ECLA EUROPEAN CLASSIFICATION

G PHYSICS

Notes

1. In this section, the following term is used with the meaning indicated :

   - "variable" (as a noun) means a feature or property, (e.g. a dimension, a physical condition such as temperature, a quality such as density or colour) which, in respect of a particular entity (e.g. an object, a quantity of a substance, a beam of light) and at a particular instant, is capable of being measured; the variable may change, so that its numerical expression may assume different values at different times or in different conditions or individual cases, but may be constant in respect of a particular entity in certain conditions or for practical purposes, (e.g. the len gth of a bar may be regarded as constant for many purposes).

2. Attention is drawn to the definitions of terms used appearing in the notes of several of the classes in this Section, particularly of "measuring" in class G01 and "control" and "regulation" in class G05.

3. The classification of inventions in this Section may present more difficulty than in others because the distinction between different fields of use rests to a considerable extent on differences in the intention of the user rather than on any constructional differences or differences in the manner of use of inventions, and also because the subjects dealt with are often in effect systems or combinations which have features or parts in common rather than "things" which are readily distinguishable as a whole. For example, information, (e.g. a set of figures) may be displayed for the purpose of education or advertising (G09), for enabling the result of a measurement to be known (G01), for signalling the information to a distant point or for giving information which has been signalled from a distant point (G08); the words used to describe the purpose depend on features which may be irrelevant to the form of the apparatus concerned - such features as the desired effect on the person who sees the display or whether the display is controlled from a remote point. Again, a device which responds to some change in a condition, e.g. in the pressure of a fluid, may be used, without modification of the device itself, to give information about the pressure (G01L) or about some other condition connected with the pressure (another subclass of G01, e.g. G01K for temperature), to make a record of the pressure or of its occurence (G07C), to give an alarm (G08B), or to control some other apparatus (G05). The classification scheme is intended to enable things of a similar nature (as indicated above) to be classified together, and it is therefore particularly necessary for the real nature of any invention to be decided before it can be properly classified.

SUBSECTION: Instruments

G01 MEASURING (counting G06M); TESTING

Notes

1. This class covers, in addition to "true" measuring instruments, other indicating or recording devices of analogous construction, and also signalling or control devices insofar as they are concerned with measurement (as defined in Note 2 below) and are not specially adapted to the particular purpose of signalling or control.

2. In this class, the following term is used with the meaning indicated:

   - "measuring" is used to cover considerably more than its primary or basic meaning. In this primary sense, it means finding a numerical expression of the value of a variable in relation to a unit or datum or to another variable of the same nature, e.g. expressing a length in terms of another length as in measuring a length with a scale; the value may be obtained directly (as just suggested) or by measuring some other variable of which the value can be related to the value of the required variable, as in measuring a change in temperature by measuring a resultant change in the length of a column of mercury. However, since the same device or instrument may, instead of giving an immediate indication, be used to produce a record or to initiate a signal to produce an indication or control effect, or may be used in combination with other devices or instruments to give a conjoint result from measurement of two or more variables of the same or different kinds, it is necessary to interpret "measuring" as including also any operation that would make it possible to obtain such a numerical expression by the additional use of some way of converting a value into figures. Thus the expression in figures may be actually made by a digital presentation or by reading a scale, or an indication of it may be given without the use of figures, e.g. by some perceptible feature (variable) of the entity (e.g. object, substance, beam of light) of which the variable being measured is a property or condition or by an analogue of such a feature (e.g. the corresponding position of a member without any scale, a corresponding voltage generated in some way). In many cases there is no such value indication but only an indication of difference or equality in relation to a standard or datum (of which the value may or may not be known in figures); the standard or datum may be the value of another variable of the same nature but of a different entity (e.g. a standard measure) or of the same entity at a different time.
     In its simplest form, measurement may give merely an indication of presence or absence of a certain condition or quality, e.g. movement (in any direction or in a particular direction), or whether a variable exceeds a predetermined value.

3. Attention is drawn to the Notes following the title of Section G, especially as regards the definition of the term "variable".

4. In many measuring arrangements, a first variable to be measured is transformed into a second, or further, variables. The second, or further, variables may be (a) a condition related to the first variable and produced in a member, or (b) a displacement of a member. Further transformation may be needed.
   When classifying such an arrangement, (i) the transformation step, or each transformation step, that is of interest is classified, or (ii) if interest lies only in the system as a whole, the first variable is classified in the appropriate place.
   This is particularly important where two or more conversions take place, for instance where a first variable, for example pressure, is transformed into a second variable, for example an optical property of a sensing body, and that second variable is expressed by means of a third variable, for example an electric effect. In such a case, the following classification places should be considered: the place for the transformation of the first variable, that for sensing the condition caused by that variable, subclass G01D for expression of the measurement, and finally the place for the overall system, if any.

5. The measurement of change in the value of a physical property is classified in the same subclass as measurement of that physical property, e.g. measurement of expansion of length is classified in G01B.

G01B **MEASURING LENGTH, THICKNESS OR SIMILAR LINEAR DIMENSIONS; MEASURING ANGLES; MEASURING AREAS; MEASURING IRREGULARITIES OF SURFACES OR CONTOURS** [N: (measuring human body, see the relevant places, where such exist, e.g. A41H1/00, A43D1/02, A61B5/103; measuring appliances combined with walking-sticks A45B3/08; sorting according to dimensions B07; tool-setting or drawing instruments not specially modified for measuring B23B49/00, B23Q15/00 to B23Q17/00, B43L; combinations of measuring devices with writing-appliances B43K29/08; geodetical, nautical or aeronautical measuring, surveying, rangefinding G01C; photogrammetry G01C11/00; measuring force or stress, in general G01L1/00; investigating or analysing particle size, investigating or analysing surface area of porous material G01N; measuring position, distance or direction, in general, by reception or emission of radiowaves or other waves and based on propagation effects, e.g. Doppler effect, propagation time, direction of propagation G01S; geophysical measuring G01V; measuring length or roll diameter of film in cameras or projectors G03B1/60; combinations of measuring devices with means for controlling or regulating G05; methods or arrangements for converting the position of a manually-operated writing or tracing member into an electrical signal G06K11/00; measuring elapsed travel of recording medium in recording and playback equipment, sensing diameter of record in autochange gramophones G11B; means structurally associated with electric rotary current collectors for indicating brush wear H01R39/58; indicating consumption of electrodes in arc lamps H05B31/34)]

G01C **MEASURING DISTANCES, LEVELS OR BEARINGS; SURVEYING; NAVIGATION; GYROSCOPIC INSTRUMENTS; PHOTOGRAMMETRY OR VIDEOGRAMMETRY (measuring dimensions or angles of objects G01B; measuring liquid level G01F; measuring intensity or direction of magnetic fields, other than the earth`s field, in general G01R; radio navigation, determining distance or velocity by use of propagation effects, e.g. Doppler effects, propagation time, of radio waves, analogous arrangements using other waves G01S; optical systems therefor G02B; maps, globes G09B)** [C9509]

G01D **MEASURING NOT SPECIALLY ADAPTED FOR A SPECIFIC VARIABLE; ARRANGEMENTS FOR MEASURING TWO OR MORE VARIABLES NOT COVERED IN A SINGLE OTHER SUBCLASS; TARIFF METERING APPARATUS; MEASURING OR TESTING NOT OTHERWISE PROVIDED FOR (means structurally associated with lightning or other over-voltage discharging apparatus for recording the operation thereof G01R; displaying information in general G09F; recording in a way which requires playback through a transducer G11B)** [C0411]

G01F **MEASURING VOLUME, VOLUME FLOW, MASS FLOW OR LIQUID LEVEL; METERING BY VOLUME** (milk flow sensing devices in milking machines or devices A01J5/01; measuring or recording blood flow A61B5/02, A61B8/06; metering media to the human body A61M5/168; burettes or pipettes B01L3/02; arrangements of liquid volume meters or volume-flow meters in liquid-delivering apparatus, e.g. for retail sale purposes, B67D5/16; pumps, fluid motors, details common to measuring or metering devices and pumps or fluid motors F01 to F04; [N: sampling G01N1/00]; locating, determining distance or velocity using reflection or reradiation of radio waves, analogous arrangements using other waves G01S; systems for ratio control G05D11/00; [N: coin-freed apparatus for metering flow of liquid or gas G07F15/00]) [C9607]

G01G **WEIGHING** (sorting by weighing B07C5/16)

G01H **MEASUREMENT OF MECHANICAL VIBRATIONS OR ULTRASONIC, SONIC OR INFRASONIC WAVES** (generation of mechanical vibrations without measurement B06B, G10K; measuring position, direction or velocity of an object G01C, G01S; measuring quasi-steady pressure of a fluid G01L7/00; determining unbalance G01M1/14; determining properties of material by sonic or ultrasonic waves transmitted therethrough G01N; systems using the reflection or reradiation of acoustic waves, e.g. acoustic imaging, G01S15/00; seismology, seismic prospecting, acoustic prospecting G01V1/00; acousto-optical devices per se G02F; obtaining records by techniques analogous to photography using ultrasonic, sonic or infrasonic waves G03B42/06; speech analysis or synthesis, speech recognition G10L; information storage based on relative movement between record carrier and transducer G11B; piezo-electric, electrostrictive or magnetostrictive elements in general H01L; manufacture of electromechanical resonators by processes which include measurement of frequency with consequential modification of the resonator H03H3/00, [N: H03H3/007, H03H9/00]) [C9809]

G01J **MEASUREMENT OF INTENSITY, VELOCITY, SPECTRAL CONTENT, POLARISATION, PHASE OR PULSE CHARACTERISTICS OF INFRA-RED, VISIBLE OR ULTRA-VIOLET LIGHT; COLORIMETRY; RADIATION PYROMETRY (light sources F21, H01J, H01K, H05B; investigating properties of materials by optical means G01N)**

G01K **MEASURING TEMPERATURE; MEASURING QUANTITY OF HEAT; THERMALLY-SENSITIVE ELEMENTS NOT OTHERWISE PROVIDED FOR** (sensing temperature changes for compensating measurements of other variables for compensating readings of instruments for variation in temperature, see G01D or relevant subclasses for variable measured; radiation pyrometry G01J; investigating or analysing materials by use of thermal means G01N25/00; compound sensitive elements, e.g. bimetallic, G12B1/02)

G01L **MEASURING FORCE, STRESS, TORQUE, WORK, MECHANICAL POWER, MECHANICAL EFFICIENCY, OR FLUID PRESSURE** (sensing pressure changes for compensating measurements of other variables or compensating readings of instruments for variations in pressure G01D or other relevant subclasses for

he variable measured; weighing G01G; converting a pattern of forces into electrical signals G06K11/00)

G01M **TESTING STATIC OR DYNAMIC BALANCE OF MACHINES OR STRUCTURES; TESTING STRUCTURES OR APPARATUS NOT OTHERWISE PROVIDED FOR** [N: (devices for testing the performance of portable percussive tools with fluid-pressure drive B25D9/00B)]

G01N **INVESTIGATING OR ANALYSING MATERIALS BY DETERMINING THEIR CHEMICAL OR PHYSICAL PROPERTIES** (separating components of materials in general B01D, B01J, B03, B07; apparatus fully provided for in a single other subclass, see the relevant subclass e.g. B01L; measuring or testing processes other than immunoassay, involving enzymes or micro-organisms C12M, C12Q; investigation of foundation soil in situ E02D1/00; sensing humidity changes for compensating measurements of other variables or for compensating readings of instruments for variations in humidity, see G01D or the relevant subclass for the variable measured; testing or determining the properties of structures G01M; measuring or investigating electric or magnetic properties of materials G01R; systems or methods in general, using reception or emission of radiowaves or other waves and based on propagation effects, e.g. Doppler effect, propagation time, direction of propagation, G01S; determining sensivity, graininess, or density of photographic materials G03C5/02; testing component parts of nuclear reactors G21C17/00; [N: controlling or regulating non-electric variables G05D; measuring degree of ionisation of ionised gases, i.e. plasma H05H1/00A; testing electrographic developer properties G03G15/08H6])

G01P **MEASURING LINEAR OR ANGULAR SPEED, ACCELERATION, DECELERATION, OR SHOCK; INDICATING PRESENCE, ABSENCE, OR DIRECTION, OF MOVEMENT** (measuring or recording blood flow A61B5/02, A61B8/06; monitoring speed or deceleration of electrically-propelled vehicles B60L3/00; vehicle lighting systems adapted to indicate speed B60Q1/54; determining position or course in navigation, measuring ground distance in geodesy or surveying G01C; combined measuring devices for measuring two or more variables of movement G01C23/00; measuring velocity of sound G01H; measuring velocity of light G01J7/00; measuring direction or velocity of solid objects by reception or emission of radiowaves or other waves and based on propagation effects, e.g. Doppler effect, propagation time, direction of propagation, G01S; measuring speed of nuclear radiation G01T; measuring acceleration of gravity G01V; [N: measuring or recording the speed of trains B61L23/00; speed indicators incorporated in motor vehicles B60K35/00; measuring frequency or phase G01R; traffic control G08G])

G01Q **SCANNING-PROBE TECHNIQUES OR APPARATUS; APPLICATIONS OF SCANNING-PROBE TECHNIQUES, e.g. SCANNING PROBE MICROSCOPY [SPM]**

G01R **MEASURING ELECTRIC VARIABLES; MEASURING MAGNETIC VARIABLES** (measuring physical variables of any kind by conversion into electric

variables, see Note (4) following the title of class G01; measuring diffusion of ions in an electric field, e.g. electrophoresis, electro-osmosis G01N; investigating non-electric or non-magnetic properties of materials by using electric or magnetic methods G01N; indicating correct tuning of resonant circuits H03J3/12; monitoring electronic pulse counters H03K21/40; monitoring operation of communication systems H04)

G01S **RADIO DIRECTION-FINDING; RADIO NAVIGATION; DETERMINING DISTANCE OR VELOCITY BY USE OF RADIO WAVES; LOCATING OR PRESENCE-DETECTING BY USE OF THE REFLECTION OR RERADIATION OF RADIO WAVES; ANALOGOUS ARRANGEMENTS USING OTHER WAVES (**[N: for special applications, see the relevant subclasses, e.g. A61B, G01F, G01N, G02B; measuring dimensions or angles of objects G01B; navigation in general G01C; measuring infrasonic, sonic or ultrasonic vibrations in general G01H; measuring infra-red, visible, or ultra-violet radiation in general G01J; transducers per se, see the relevant subclasses, e.g. G01L, H01L, H04R; measuring direction or velocity of flowing fluids by reception or emission of radiowaves or other waves and based on propagation effects caused in the fluid itself G01P; measuring electric or magnetic variables in general G01R]**; detecting masses or objects by methods not involving reflection or radiation of radio, acoustic or other waves G01V;** [N: time-interval measuring G04F]**; aerials H01Q)** [C9504]

G01T **MEASUREMENT OF NUCLEAR OR X-RADIATION** (radiation analysis of materials, mass spectrometry G01N; counters per se G06M, H03K; electric discharge tubes for analysing radiation or particles H01J40/00, H01J47/00, H01J49/00)

G01V **GEOPHYSICS; GRAVITATIONAL MEASUREMENTS; DETECTING MASSES OR OBJECTS** (detecting or locating foreign bodies for diagnostic, surgical or person-identification purposes A61B; means for indicating the location of accidentally buried, e.g. snow-buried persons A63B29/02; investigating or analysing earth materials by determining their chemical or physical properties G01N; measuring electric or magnetic variables in general, other than direction or magnitude of the earth`s field G01R; electronic or nuclear magnetic resonance arrangements G01R33/20; radar, sonar or analogous methods in general, detecting masses or objects involving these methods G01S)

G01W **METEOROLOGY** (influencing weather conditions A01G15/00; dispersing fog E01H13/00; instruments for measuring single variable in general, see the appropriate subclass of G01, e.g. G01K, G01L; obtaining meteorological information by radar G01S13/95)

G02 **OPTICS** (making optical elements or apparatus B24B, B29D11/00, C03, or other appropriate subclasses or classes; materials per se, see the relevant places, e.g. C03B, C03C)

Note

In this class, the following expression is used with the meaning indicated:

- "optical" applies not only to visible light but also to ultra-violet or infra-red radiations.

G02B **OPTICAL ELEMENTS, SYSTEMS, OR APPARATUS** (G02F takes precedence; measuring-instruments, see the relevant subclass of G01, e.g. optical rangefinders G01C; testing of optical elements, systems, or apparatus G01M11/00; spectacles G02C; sound lenses G10K11/30; electron and ion "optics" H01J; X-ray "optics" H01J, H05G1/00; optical elements structurally combined with electric discharge tubes H01J5/16, H01J29/89, H01J37/22; microwave "optics" H01Q; combination of optical elements with television receivers H04N5/72; heating arrangements specially adapted for transparent or reflecting areas H05B3/84; [N: optical apparatus 42H])

G02C **SPECTACLES; SUNGLASSES OR GOGGLES INSOFAR AS THEY HAVE THE SAME FEATURES AS SPECTACLES; CONTACT LENSES** (trial frames for testing the eyes A61B3/04; goggles or eyeshields not having the same features as spectacles A61F9/00)

G02F **DEVICES OR ARRANGEMENTS, THE OPTICAL OPERATION OF WHICH IS MODIFIED BY CHANGING THE OPTICAL PROPERTIES OF THE MEDIUM OF THE DEVICES OR ARRANGEMENTS FOR THE CONTROL OF THE INTENSITY, COLOUR, PHASE, POLARISATION OR DIRECTION OF LIGHT, e.g. SWITCHING, GATING, MODULATING OR DEMODULATING; TECHNIQUES OR PROCEDURES FOR THE OPERATION THEREOF; FREQUENCY-CHANGING; NON-LINEAR OPTICS; OPTICAL LOGIC ELEMENTS; OPTICAL ANALOGUE/DIGITAL CONVERTERS** (optical transfer means between sensing member and indicating or recording part in connection with measuring G01D5/26; devices in which mathematical operations are carried out with optical elements G06E3/00, [N: G06E3/00A]; electrical signal transmission systems using optical means to convert the input signal G08C19/36; information-recording by electric or magnetic means and reproducing by sensing optical properties G11B11/00; static stores using optical elements G11C13/04; transmission systems employing electromagnetic waves other than radio waves, e.g. light, infra-red radiation, H04B10/00; optical multiplex systems H04J14/00; pictorial communication, e.g. television H04N)

G03 **PHOTOGRAPHY; CINEMATOGRAPHY; ELECTROGRAPHY; HOLOGRAPHY** (reproduction of pictures or patterns by scanning and converting into electrical signals H04N)

G03B **APPARATUS OR ARRANGEMENTS FOR TAKING PHOTOGRAPHS OR FOR PROJECTING OR VIEWING THEM; APPARATUS OR ARRANGEMENTS EMPLOYING ANALOGOUS TECHNIQUES USING**

WAVES OTHER THAN OPTICAL WAVES; ACCESSORIES THEREFOR (optical parts of such apparatus G02B; systems for automatic generation of focusing signals for optical elements per se G02B7/28; photosensitive materials or processes for photographic purposes G03C; apparatus for processing exposed photographic materials G03D)

G03C **PHOTOSENSITIVE MATERIALS FOR PHOTOGRAPHIC PURPOSES (for photomechanical purposes G03F); PHOTOGRAPHIC PROCESSES, e.g. CINE, X-RAY, COLOUR, STEREO-PHOTOGRAPHIC PROCESSES; AUXILIARY PROCESSES IN PHOTOGRAPHY (photographic processes characterised by the use or manipulation of apparatus classifiable per se in subclass G03B, see G03B; photomechanical production of textured or patterned surfaces G03F; electrophotography, magnetography G03G)**

G03D **APPARATUS FOR PROCESSING EXPOSED PHOTOGRAPHIC MATERIALS** (apparatus specially adapted for photomechanical production of textured or patterned surfaces G03F)**; ACCESSORIES THEREFOR** (photosensitive materials or processes for photographic purposes G03C; electrographic, electrophotographic, or magnetographic methods or apparatus G03G)

G03F **PHOTOMECHANICAL PRODUCTION OF TEXTURED OR PATTERNED SURFACES, e.g. FOR PRINTING, FOR PROCESSING OF SEMICONDUCTOR DEVICES; MATERIALS THEREFOR; ORIGINALS THEREFOR; APPARATUS SPECIALLY ADAPTED THEREFOR; (phototypographic composing devices B41B; photosensitive materials or processes for photographic purposes G03C; electrophotography, sensitive layers or processes therefor G03G)**

G03G **ELECTROGRAPHY; ELECTROPHOTOGRAPHY; MAGNETOGRAPHY** (information storage based on relative movement between record carrier and transducer G11B; static stores with means for writing-in or reading-out information G11C; recording of television signals H04N5/76) [C9507]

G03H **HOLOGRAPHIC PROCESSES OR APPARATUS** (holograms, e.g. point holograms, used as ordinary optical elements G02B5/32; producing stereoscopic or other three-dimensional effects G02B27/22; diffraction-grating systems G02B27/44; systems using moirè fringes G02B27/60; optical logic elements G02F3/00; stereo-photography G03B35/00; photosensitive materials or processes for photographic purposes G03C; [N: stereo-photographic or similar processes G03C9/00]; apparatus for processing exposed photographic materials G03D; analogue computers performing mathematical operations with the aid of optical elements G06E3/00; authentication by radiation, of concealed information carried by holograms or diffraction gratings G06K19/16; holographic storage G11B7/0065, G11C13/04; [N: stereoscopic or other three dimensional effects in television systems H04N13/00]) [C0805]

G04 HOROLOGY

G04B MECHANICALLY-DRIVEN CLOCKS OR WATCHES; MECHANICAL PARTS OF CLOCKS OR WATCHES IN GENERAL; TIME PIECES USING THE POSITION OF THE SUN, MOON OR STARS (spring- or weight-driven mechanisms in general F03G; electromechanical clocks or watches G04C; electromechanical clocks with attached or built-in means operating any device at pre-selected times or after predetermined time intervals G04C23/00; clocks or watches with stop devices G04F7/08)

G04C ELECTROMECHANICAL CLOCKS OR WATCHES (mechanical parts of clocks or watches in general G04B; electronic time-pieces with no moving parts, electronic circuitry for producing timing pulses G04G)

G04D APPARATUS OR TOOLS SPECIALLY DESIGNED FOR MAKING OR MAINTAINING CLOCKS OR WATCHES (machine tools in general B23, B24; hand tools in general B25)

G04F TIME-INTERVAL MEASURING (measuring pulse characteristics G01R, e.g. G01R29/02; in radar or like systems G01S; masers H01S1/00; generation of oscillations H03B; generation or counting of pulses, frequency dividing, analogue/digital conversion H03K) [N: time fuzes F42C9/00]

G04G ELECTRONIC TIME-PIECES

G04R RADIO-CONTROLLED TIME-PIECES [N1208]

G05 CONTROLLING; REGULATING (specially adapted to a particular field of use, see the relevant place for that field, e.g. A62C37/00, B03B13/00, B23Q)

Notes

1. This class covers methods, systems, and apparatus for controlling, in general.

2. In this class, the following terms or expressions are used with the meanings indicated:

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- "controlling" means influencing a variable in any way, e.g.
  changing its direction or its value (including changing it
  to or from zero), maintaining it constant, limiting its
range
  of variation;
- "regulation" means maintaining a variable automatically at
  a desired value or within a desired range of values. The
  desired value or range may be fixed, or manually varied, or
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  may vary with time  according to a predeterminated
"programme"
  or according to  variation of another variable. Regulation
is
  a form of control;
- "automatic control" is often used in the art as a synonym
for
  "regulation".
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3. Attention is drawn to the Notes following the title of section G, especially as regards the definition of the term "variable".

G05B **CONTROL OR REGULATING SYSTEMS IN GENERAL; FUNCTIONAL ELEMENTS OF SUCH SYSTEMS; MONITORING OR TESTING ARRANGEMENTS FOR SUCH SYSTEMS OR ELEMENTS** (fluid-pressure actuators or systems acting by means of fluids in general F15B; valves per se F16K; characterised by mechanical features only G05G; sensitive elements, see the appropriate subclass, e.g. G12B, subclass of G01, H01; correcting units, see the appropriate subclass, e.g. H02K)

G05D **SYSTEMS FOR CONTROLLING OR REGULATING NON-ELECTRIC VARIABLES** (for continuous casting of metals B22D11/16; valves per se F16K; sensing non-electric variables, see the relevant subclasses of G01; for regulating electric or magnetic variables G05F)

G05F **SYSTEMS FOR REGULATING ELECTRIC OR MAGNETIC VARIABLES** (regulating the timing or recurrence frequency of pulses in radar or radio navigation systems G01S; closed-loop systems for regulating non-electric variables by electric means G05D; regulating power supply of digital computers G06F1/26; regulating electric power distribution networks H02J; regulating the charging of batteries H02J7/00; regulation of the output of static converters, e.g. switching regulators H02M; regulation of the output of electric generators H02N, H02P9/00, H03L; controlling transformers, reactors or choke coils H02P13/00; regulating frequency response, gain, maximum output, amplitude or bandwidth of amplifiers H03G; regulating tuning of resonant circuits H03J; regulating characteristics of transmission lines H04B; electric control of X-ray apparatus H05G1/30)

G05G **CONTROL DEVICES OR SYSTEMS INSOFAR AS CHARACTERISED BY MECHANICAL FEATURES ONLY** ("Bowden" or like mechanisms F16C1/10; gearings or mechanisms not peculiar to this purpose F16H; speed changing or reversing mechanisms for gearings conveying rotary motion F16H59/00 to F16H63/00) [C9610]

G06 **COMPUTING; CALCULATING; COUNTING** (score computers for games A63B71/06, A63D15/20, A63F1/18; combinations of writing implements with computing devices B43K29/08)

Note
Attention is drawn to the notes (particularly the definition of the term "variable") on page [G3] of the Int.Cl.In this class:

1. The term "data" is understood to be synonymous with "information", and the term "information" is therefore not used in G06C;

2. The terms "calculating" and "computing" are both understood to include, inter alia, operations on numerical values and on data expressed in numerical form; of these words "computing" is used throughout the class. "Computation" is derived from this interpretation of "computing". In the French language the word "calcul" will serve for either word;

3. In those subclasses which include simulators:

   a. a simulator in G06 is concerned with the mathematics of computing the existing or anticipated conditions within the real device or system;

   b. Control functions derived from simulators are not in G06 but are generally in G05, although they may be in the subclass for the device controlled;

   c. measurement of an individual variable to serve as an input to a simulator is in G01 [N: 21E; 42; 119]

   d. a simulator is regarded as a teaching or training device proper to G09 if the simulator gives perceptible sensations having a likeness to the sensations the student would experience in reality in responce to actions taken by him. Simulators which demonstrate, by means involving computing, the functioning of apparatus or of a system are in G06, if no provision exists elsewhere. Components of simulators, if identical with real devices or machines, are classified in the relevant subclass for these devices or machines and not in G06 or G09;

   e. a simulator may use the same time scale as the real device or operate on an expanded or compressed time scale;

   f. models of real devices to reduced or expanded scales are not regarded as simulators

4. The term "record carrier" is understood to mean a body, such as a cylinder, disc, card, tape or wire, capable of permanently holding information, which can be read-off by a sensing element movable relative to the recorded information.

G06C **DIGITAL COMPUTERS IN WHICH ALL THE COMPUTATION IS EFFECTED MECHANICALLY** (score computers for card games A63F1/18; construction of keys, printing mechanisms or other parts of general application to the typewriting or printing art B41; keys or printing mechanisms for special applications, see the relevant subclasses, e.g. G05G, G06K; cash registers G07G1/00)

G06D **DIGITAL FLUID-PRESSURE COMPUTING DEVICES**

G06E **OPTICAL COMPUTING DEVICES;** [N: COMPUTING DEVICES USING OTHER RADIATIONS WITH SIMILAR PROPERTIES] (optical logic elements per se G02F3/00;

digital storage using optical elements G11C13/04)

G06F **ELECTRICAL DIGITAL DATA PROCESSING (computers in which a part of the computation is effected hydraulically or pneumatically G06D; optically G06E; self-contained input or output peripheral equipment G06K; impedance networks using digital techniques H03H)** [C9603]

G06G **ANALOGUE COMPUTERS** (analogue optical computing devices G06E3/00)

G06J **HYBRID COMPUTING ARRANGEMENTS** (optical hybrid computing devices G06E3/00; [N: fuzzy computing G06N7/02]; neural networks for image data processing G06T; analog/digital conversion, in general H03M1/00) [C9603]

G06K **RECOGNITION OF DATA; PRESENTATION OF DATA; RECORD CARRIERS; HANDLING RECORD CARRIERS**

G06M **COUNTING MECHANISMS; COUNTING OF OBJECTS NOT OTHERWISE PROVIDED FOR** (counting by measuring volume or weight of articles to be counted G01F, G01G; computers G06C to G06J; counting electric pulses H03K; counting characters, words or messages in switching networks for transmission of digital information H04L12/08)

G06N **COMPUTER SYSTEMS BASED ON SPECIFIC COMPUTATIONAL MODELS** [N0004]

G06Q **DATA PROCESSING SYSTEMS OR METHODS, SPECIALLY ADAPTED FOR ADMINISTRATIVE, COMMERCIAL, FINANCIAL, MANAGERIAL, SUPERVISORY OR FORECASTING PURPOSES; SYSTEMS OR METHODS SPECIALLY ADAPTED FOR ADMINISTRATIVE, COMMERCIAL, FINANCIAL, MANAGERIAL, SUPERVISORY OR FORECASTING PURPOSES, NOT OTHERWISE PROVIDED FOR** [N0506]

G06T **IMAGE DATA PROCESSING OR GENERATION, IN GENERAL (specially adapted for particular applications, see the relevant subclasses, e.g. G06K, G09G, H04N)** [N9408]

G07 CHECKING-DEVICES

G07B **TICKET-ISSUING APPARATUS; FARE-REGISTERING APPARATUS; FRANKING APPARATUS**

G07C **TIME OR ATTENDANCE REGISTERS; REGISTERING OR INDICATING THE WORKING OF MACHINES; GENERATING RANDOM NUMBERS; VOTING OR LOTTERY APPARATUS; ARRANGEMENTS, SYSTEMS OR APPARATUS FOR CHECKING NOT PROVIDED FOR ELSEWHERE** (finger printing A61B5/103; indicating or recording apparatus for measuring in general, analogous apparatus but in which the input is not a variable to be measured, e.g. a hand operation, G01D; clocks, clock mechanisms G04B, G04C; time-interval measuring G04F; counting mechanisms per se G06M)

G07D **HANDLING OF COINS OR OF PAPER CURRENCY OR SIMILAR VALUABLE PAPERS, e.g. TESTING, SORTING BY DENOMINATIONS, COUNTING, DISPENSING, CHANGING OR DEPOSITING [M1104]**

G07F **COIN-FREED OR LIKE APPARATUS** (coin sorting G07D3/00; coin testing G07D5/00; [N: handling coins or paper currencies apart from payment activated apparatus G07D; payment architectures, schemes or protocols G06Q20/00]) [C1201]

G07G **REGISTERING THE RECEIPT OF CASH, VALUABLES, OR TOKENS (digital computing in general G06C, G06F)**

G08 **SIGNALLING** (indicating or display devices per se G09F; transmission of pictures H04N) [C9504]

G08B **SIGNALLING OR CALLING SYSTEMS; ORDER TELEGRAPHS; ALARM SYSTEMS** (signalling arrangements on vehicles B60Q, B62D41/00; railway signalling systems or devices B61L; on cycles B62J3/00, B62J6/00; safes or strong-rooms with alarm devices E05G; signalling or alarm devices in mines E21F17/18; lamps or shutters therefor F21; sensitive measuring elements, see the appropriate subclasses of G01; traffic control systems G08G; visual indicating means G09; sound-producing devices G10; radio or near-field calling systems H04B5/00, H04B7/00; selecting arrangements H04Q7/00, H04Q9/00; loudspeakers, microphones, gramophone pick-ups or like acoustic electromechanical transducers H04R) [C9504]

G08C **TRANSMISSION SYSTEMS FOR MEASURED VALUES, CONTROL OR SIMILAR SIGNALS** (fluid pressure transmission systems F15B; sensing members for specific physical variables, see the relevant subclasses, e.g. of G01 or H01; indicators or recorders, see the relevant subclasses, e.g. G01D, G09F; mechanical means for transferring the output of a sensing member G01D5/00; means for converting the output of the sensing member into a different variable G01D5/00; self-balancing bridges G01R; position control in general G05D3/00; mechanical control systems G05G; systems for transmitting "on/off" signals only, systems for transmitting alarm conditions G08B; order telegraph systems G08B9/00; generating electric pulses H03K; coding, decoding or code conversion H03M; transmission of digital information H04L; selective calling from one station to another H04Q9/00)

G08G **TRAFFIC CONTROL SYSTEMS** (guiding railway traffic, ensuring the safety of railway traffic B61L; arrangement of road signs or traffic signals E01F9/00; radar or analogous systems, sonar systems, lidar systems specially adapted for traffic control G01S13/91, G01S15/88, G01S17/88; [N: radar or analogous systems, sonar systems, lidar systems specially adapted for anti-collision purposes G01S13/93, G01S15/93, G01S17/93]) **[C2010.02]**

G09 EDUCATION; CRYPTOGRAPHY; DISPLAY; ADVERTISING; SEALS

G09B **EDUCATIONAL OR DEMONSTRATION APPLIANCES; APPLIANCES FOR TEACHING, OR COMMUNICATING WITH, THE BLIND, DEAF OR MUTE; MODELS; PLANETARIA; GLOBES; MAPS; DIAGRAMS** (devices for psychotechnics or for testing reaction times A61B5/16; games, sports, amusements A63; projectors, projector screens G03B)

G09C **CODING OR CIPHERING APPARATUS FOR CRYPTOGRAPHIC OR OTHER PURPOSES INVOLVING THE NEED FOR SECRECY** (secret transmission H04K; arrangements for secret telegraphic communication H04L9/00)

G09D **RAILWAY OR LIKE TIME OR FARE TABLES; PERPETUAL CALENDARS** (calendar blocks B42D5/04; clockwork driven G04B; comprising computing means G06C)

G09F **DISPLAYING; ADVERTISING; SIGNS; LABELS OR NAME-PLATES; SEALS** (display cases A47F; designs or pictures characterised by special or unusual effects, e.g. changing B44F1/00; disposition of road signs or traffic signals E01F9/00; lighting in general F21; arrangements for controlling light beams G02F1/00; visible signalling arrangements or devices G08B5/00; traffic control systems G08G; arrangements or circuits for control of indicating devices using static means to present variable information G09G, [N: G06F3/14]; static indicating arrangements comprising integral associations of a plurality of light sources H01J, H01K, H01L, H05B33/12)

G09G **ARRANGEMENTS OR CIRCUITS FOR CONTROL OF INDICATING DEVICES USING STATIC MEANS TO PRESENT VARIABLE INFORMATION** (lighting in general F21; arrangements for displaying electric variables or waveforms G01R3/00; devices or arrangements for the control of light beams G02F1/00; indicating of time by visual means G04B19/00, G04C17/00, G04G9/00; arrangements for transferring data between computers and peripheral equipment G06F3/00; visible signalling arrangements or devices G08B5/00; traffic control systems G08G; display, advertising, signs G09F, e.g. static indicating arrangements comprising an association of a number of separate sources or light control cells G09F9/00; static indicating arrangements comprising integral associations of a number of light sources H01J, H01K, H01L, H05B33/12; circuits in pulse counters for indicating the result H03K21/18; coding, decoding or code conversion, in general H03M; reproducing a

picture or pattern using electric signals representing parts thereof and produced by scanning an original H04N)

G10 MUSICAL INSTRUMENTS; ACOUSTICS

Notes

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:

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- "musical instrument" does not exclude devices emitting a
  single sound signal.
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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:

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- wind instruments;
- string instruments;
- percussion instruments,
which relate clearly to the majority of instruments.
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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 G10D17/00 or G10K7/00, G10K9/00 or G10K15/04, all the other groups normally finding a definite place.

G10B ORGANS; HARMONIUMS OR LIKE WIND-ACTUATED MUSICAL INSTRUMENTS (mouth organs G10D7/12; accordions G10D11/00; aspects of automatic actuation G10F1/12; combinations of microphones, pick-ups or amplifiers with musical instruments G10H; electronic organs G10H7/00)

G10C PIANOS, HARPSICHORDS, SPINETS OR SIMILAR STRINGED MUSICAL INSTRUMENTS WITH ONE OR MORE KEYBOARD

(non-musical aspects of toy pianos A63H5/00; aspects of automatic actuation G10F; combinations of microphones, pick-ups or amplifiers with musical instruments G10H)

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 microphones, pick-ups or amplifiers with musical instruments G10H; sound-producing devices not regarded as musical instruments or parts thereof G10K)

G10F AUTOMATIC MUSICAL INSTRUMENTS (non-musical aspects of toy

instruments A63H5/00; sound recording or reproducing G11B; working in association with recording or reproducing apparatus G11B31/02)

G10G **AIDS FOR MUSIC** (teaching music G09B15/00)**; SUPPORTS FOR MUSICAL INSTRUMENTS; OTHER AUXILIARY DEVICES OR ACCESSORIES FOR MUSIC OR MUSICAL INSTRUMENTS** (metronomes G04F5/02)

G10H **ELECTROPHONIC MUSICAL INSTRUMENTS** (electronic circuits in general H03)

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) [C9511]

G10L **SPEECH ANALYSIS OR SYNTHESIS; SPEECH RECOGNITION; SPEECH OR VOICE PROCESSING; SPEECH OR AUDIO CODING OR DECODING** [C9607] [C1208]

G11 INFORMATION STORAGE

G11B **INFORMATION STORAGE BASED ON RELATIVE MOVEMENT BETWEEN RECORD CARRIER AND TRANSDUCER** ([N: producing carriers of sound records for needle playback B29C39/00]; recording measured values in a way that does not require playback through a transducer G01D; photosensitive materials or processes for photographic purposes G03C; electrography, electrophotography, magnetography G03G; recording or playback apparatus using mechanically marked tape, e.g. punched paper tape, or using unit records, e.g. punched or magnetically marked cards, G06K; transferring data from one type of record carrier to another G06K1/18; printing of data from record carriers G06K3/00; arrangements for producing a permanent visual presentation of the output data G06K15/00; arrangements or circuits for control of indicating devices using static means to present variable information G09G; coding, decoding or code conversion, in general H03M; circuits for coupling output of reproducer to radio receiver H04B1/20; circuits [N: or arrangements] specially adapted for [N: pictorial or] television signal recording [N: H04N1/21], H04N5/76, H04N9/79; loudspeakers, microphones, gramophone pick-ups or like acoustic electromechanical transducers or circuits therefor H04R)

G11C **STATIC STORES** (information storage based on relative movement between record carrier and transducer G11B; semiconductor devices for storage H01L, e.g. H01L27/108

o H01L27/115; pulse technique in general H03K, e.g. electronic switches H03K17/00; [N: using a static store as a picture recording medium H04N5/907])

G12 INSTRUMENT DETAILS

G12B CONSTRUCTIONAL DETAILS OF INSTRUMENTS, OR COMPARABLE DETAILS OF OTHER APPARATUS, NOT OTHERWISE PROVIDED FOR

SUBSECTION: Nucleonics

G21 NUCLEAR PHYSICS; NUCLEAR ENGINEERING

G21B FUSION REACTORS (uncontrolled reactors G21J)

G21C NUCLEAR REACTORS (analogue computers therefor G06G7/54; fusion reactors, hybrid fission-fusion reactors G21B; nuclear explosives G21J)

G21D NUCLEAR POWER PLANT (electric or magnetic analogue computers, e.g. simulators, for nuclear physics G06G7/54)

G21F PROTECTION AGAINST X-RADIATION, GAMMA RADIATION, CORPUSCULAR RADIATION OR PARTICLE BOMBARDMENT; TREATING RADIOACTIVELY CONTAMINATED MATERIAL; DECONTAMINATION ARRANGEMENTS THEREFOR (radiation protection by pharmaceutical means A61K7/40; in cosmonautic vehicles B64G; combined with a reactor G21C11/00; combined with X-ray tubes H01J35/16; combined with X-ray apparatus H05G1/02)

G21G CONVERSION OF CHEMICAL ELEMENTS; RADIOACTIVE SOURCES (applications of radiation in general G21H5/00; handling particles, e.g. neutrons, or electromagnetic radiation not otherwise provided for G21K)

G21H OBTAINING ENERGY FROM RADIOACTIVE SOURCES; APPLICATIONS OF RADIATION FROM RADIOACTIVE SOURCES; UTILISING COSMIC RADIATION (measurement of nuclear or X-radiation G01T; fusion reactors G21B; nuclear reactors G21C; semiconductor devices sensitive to electro-magnetic or corpuscular radiation H01L31/00)

G21J NUCLEAR EXPLOSIVES; APPLICATIONS THEREOF (electric or magnetic

analogue computers, e.g. simulators, for nuclear physics G06G7/54)

G21K TECHNIQUES FOR HANDLING PARTICLES OR IONISING RADIATION NOT OTHERWISE PROVIDED FOR; IRRADIATION DEVICES; GAMMA RAY OR X-RAY MICROSCOPES