars, blocks, forks, gongs, plates, rods, or teeth	17/00	Musical instruments not provided for in any other group of this subclass, e.g. Aeolian harp, singing-flame musical instrument

G10F **AUTOMATIC MUSICAL INSTRUMENTS** (non-musical aspects of toy instruments A63H 5/00; sound-recording or reproducing G11B; working in association with recording or reproducing apparatus G11B 31/02)

Note(s)

This subclass does not cover aspects of musical instruments which are independent of the automatic actuation, which are covered by subclass G10B, G10C or G10D.

1/00	Automatic musical instruments	1/18	• • to be played by a bow
1/02	• Pianofortes with keyboard	1/20	• • to be plucked
1/04	• Pianofortes which have no keyboard	1/22	• Combinations of two or more instruments
1/06	• Musical boxes with plucked teeth, blades, or the like (combinations with other articles, <u>see</u> the relevant classes for the articles)	3/00	Independent players for keyboard instruments
1/08	• Percussion musical instruments	5/00	Details or accessories
1/10	• • Carillons	5/02	• Actions
1/12	• Wind-actuated instruments	5/04	• Tune barrels, sheets, rollers, spools, or the like
1/14	• • Barrel-organs	5/06	• • Driving or setting of tune barrels, discs, or the like; Winding, rewinding, or guiding of tune sheets or the like
1/16	• Stringed musical instruments other than pianofortes		

G10G **AIDS FOR MUSIC** (teaching music G09B 15/00); **SUPPORTS FOR MUSICAL INSTRUMENTS; OTHER AUXILIARY DEVICES OR ACCESSORIES FOR MUSIC OR MUSICAL INSTRUMENTS** (metronomes G04F 5/02)

1/00	Means for the representation of music	3/04	• using electrical means
1/02	• Chord or note indicators, fixed or adjustable, for keyboards or fingerboards	5/00	Supports for musical instruments
1/04	• Transposing; Transcribing	7/00	Other auxiliary devices or accessories, e.g. conductors' batons or separate holders for resin or strings
3/00	Recording music in notation form, e.g. recording the mechanical operation of a musical instrument	7/02	• Tuning forks or like devices
3/02	• using mechanical means only		

G10H **ELECTROPHONIC MUSICAL INSTRUMENTS; INSTRUMENTS IN WHICH THE TONES ARE GENERATED BY ELECTROMECHANICAL MEANS OR ELECTRONIC GENERATORS, OR IN WHICH THE TONES ARE SYNTHESISED FROM A DATA STORE**

Note(s)

This subclass covers musical instruments in which individual notes are constituted as electric oscillations under the control of a performer and the oscillations are converted to sound-vibrations by a loudspeaker or equivalent device.

1/00	Details of electrophonic musical instruments (keyboards applicable also to other musical instruments G10B, G10C; arrangements for producing a reverberation or echo sound G10K 15/08) [3]	1/047	• • • • by acousto-mechanical means, e.g. rotating speakers or sound deflectors [3]
1/02	• Means for controlling the tone frequencies, e.g. attack or decay; Means for producing special musical effects, e.g. vibratos or glissandos	1/053	• • • during execution only [3]
1/04	• • by additional modulation	1/055	• • • • by switches with variable impedance elements [3]
1/043	• • • Continuous modulation [3]	1/057	• • • • by envelope-forming circuits [3]
1/045	• • • • by electromechanical means [3]	1/06	• • Circuits for establishing the harmonic content of tones
		1/08	• • • by combining tones (G10H 1/14, G10H 1/16 take precedence; chord G10H 1/38; speech analysis or synthesis, G10L) [3]

G10H

- 1/10 • • • for obtaining chorus, celeste or ensemble effects (continuous modulation G10H 1/043) [3]
- 1/12 • • • by filtering complex waveforms (G10H 1/14, G10H 1/16 take precedence) [3]
- 1/14 • • • during execution (modulation during execution G10H 1/053) [3]
- 1/16 • • • by non-linear elements (G10H 1/14 takes precedence; generation of non-sinusoidal basic tones G10H 5/10) [3]
- 1/18 • Selecting circuits [3]
- 1/20 • • for transposition [3]
- 1/22 • • for suppressing tones; Preference networks [3]
- 1/24 • • for selecting plural preset register stops [3]
- 1/26 • • for automatically producing a series of tones [3]
- 1/28 • • • to produce arpeggios [3]
- 1/30 • • • to reiteratively sound two tones [3]
- 1/32 • Constructional details [3]
- 1/34 • • Switch arrangements, e.g. keyboards or mechanical switches peculiar to electrophonic musical instruments (keyboards applicable also to other musical instruments G10B, G10C) [3]
- 1/36 • Accompaniment arrangements [3]
- 1/38 • • Chord [3]
- 1/40 • • Rhythm (metronomes G04F 5/02) [3]
- 1/42 • • • comprising tone forming circuits [3]
- 1/44 • Tuning means [3]
- 1/46 • Volume control [3]
- 3/00 Instruments in which the tones are generated by electromechanical means**
- 3/02 • using mechanical interrupters
- 3/03 • using pick-up means for reading recorded waves, e.g. on rotating discs [3]
- 3/06 • • using photoelectric pick-up means
- 3/08 • • using inductive pick-up means
- 3/09 • • • using tapes or wires [3]
- 3/10 • • using capacitive pick-up means
- 3/12 • using mechanical resonant generators, e.g. strings or percussion instruments, the tones of which are picked up by electromechanical transducers, the electrical signals being further manipulated or amplified and subsequently converted to sound by a loudspeaker or equivalent device [3]
- 3/14 • • using mechanically actuated vibrators with pick-up means (G10H 3/24 takes precedence) [3]
- 3/16 • • • using a reed [3]
- 3/18 • • • using strings, e.g. electric guitars [3]
- 3/20 • • • using a tuning fork, rod or tube [3]
- 3/22 • • using electromechanically actuated vibrators with pick-up means (G10H 3/24 takes precedence) [3]
- 3/24 • • incorporating feedback means, e.g. acoustic [3]
- 3/26 • • • using electric feedback [3]
- 5/00 Instruments in which the tones are generated by means of electronic generators** (G10H 7/00 takes precedence) [3]
- 5/02 • using generation of basic tones
- 5/04 • • with semiconductor devices as active elements (G10H 5/10, G10H 5/12 take precedence)
- 5/06 • • tones generated by frequency multiplication or division of a basic tone
- 5/07 • • • resulting in complex waveforms [3]
- 5/08 • • tones generated by heterodyning
- 5/10 • using generation of non-sinusoidal basic tones, e.g. sawtooth
- 5/12 • • using semiconductor devices as active elements
- 5/14 • using electromechanical resonators, e.g. quartz crystals, as frequency-determining elements [3]
- 5/16 • using cathode ray tubes [3]
- 7/00 Instruments in which the tones are synthesised from a data store, e.g. computer organs** (synthesis of acoustic waves not specific to musical instruments G10K 15/02, G10L) [3, 5]
- 7/02 • in which amplitudes at successive sample points of a tone waveform are stored in one or more memories [5]
- 7/04 • • in which amplitudes are read at varying rates, e.g. according to pitch [5]
- 7/06 • • in which amplitudes are read at a fixed rate, the read-out address varying stepwise by a given value, e.g. according to pitch [5]
- 7/08 • by calculating functions or polynomial approximations to evaluate amplitudes at successive sample points of a tone waveform [5]
- 7/10 • • using coefficients or parameters stored in a memory, e.g. Fourier coefficients (G10H 7/12 takes precedence) [5]
- 7/12 • • by means of a recursive algorithm using one or more sets of parameters stored in a memory and the calculated amplitudes of one or more preceding sample points [5]

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 [6]

Note(s)

1. This subclass covers arrangements for generating mechanical vibrations in fluids.
2. This subclass covers also the production of sounds which may not be audible to human beings but which are audible to animals.
3. In this subclass, the following terms are used with the meanings indicated:
 - "acoustics" and "sound" cover the technical field dealing with mechanical vibrations at all infrasonic-, sonic- and ultrasonic frequencies. However, generation or transmission of mechanical waves, in general, is covered by subclass B06B, subject to the exception specified in Note (1) above.

- 1/00 Devices in which sound is produced by striking a resonating body, e.g. bells, chimes or gongs** (combinations with clocks or watches G04B, G04C; multi-toned musical instruments G10D 13/08; automatic carillons G10F 1/10)
- 1/06 • the resonating device having the shape of a bell, plate, rod, or tube (bells for towers G10K 1/28)
- 1/062 • • electrically operated
- 1/063 • • • the sounding member being a bell
- 1/064 • • • Operating or striking mechanisms therefor

- 1/065 • • • • • for timed or repeated operation
- 1/066 • • • the sounding member being a tube, plate, or rod
- 1/067 • • • • Operating or striking mechanisms therefor
- 1/068 • • • hydraulically operated; pneumatically operated
- 1/07 • • • mechanically operated; Hand bells; Bells for animals
- 1/071 • • • Hand bells; Bells for animals
- 1/072 • • • Operating or striking mechanisms therefor
- 1/074 • • • • with rotary clappers or shells
- 1/076 • • • • for timed or repeated operation
- 1/08 • • • Details or accessories of general applicability
- 1/10 • • • Sounding members; Mounting thereof; Clappers or other strikers
- 1/26 • • • Mountings; Casings
- 1/28 • • • Bells for towers or the like
- 1/30 • • • Details or accessories
- 1/32 • • • Sounding members; Clappers or other strikers
- 1/34 • • • Operating mechanisms
- 1/36 • • • Means for silencing or damping (means or arrangements for avoiding or reducing out-of-balance forces due to motion F16F 15/00)
- 1/38 • • • Supports; Mountings

3/00 Rattles or like noise-producing devices

5/00 Whistles

- 5/02 • Ultrasonic whistles [3]

7/00 Sirens

- 7/02 • in which the sound-producing member is rotated manually or by a motor (G10K 7/06 takes precedence)
- 7/04 • • by an electric motor
- 7/06 • in which the sound-producing member is driven by a fluid, e.g. by a compressed gas

9/00 Devices in which sound is produced by vibrating a diaphragm or analogous element, e.g. fog horns, vehicle hooters or buzzers (loudspeakers or like acoustic electromechanical transducers H04R)

- 9/02 • driven by gas, e.g. suction operated
- 9/04 • • by compressed gases, e.g. compressed air
- 9/06 • • produced by detonation
- 9/08 • driven by water or other liquids
- 9/10 • driven by mechanical means only
- 9/12 • electrically operated

Note(s)

This group does not cover the construction of, or circuits for, broadband-transducers such as loudspeakers or microphones, which are covered by subclass H04R.

- 9/122 • • using piezo-electric driving means [6]
- 9/125 • • • with a plurality of active elements [6]
- 9/128 • • using magnetostrictive driving means [6]
- 9/13 • • using electromagnetic driving means [3]
- 9/15 • • • Self-interrupting arrangements [3]
- 9/16 • • with means for generating the current by muscle power
- 9/18 • Details, e.g. bulbs, pumps, pistons, switches or casings
- 9/20 • • Sounding members

- 9/22 • • Mountings; Casings

11/00 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

- 11/02 • Mechanical acoustic impedances; Impedance matching, e.g. by horns; Acoustic resonators [3]
- 11/04 • • Acoustic filters [3]
- 11/08 • Non-electric sound-amplifying devices, e.g. non-electric megaphones (amplifying by horns G10K 11/02; amplifying by focusing G10K 11/26)
- 11/16 • Methods or devices for protecting against, or for damping, noise or other acoustic waves in general (G10K 11/36 takes precedence) [3]
- 11/162 • • Selection of materials [6]
- 11/165 • • • Particles in a matrix [6]
- 11/168 • • • Plural layers of different materials, e.g. sandwiches [6]

Note(s)

When classifying in this group, classification is also made in subclass B32B, insofar as any layered product is concerned.

- 11/172 • • using resonance effects [6]
- 11/175 • • using interference effects; Masking sound [6]
- 11/178 • • • by electro-acoustically regenerating the original acoustic waves in anti-phase [6]
- 11/18 • Methods or devices for transmitting, conducting or directing sound (G10K 11/02, G10K 11/36 take precedence; medical stethoscopes A61B 7/02) [3]
- 11/20 • • Reflecting arrangements (G10K 11/28 takes precedence) [3]
- 11/22 • • for conducting sound through hollow pipes, e.g. speaking tubes [3]
- 11/24 • • for conducting sound through solid bodies, e.g. wires [3]
- 11/26 • • Sound-focusing or directing, e.g. scanning [3]
- 11/28 • • • using reflection, e.g. parabolic reflectors [3]
- 11/30 • • • using refraction, e.g. acoustic lenses [3]
- 11/32 • • • characterised by shape of the source [3]
- 11/34 • • • using electrical steering of transducer arrays, e.g. beam steering [3]
- 11/35 • • • using mechanical steering of transducers [6]
- 11/36 • Devices for manipulating acoustic surface waves (electro-acoustic amplifiers H03F 13/00; networks comprising electro-acoustic elements H03H 9/00) [3]

13/00 Cones, diaphragms, or the like, for emitting or receiving sound in general (for electromechanical transducers H04R 7/00)

15/00 Acoustics not otherwise provided for [4]

- 15/02 • Synthesis of acoustic waves (synthesis of speech G10L 13/00) [4]
- 15/04 • Sound-producing devices (G10K 15/02 takes precedence) [4]
- 15/06 • • using electric discharge [4]
- 15/08 • Arrangements for producing a reverberation or echo sound [5]
- 15/10 • • using time-delay networks comprising electromechanical or electro-acoustic devices [5]
- 15/12 • • using electronic time-delay networks [5]

Note(s) [2010.01]

This subclass does not cover :

- devices for the storage of speech or audio signals, which are covered by subclasses G11B and G11C;
- encoding of compressed speech signals for transmission or storage, which is covered by group H03M 7/30.

11/00	Determination or detection of speech or audio characteristics not restricted to a single one of groups G10L 15/00-G10L 21/00 [7]	15/24	• Speech recognition using non-acoustical features, e.g. position of the lips [7]
11/02	• Detection of presence or absence of speech signals [7]	15/26	• Speech to text systems (G10L 15/08 takes precedence) [7]
11/04	• Pitch determination of speech signals [7]	15/28	• Constructional details of speech recognition systems [7]
11/06	• Discriminating between voiced and unvoiced parts of speech signals (G10L 11/04 takes precedence) [7]	17/00	Speaker identification or verification [7]
13/00	Speech synthesis; Text to speech systems [7]	19/00	Speech or audio signal analysis-synthesis techniques for redundancy reduction, e.g. in vocoders; Coding or decoding of speech or audio signals, e.g. for compression or expansion, source-filter models or psychoacoustic analysis [7]
13/02	• Methods for producing synthetic speech; Speech synthesisers [7]	19/02	• using spectral analysis, e.g. transform vocoders or subband vocoders [7]
13/04	• • Details of speech synthesis systems, e.g. synthesiser structure or memory management [7]	19/04	• using predictive techniques [7]
13/06	• Elementary speech units used in speech synthesisers; Concatenation rules [7]	19/06	• • Determination or coding of the spectral characteristics, e.g. of the short term prediction coefficients [7]
13/08	• Text analysis or generation of parameters for speech synthesis out of text, e.g. grapheme to phoneme translation, prosody generation or stress or intonation determination [7]	19/08	• • Determination or coding of the excitation function; Determination or coding of the long-term prediction parameters [7]
15/00	Speech recognition (G10L 17/00 takes precedence) [7]	19/10	• • • Determination or coding of a multipulse excitation [7]
15/02	• Feature extraction for speech recognition; Selection of recognition unit [7]	19/12	• • • Determination or coding of a code excitation, e.g. in code excited linear prediction [CELP] vocoders [7]
15/04	• Segmentation or word limit detection [7]	19/14	• • Details not provided for in groups G10L 19/06-G10L 19/12, e.g. gain coding, post filtering design or vocoder structure [7]
15/06	• Creation of reference templates; Training of speech recognition systems, e.g. adaptation to the characteristics of the speaker's voice (G10L 15/14 takes precedence) [7]	21/00	Processing of the speech signal to produce another audible or non-audible signal, e.g. visual or tactile, in order to modify its quality or its intelligibility (G10L 19/00 takes precedence) [7]
15/08	• Speech classification or search [7]	21/02	• Speech enhancement, e.g. noise reduction or echo cancellation (reducing echo effects in line transmission systems H04B 3/20; echo suppression in hand-free telephones H04M 9/08) [7]
15/10	• • using distance or distortion measures between unknown speech and reference templates [7]	21/04	• Time compression or expansion [7]
15/12	• • using dynamic programming techniques, e.g. Dynamic Time Warping [DTW] [7]	21/06	• Transformation of speech into a non-audible representation, e.g. speech visualisation or speech processing for tactile aids (G10L 15/26 takes precedence) [7]
15/14	• • using statistical models, e.g. Hidden Markov Models [HMM] (G10L 15/18 takes precedence) [7]	23/00	Speech analysis not provided for in other groups of this subclass [2009.01]
15/16	• • using artificial neural networks [7]		
15/18	• • using natural language modelling [7]		
15/20	• Speech recognition techniques specially adapted for robustness in adverse environments, e.g. in noise or of stress induced speech (G10L 21/02 takes precedence) [7]		
15/22	• Procedures used during a speech recognition process, e.g. man-machine dialog [7]		