CPC COOPERATIVE PATENT CLASSIFICATION

G PHYSICS

NOTE

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).

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 .

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

NOTE

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.

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.

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

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.

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** { (measuring human body, see the relevant places, where such exist, e.g. A41H 1/00, A43D 1/02, A61B 5/103; measuring appliances combined with walking-sticks A45B 3/08; sorting according to dimensions B07 ; tool-setting or drawing instruments not specially modified for measuring B23B 49/00, B23Q 15/00 to B23Q 17/00, B43L ; combinations of measuring devices with writing-appliances B43K 29/08; geodetical, nautical or aeronautical measuring, surveying, rangefinding G01C ; photogrammetry G01C 11/00; measuring force or stress, in general G01L 1/00; 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 G03B 1/60; 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 G06K 11/00; 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 H01R 39/58; indicating consumption of electrodes in arc lamps H05B 31/34) }

NOTE

This subclass covers measuring of position or displacement in terms of linear or angular dimensions.

In this subclass, the groups are distinguished by the means of measurement which is of major importance. Thus the mere application of other means for giving a final indication does not affect the classification.

Attention is drawn to the Notes following the title of class G01 .

Machines operated on similar principles to the hand-held devices specified in this subclass are classified with these devices.

Measuring arrangements or details thereof covered by two or more of groups G01B 3/00-G01B 17/00 are classified in group G01B 21/00 if no single other group can be selected as being predominantly applicable.

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)

NOTE

In this subclass, the following term is used with the meaning indicated:
"navigation" means determining the position and course of land vehicles, ships, aircraft, and space vehicles.

Attention is drawn to the Notes following the title of class G01 .

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)

NOTE

This subclass covers :

- devices for indicating or recording the results of measurements, not peculiar to variables covered by a single other subclass; - analogous apparatus but in which the input is not a variable to be measured, e.g. a hand operation; - details of measuring instruments, which are of general interest; - measurement transducers not adapted solely for the measurement of a single specified variable and not provided for elsewhere, i.e. means for converting the output of a sensing member to another variable where the form or nature of the sensing member does not constrain the means for converting; - measuring or testing not otherwise provided for.

Attention is drawn to the Notes following the title of class G01 .

G01F **MEASURING VOLUME, VOLUME FLOW, MASS FLOW OR LIQUID LEVEL; METERING BY VOLUME** (milk flow sensing devices in milking machines or devices A01J 5/01; measuring or recording blood flow A61B 5/02, A61B 8/06; metering media to the human body A61M 5/168; burettes or pipettes B01L 3/02; arrangements of liquid volume meters or volume-flow meters in liquid-delivering apparatus, e.g. for retail sale purposes, B67D 5/16; pumps, fluid motors, details common to measuring or metering devices and pumps or fluid motors F01 to F04 ; { sampling G01N 1/00 }; locating, determining distance or velocity using reflection or reradiation of radio waves, analogous arrangements using other waves G01S ; systems for ratio control G05D 11/00; { coin-freed apparatus for metering flow of liquid or gas G07F 15/00 })

NOTE

Attention is drawn to the Notes following the title of class G01 .

G01G **WEIGHING** (sorting by weighing B07C 5/16)

NOTE

Attention is drawn to the Notes following the title of class G01 .

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 G01L 7/00; determining unbalance G01M 1/14; 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, G01S 15/00; seismology, seismic prospecting, acoustic prospecting G01V 1/00; acousto-optical devices per se G02F ; obtaining records by techniques analogous to photography using ultrasonic, sonic or infrasonic waves G03B 42/06; 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 H03H 3/00, { H03H 3/007, H03H 9/00 })

NOTE

This subclass covers the combination of generation and measurement of mechanical vibrations.

Attention is drawn to the Notes following the title of class G01 .

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)

NOTE

This subclass covers the detection of the presence or absence of infra-red, visible, or ultra-violet light, not otherwise provided for.

Attention is drawn to the Notes following the title of class G01 .

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 G01N 25/00; compound sensitive elements, e.g. bimetallic, G12B 1/02)

NOTE

In this subclass, the following term is used with the meaning indicated :

- "thermometer" includes thermally-sensitive elements not provided for in other subclasses.

Attention is drawn to the Notes following the title of class G01 .

Attention is drawn to the Notes following the titles of class B81 and subclass B81B relating to "micro-structural devices" and "micro-structural systems".

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 the variable measured; weighing G01G ; converting a pattern of forces into electrical signals G06K 11/00)

NOTE

Attention is drawn to the Notes following the title of class G01 .

G01M TESTING STATIC OR DYNAMIC BALANCE OF MACHINES OR STRUCTURES; TESTING STRUCTURES OR APPARATUS NOT OTHERWISE PROVIDED FOR { (devices for testing the performance of portable percussive tools with fluid-pressure drive B25D 9/005) }

NOTE

Attention is drawn to the Note following the title of Class G01 .

WARNING

Subject matter covered by these groups is classified in the following CPC groups: - G01M/38 covered by G01M 1/14 and G01M 1/30 and subgroups

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 E02D 1/00; 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 G03C 5/02; testing component parts of nuclear reactors G21C 17/00; { controlling or regulating non-electric variables G05D ; measuring degree of ionisation of ionised gases, i.e. plasma H05H 1/0006; testing electrographic developer properties G03G 15/0848 })

NOTE

In this subclass, the following terms are used with the meanings indicated :

- "investigating" means testing or determining;
- "materials" includes solid, liquid or gaseous media, e.g. the atmosphere.

Attention is drawn to the Notes following the title of class G01 .

Inventions relating to investigating the properties of materials, specially adapted for use in processes covered by subclass B23K , are classified in group B23K 31/12.

G01P MEASURING LINEAR OR ANGULAR SPEED, ACCELERATION, DECELERATION, OR SHOCK; INDICATING PRESENCE, ABSENCE, OR DIRECTION, OF MOVEMENT (measuring or recording blood flow A61B 5/02, A61B 8/06; monitoring speed or deceleration of electrically-propelled vehicles B60L 3/00; vehicle lighting systems adapted to indicate speed B60Q 1/54; 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 G01C 23/00; measuring velocity of sound G01H ; measuring velocity of light G01J 7/00; 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 ; { measuring or recording the speed of trains B61L 23/00; speed indicators incorporated in motor vehicles B60K 35/00; measuring frequency or phase G01R ; traffic control G08G })

NOTE

This subclass covers measuring direction or velocity of flowing fluids using propagation effects of radiowaves or other waves caused in the fluid itself, e.g. by laser anemometer, by ultrasonic flowmeter with "sing-around-system".

Attention is drawn to the Notes following the title of class G01 .

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

NOTE

In this subclass, the first place priority rule is applied, i.e. at each hierarchical level, classification is made in the first appropriate place.

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 H03J 3/12; monitoring electronic pulse counters H03K 21/40; monitoring operation of communication systems H04)

NOTE

This subclass covers:

- measuring all kinds of electric or magnetic variables directly or by derivation from other electric or magnetic variables; - measuring all kinds of electric or magnetic properties of materials; - testing electric or magnetic devices, apparatus or networks, (e.g. discharge tubes, amplifiers) or measuring their characteristics; - indicating presence or sign of current or voltage; - NMR, EPR or other spin-effect apparatus, not specially adapted for a particular application; - equipment for generating signals to be used for carrying out such tests and measurements.

In this subclass, the following terms or expressions are used with the meanings indicated :

- "measuring" includes investigating; - "instruments" or "measuring instruments" means electro-mechanical measuring mechanisms; - "arrangements for measuring" means apparatus, circuits, or methods for measuring;

Attention is drawn to the Notes following the title of class G01 .

In this subclass, group G01R 17/00 takes precedence over groups G01R 19/00 to G01R 31/00.

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** ({ 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 ; { time-interval measuring G04F }; aerials H01Q)

NOTE

In this subclass, the following term is used with the meaning indicated:

- "transponder" means an arrangement which reacts to an incoming interrogating or detecting wave by emitting a specific answering or identifying wave.

Attention is drawn to the Notes following the title of class G01 and to Note (1) following the title of subclass G09B .

WARNING

[2012.05]
The following IPC group is not used in the CPC scheme. Subject matter covered by this group is classified in the following CPC groups: - G01S 7/26 covered by G01S 7/06

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 H01J 40/00, H01J 47/00, H01J 49/00)

NOTE

This subclass covers the measurement of X-radiation, gamma radiation, corpuscular radiation, cosmic radiation or neutron radiation.

Attention is drawn to the Notes following the title of class G01 .

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 A63B 29/02; 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 G01R 33/20; radar, sonar or analogous methods in general, detecting masses or objects involving these methods G01S)

NOTE

In this subclass, the geophysical methods apply both to the earth and to other celestial objects, e.g. planets.

Attention is drawn to the Notes following the title of class G01 .

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

G01V 3/11 covered by G01V 3/10B, G01V 3/10C

G01W **METEOROLOGY** (influencing weather conditions A01G 15/00; dispersing fog E01H 13/00; instruments for measuring single variable in general, see the appropriate subclass of G01 , e.g. G01K , G01L ; obtaining meteorological information by radar G01S 13/95)

G02 **OPTICS** (making optical elements or apparatus B24B , B29D 11/00, 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 G01M 11/00; spectacles G02C ; sound lenses G10K 11/30; electron and ion "optics" H01J ; X-ray "optics" H01J , H05G 1/00; optical elements structurally combined with electric discharge tubes H01J 5/16, H01J 29/89, H01J 37/22; microwave "optics" H01Q ; combination of optical elements with television receivers H04N 5/72; heating arrangements specially adapted for transparent or reflecting areas H05B 3/84; { optical apparatus 42H })

NOTE

In this subclass, the following terms are used with the meanings indicated :

- "simple lens or prism" means a single lens or prism;
- "compound lens or prism" means an optical member, the constituents of which either are close together without air-space or (except in group G02B 11/00) are "in broken contact",
i.e. with the air-space between the constituents having no essential optical influence;
- "objective" means a lens or an optical system designed to produce a real image of a real object;
- "eyepiece" means a lens or an optical system designed to produce a virtual image for viewing by the eye or by another optical system;
- "front" or "rear" is determined by looking from the more distant conjugate.

WARNING

The following IPC groups are not used in the CPC classification system. Subject matter covered by these groups is classified in the CPC groups:
G02B 11/00 - G02B 11/34 covered by G02B 9/00 and subgroups and G02B 13/00 and subgroups

G02C **SPECTACLES; SUNGLASSES OR GOGGLES INSOFAR AS THEY HAVE THE SAME FEATURES AS SPECTACLES; CONTACT LENSES** (trial frames for testing the eyes A61B 3/04; goggles or eyeshields not having the same features as spectacles A61F 9/00)

NOTE

This subclass also covers monocles, pince-nez or lorgnettes.

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 G01D 5/26; devices in which mathematical operations are carried out with optical elements G06E 3/00, { G06E 3/001 }; electrical signal transmission systems using optical means to convert the input signal G08C 19/36; information-recording by electric or magnetic means and reproducing by sensing optical properties G11B 11/00; static stores using optical elements G11C 13/04; transmission systems employing electromagnetic waves other than radio waves, e.g. light, infra-red radiation, H04B 10/00; optical multiplex systems H04J 14/00; pictorial communication, e.g. television H04N)

WARNING

Subject matter covered by these groups is classified in the following CPC groups:
- G02F 1/13357 covered by G02F 1/1336 and subgroups

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 G02B 7/28; photosensitive materials or processes for photographic purposes G03C ; apparatus for processing exposed photographic materials G03D)

NOTE

This subclass covers, as far as processes are concerned, only processes characterised by the use or manipulation of apparatus classifiable per se in this subclass.

1. This subclass covers:

apparatus or methods for taking photographs using light sensitive film for image capture, apparatus, or methods for printing, for projecting or viewing images using film stock, photographic film or slides by optical means, e.g. mounting of optical elements, flashes, or their related controls, e.g. exposure, focus, (opto-)mechanical motion blur (anti-shake), cooling, beam shaping;

aspects of apparatus or methods for taking photographs using an electronic image sensor [EIS] for image capture, insofar as they correspond to those of said apparatus or methods for taking photographs using light sensitive film, i.e. insofar not peculiar to the presence of the EIS, e.g. mounting of optical elements or flashes not peculiar to the presence of the EIS, or their related controls insofar they are not peculiar to the presence of the EIS, e.g. exposure, focus, (opto-) mechanical motion blur (anti-shake);

aspects of apparatus or methods for projecting or viewing images using an electronic spatial light modulator [ESLM], insofar as they correspond to those of said apparatus or methods for projecting or viewing images using film stock, photographic film or slides, i.e. insofar as not peculiar to the presence of the ESLM, e.g. mounting of optical elements not peculiar to the presence of the ESLM, or their related controls not peculiar to the presence of the ESLM, e.g. cooling, beam shaping, optical keystone correction;

(opto-)mechanical image enhancement in printers or projectors, e.g. keystone correction;

optical viewfinders;

remote control of cameras and projectors insofar not peculiar to the EIS or ESLM;

optical aspects of camera modules using electronic image sensors or related constructional details;

constructional aspects of projectors, e.g. cooling, beam shaping, light integrating means not peculiar to the ESLM.

2. This subclass does not cover:

concerning cameras or projectors:

arrangements or methods for image capture peculiar to the presence or use of an EIS or image projection peculiar to the presence or use of an ESLM, and their related controls insofar they are peculiar to the presence or use of the EIS or ESLM, which are covered by H04N ;

processing of electrical image signals from the EIS or provided to the ESLM, which is covered by H04N ;

electronic viewfinders, e.g. control of image pickup devices based on information indicated by the electronic viewfinder displaying an image signal generated by the EIS, which are covered by H04N ;

electrical or mechanical aspects of camera modules using electronic image sensors and related constructional details as in webcams or mobile phones, which are covered by H04M , H04N ;

details of projectors peculiar to the use of an ESLM, e.g. dichroic or polarizing arrangements specially adapted for the ESLM, which are covered by H04N ;

remote control of cameras or projectors peculiar to the EIS or the ESLM, e.g. affecting their operation, or based on a generated electrical image signal, which is covered by H04N ;

adaptations peculiar to the use of an EIS or ESLM or the display, the transmission, recording or other use of electrical image data and related circuitry, e.g. mounting of EIS or ESLM, integrated cleaning system for the EIS, dust mapping, cooling of the EIS. which are coveerd by H04N ;

video cameras, TV cameras, e.g. in studios, CCTV cameras, surveillance cameras and camcorders; constructional and mechanical details related to such cameras, e.g. housings, even when not peculiar to the presence of an EIS, which are covered by H04N 5/225;

systems or apparatus wherein the inventive contribution lies in features covered above, concerning cameras when interacting with those to be covered by G03B , e.g. switch-over between electronic motion-blur correction of electronic viewfinder during focussing and optical motion-blur correction of the lens during exposure, electronic-motion blur correction of the electronic image signal based on output signals of additional sensor, or interaction between mechanical shutter and electronic control of the charge accumulation period of the EIS, which are covered by H04N .

EIS-sensor read-out, which is covered by H04N 5/335;

processing or use of electrical image signals from the EIS for the generation of camera control signals. e.g. focusing, exposure control, electronic blur correction, display in electronic viewfinder, which are covered by H04N 5/232, H04N 5/235.

optical parts for apparatus or arrangements for taking photographs or for projecting or viewing them, which are covered by G02B ;

photosensitive materials for photographic purposes, which are covered by G03C ;

apparatus for processing exposed photographic materials; accessories therefor, which are covered by G03D .

optical elements or arrangements associated with solid state imager structures, which are covered by H01L 27/146;

3. In this subclass the following expression is used with the meaning indicated:
subject to the application of Notes 1 and 2 above, "photography" is the process of recording pictures by means of capturing light on a light-sensitive medium, e.g. silver halide based chemical or an electronic image sensor. Light patterns reflected or emitted from objects expose such a light sensitive medium during a timed exposure, usually through a photographic lens in a device known as a camera.

4. In this subclass, as in subclass H04N , the following terms are used with the meaning indicated:
"camera": a device capturing image information represented by light patterns reflected or emitted from objects, and exposing a light sensitive film or a main electronic image sensor during a timed exposure, usually through a photographic lens, and producing an image on a light sensitive film or an electrical image information signal respectively;

"projector": a device displaying image information by projection of light patterns, usually through an optical lens, wherein the light patterns are generated by illuminating an image, e.g. film or slide, or by converting an electric image signal into an optical signal using an electronic spatial light modulator;

"electronic image sensor [EIS]": optoelectronic transducer, converting optical image information into an electrical signal susceptible of being processed, stored, transmitted or displayed;

"additional sensor": a sensor, other than the main electronic image sensor, used for controlling a camera;

"electronic spatial light modulator [ESLM]": optoelectronic transducer converting electric signals representing image information into optical image information.]

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)

NOTE

In this subclass, the following expressions are used with the meanings indicated :

- "photosensitive compositions" covers photosensitive substances, e.g. silverhalides, and, if applicable, binders or additives;
- "photosensitive materials" covers the photosensitive compositions, e.g. emulsions, the bases carrying them, and, if applicable, auxiliary layers.

WARNING

Subject matter covered by this group is classified in the following CPC group:
-G03C 9/08 covered by G03F 7/00S

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)

NOTE

In this subclass, the following terms or expressions are used with the meanings indicated :

- "photosensitive" means not only sensitive to electromagnetic radiation but also to corpuscular radiation;
- "photosensitive compositions" covers photosensitive substances, e.g. quinonediazides, and, if applicable, binders or additives;
- "photosensitive materials" covers the photosensitive compositions, e.g. photoresists, the bases carrying them and, if applicable, auxiliary layers.

WARNING

The following IPC groups are not used in the CPC system. Subject matter covered by these groups is classified in the following CPC groups :

G03F 3/08 covered by H04N 1/46
G03F 7/207 " G03F 7/20
G03F 7/23 " G03F 7/22
G03F 9/02 " G03F 9/00

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 H04N 5/76)

NOTE

This subclass covers:

- the production of permanent directly-visible pictures in conformity with an original picture or document, using an intermediate imagewise distribution of an electric or magnetic quantity, such as a charge pattern, an electric conductivity pattern, or a magnetic pattern;
- the production of permanent directly-visible pictures using an intermediate imagewise distribution of an electric or magnetic quantity, when the origin and the way of generating said intermediate distribution are not relevant.

This subclass does not cover:

- use of electric signals for the transmission of the picture information from the original to the reproduction, i.e. pictorial communication, which is covered by subclass H04N ;
- production of pictures by heat patterns exclusively, not using an electrostatic or magnetic pattern, which is covered by group B41M 5/00;
- production of prints by transferring ink from a printing form to a printing surface, without physical contact and using the force of an electrostatic field, which is covered by subclass B41M ;
- selective printing mechanisms characterised by the selective supply of electric current, or the selective application of magnetism or radiation, to a printing material or impression-transfer material, which are covered by groups B41J 2/385, B41J 2/435.

G03H **HOLOGRAPHIC PROCESSES OR APPARATUS** (holograms, e.g. point holograms, used as ordinary optical elements G02B 5/32; producing stereoscopic or other three-dimensional effects G02B 27/22; diffraction-grating systems G02B 27/44; systems using moirè fringes G02B 27/60; optical logic elements G02F 3/00; stereo-photography G03B 35/00; photosensitive materials or processes for photographic purposes G03C ; { stereo-photographic or similar processes G03C 9/00 }; apparatus for processing exposed photographic materials G03D ; analogue computers performing mathematical operations with the aid of optical elements G06E 3/00; authentication by radiation, of concealed information carried by holograms or diffraction gratings G06K 19/16; holographic storage G11B 7/0065, G11C 13/04; { stereoscopic or other three dimensional effects in television systems H04N 13/00 })

NOTE

This subclass covers means for producing a record of the phase and amplitude information of a wave-front, which information can be used to reconstruct the original wave-front, or means to reconstruct the original wave-front from a record containing the phase and amplitude information of the wave-front.

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 G04C 23/00; clocks or watches with stop devices G04F 7/08)

NOTE

This subclass covers mechanically-driven clocks or clockwork calendars, and the mechanical part of such clocks or calendars.

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)

NOTE

This subclass covers electric features of mechanically-driven clocks or watches, such as electric winding of such clocks or the provision of electric contacts thereon.

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. G01R 29/02; in radar or like systems G01S ; masers H01S 1/00; generation of oscillations H03B ; generation or counting of pulses, frequency dividing, analogue/digital conversion H03K) { time fuzes F42C 9/00 }

NOTE

This subclass covers:

- apparatus for measuring-off predetermined time intervals;
- apparatus for producing such intervals as timing standards, e.g. metronomes;
- apparatus for measuring unknown intervals, e.g. precision systems for short time interval measurement.

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

G04F 10/08 covered by G04F 5/16

G04G **ELECTRONIC TIME-PIECES**

NOTE

This subclass covers:

- electronic time-pieces with no moving parts; - electronic circuitry for producing timing pulses irrespective of the nature of the time indicating means utilised.

This subclass does not cover electronic time-pieces with moving parts, which are covered by subclass G04C .

G04R **RADIO-CONTROLLED TIME-PIECES**

G05 **CONTROLLING; REGULATING** (specially adapted to a particular field of use, see the relevant place for that field, e.g. A62C 37/00, B03B 13/00, B23Q)

NOTE

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

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

- "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 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".

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)

NOTE

This subclass covers features of control systems or elements for regulating specific

variables, which are clearly more generally applicable.

This subclass does not cover applications of such systems or elements, which are covered by subclass G05D or G05F .

In this subclass, the following terms or expressions are used with the meanings indicated :

- "automatic controller" means a system, circuit, or device in which a signal from the detecting element is compared with a signal representing the desired value and which operates in such a way as to reduce the deviation. The automatic controller generally does not include the sensitive element, i.e. that element which measures the value of the condition to be corrected, or the correcting element, i.e. that element which adjusts the condition to be corrected;
- "electric" includes "electromechanical", "electrohydraulic" or "electropneumatic".

In this subclass, details or specific control systems are classified in the group relevant to that system, if not otherwise provided for.

G05D SYSTEMS FOR CONTROLLING OR REGULATING NON-ELECTRIC VARIABLES (for continuous casting of metals B22D 11/16; valves per se F16K ; sensing non-electric variables, see the relevant subclasses of G01 ; for regulating electric or magnetic variables G05F)

NOTE

This subclass does not cover features of general applicability to regulating systems, e.g. anti-hunting arrangements, which are covered by subclass G05B .

In this subclass, the following term is used with the meaning indicated:

- "systems" includes self-contained devices such as speed governors, pressure regulators.

Control systems specially adapted for particular apparatus, machines or processes are classified in the subclasses for the apparatus, machines or processes, provided that there is specific provision for control or regulation relevant to the special adaptation, either at a detailed level, (e.g. A21B 1/40: "for regulating temperature in bakers` ovens") or at a general level, (e.g. B23K 9/095: "for automatic control of welding parameters in arc welding"). Otherwise, classification is madein the most appropriate place in this subclass. The following are lists of places where there is specific provision of the kind referred to above. Where such provision is at a detailed level, the places have been grouped according to the main groups of this subclass. Where the provision is at a general level (e.g. of a kind appropriate to more than one of the main groups specified in the lists, or to main groups G05D 27/00 or G05D 29/00), the places are listed under the title "General References". Places related to G05D 1/00

A01B 69/00 Agricultural machines or implements
A63H 17/36 Toy vehicles
B60V 1/11 Air-cushion vehicles
B62D 1/00 Steering controls of motor vehicles or trailers, i.e. means for initiating a change of direction

B62D 6/00 Arrangements for automatically controlling the steering depending on driving conditions
B62D 55/116 Chassis of endless-tracked vehicles
B63H 25/00 Marine steering; control of waterborne vessels
B64C 13/00 to B64C 15/00 Controlling aircraft
B64D 25/11 Controlling attitude or direction of aircraft ejector seats
B64G 1/24 Cosmonautic vehicles
F41G 7/00 Self-propelled missiles
F42B 15/01 Guided missiles
F42B 19/01 Marine torpedoesPlaces related to G05D 3/00
A43D 119/00 Footwear manufacture
B21K 31/00 Tool carriers in forging or pressing
B23B 39/26 Pattern-controlled boring or drilling tools
B23D 1/30, B23D 3/06, B23D 5/04 Planing or slotting machines controlled by copying device
B23H 7/18 Electrode to workpiece spacing in electric dischargte and electrochemical machining
B23K 26/02 Workpiece in laser welding or cutting
B23K 37/04 Workpiece in welding
B23K 37/06 Molten metal in welding
B23Q 5/20 Spindles in machine tools
B23Q 15/00, B23Q 16/00 Tool or work position in machine tools
B23Q 35/00 Tools controlled by pattern or master model
B24B 17/00 Grinding controlled by patterns, drawings, magnetic tape or the like
B24B 47/22 Starting position in grinding
B30B 15/24 Actuating members in presses
B62D 55/116 Chassis of tracked vehicles
B65H 23/18 Web-advancing mechanisms
E02F 3/43 Dippers or buckets in dredgers
F15B 9/00 Fluid-pressure servomotors with follow-up action
F24J 2/38 Tracking of solar haet collectors
G03F 9/00 Photomechanical production of patterned or textured surfaces
G11B 5/588 Rotating heads in information storage systems
G21C 7/12 Movement of control elements in nuclear reactors
Places related to G05D 5/00
A24B 7/14 Tobacco cutting
B05C 11/02 Thickness of coating of fluent material on surface
B21B 37/16 Thickness, width, diameter or other transverse dimensions of the products of metal-rolling mills
C03B 18/04 Dimension of glass ribbon
D21F 7/06 Thickness of layer in paper makingPlaces related to G05D 7/00
A45D 20/26 Air in hair drying helmets
A61M 5/168 Flow of media to the human body
B03C 3/36 Gases or vapour in electrostatic separators
B05C 11/10 Fluent material in coating devices
B67D 1/12 Dispensing beverages on draught
B67D 5/28 Transferring liquids
C10K 1/28 Gas purifiers
E21B 21/08 Flushing boreholes
E21B 43/12 Obtaining liquids from wells
F01D 17/00 Flow in non-positive-displacement machines or systems
F01M 1/16 Lubrication arrangements
F01P 7/00 Coolant flow in cooling devices
F02C 9/16,
F02C 9/50 Gas-turbine working fluid

F16L 55/027 Throttle passages in pipes
F24F 11/00 Air-flow or supply of heating or cooling fluids in air treatment arrangements
F26B 21/12 Air or gas flow in dryers
G01G 11/08 Continuous flow weighing apparatus
G21D 3/14 Coolant in nuclear power plantPlaces related to G05D 9/00
B01D 21/34 Liquid level in sedimentation arrangements
B41L 27/04 Ink level in printing, manifolding or duplicating arrangements
F22D 5/00 Feed water for boilers
H01J 1/10, H01J 13/14 Liquid pool electrodes in electric discharge tubes or lampsPlaces related to G05D 11/00
B01D 21/32 Density in sedimentation arrangements
B01F 15/04 Mixers
B24C 7/00 Abrasive blasts
B28C 7/00 Mixtures of clays or cements
B65G 53/66 Bulk material conveyers
F02K 3/075 Flow ratio in jet-propulsion plantsPlaces related to G05D 13/00
B21C 1/12 Drum speed in metal drawing
B23Q 15/00 Cutting velocity of tool or work
B30B 15/20 Ram speed in presses
B60K 31/00 Setting or limiting speed of vehicles
B60L 15/00 Electrically-propelled vehicles
B64D 31/08 Cruising speed of aircraft
D01D 1/09 Feed rate in manufacture of artificial filaments, threads, fibres, bristles or ribbons
D01G 15/36 Carding machines
D02H 13/14 Warping, beaming or leasing machines
D03D 51/16 Cyclically varying speed of looms
G01N 30/32 Speed of fluid carrier in chemical analysis
G11B 15/46 Filamentary or web record carriers or heads for such carriers in information storage systems
G11B 19/28 Non-filamentary, non-web record carriers, or heads for such carriers in information storage systemsPlaces related to G05D 15/00
B25D 9/26 Portable percussive tools
B30B 15/22 Ram pressure in presses
B65H 59/00 Tension in filamentary material
{ B65H 23/00, B65H 59/00 } Tension in webs, tapes, filamentary material
B66D 1/50 Rope, cable or chain tension
D03D 49/04 Tension in looms
D05B 47/04 Tension in sewing machines
D21F 3/06 Pressure in paper-making machines
F26B 13/12 Drying fabrics
F26B 21/10 Pressure in dryers
G11B 15/43 Record carrier tension in information storage arrangementsPlaces related to G05D 16/00
B60C 23/00 Tyre pressure
B63C 11/08 Air within diving suit
B64D 13/00 Aircraft air-pressure
B65G 53/66 Bulk material conveyers
D01D 1/09 Manufacture of artificial filaments, threads, fibres, bristles or ribbons
E21B 21/08 Flushing boreholes
F01M 1/16 Lubrication arrangements
G01N 30/32 Pressure of fluid carrier in chemical analysis
H01J 7/14 Pressure in electric discharge tubes or lamps
H01K 1/52 Pressure in electric incandescent lampsPlaces

related to G05D 19/00
B25D 9/26 Portable percussion tools
B65G 27/32 Jigging conveyersPlaces related to G05D 21/00
B01D 21/32 Density in sedimentation arrangements
B01D 53/30 Treating gases or vapours
G01N 30/34 Composition of fluid carrier in chemical analysis
Places related to G05D 22/00
A01G 25/16 Watering gardens, fields, sports grounds or the like
A01K 41/04 Poultry incubators
A24B 9/00 Tobacco products
F24F 11/00 Air conditioning
F26B 21/08 DryersPlaces related to G05D 23/00
A21B 1/40 Bakers` ovens
A45D 6/20 Hair curlers
B21C 31/00 Metal extruding
B60C 23/00 Tyre temperature
B64G 1/50 Cosmonautic vehicles
C03B 18/18,
C03B 18/22 Float baths in glass making
D01D 1/09 Manufacture of artificial filaments, threads, fibres, bristles or ribbons
D04B 35/30 Knitting machines
D06F 75/26 Hand irons
D21F 5/06 Paper-making machines
F01M 5/00 Lubricant in lubrication arrangements
F16N 7/08 Arrangements for supplying oil or unspecified lubricant from a reservoir
F22G 5/00 Steam superheat
F26B 21/10 Dryers
G01N 30/30 Temperature of fluid carrier in chemical analysis
H01M 10/50 Electric storage cells
H05B 6/06,
H05B 6/50,
H05B 6/68 Dielectric, induction or microwave heating
H05G 1/36 Anode of X-ray tubePlaces related to G05D 25/00
B41B 21/08 Photographic composing machines
H01S 3/10,
H05B 33/08,
H05B 35/00 to
H05B 43/00 Lasers and other light sourcesGeneral references
A01J 5/007 Milking machines
B23K 9/095 Welding parameters
B23Q 35/00 Copying
B24B 17/00,
B24B 49/00 Grinding or polishing
B24C 7/00 Abrasive blasts
B67D 1/12 Dispensing beverages on draught
G03G 21/20 Electrographic, electrophotographic or magnetographic processes
H02P 5/00 to
H02P 9/00 Dynamo-electric motors or generators

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 G06F 1/26; regulating electric power distribution networks H02J ; regulating the charging of batteries H02J 7/00; regulation of the output of static converters, e.g. switching regulators H02M ; regulation of

the output of electric generators H02N , H02P 9/00, H03L ; controlling transformers, reactors or choke coils H02P 13/00; 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 H05G 1/30)

NOTE

This subclass covers:

- systems only;
- use of hydraulic, pneumatic, mechanical, and electrical motors for varying electric characteristics of devices which restore the quantity regulated;
- the combination of static converters and current or voltage regulators, if the invention resides in the combination.

This subclass does not cover elements per se, which are covered by the relevant subclasses.

WARNING

The following IPC groups are not used in the internal CPC classification scheme. Subject matter covered by these groups is classified in the following CPC groups:
G05F 3/28 covered by G05F 3/26
G05F 5/02 " " G05F 5/00
G05F 5/04 " " G05F 5/00
G05F 5/06 " " G05F 5/00
G05F 5/08 " " G05F 5/00

G05G CONTROL DEVICES OR SYSTEMS INSOFAR AS CHARACTERISED BY MECHANICAL FEATURES ONLY ("Bowden" or like mechanisms F16C 1/10; gearings or mechanisms not peculiar to this purpose F16H ; speed changing or reversing mechanisms for gearings conveying rotary motion F16H 59/00 to F16H 63/00)

NOTE

This subclass covers :

- members of general applicability for mechanical control;
- mechanical systems for moving members to one or more definite settings.

Systems peculiar to the control of particular machines or apparatus provided for in a single other class are classified in the relevant class for such machines or apparatus, for example:

A61G 13/02 Controls for adjusting operating tables
A61G 15/02 Controls for adjusting operating chairs
B25J Manipulators, e.g. controls therefor
B60K 26/00 Arrangement or mounting of propulsion-unit control devices in vehicles
B60T 7/00 Vehicle brake-action initiating means
B62D 33/073 Adaptations of control devices for movable vehicle cabs
B62K 21/00 Cycle-steering devices

B62K 23/00 Rider-operated controls specially adapted for cycles
B62L 3/00 Brake-actuating mechanisms specially adapted for cycles
B63H 25/02 Marine steering initiating means
B66B 1/00 Controls for elevators
B66C 13/18 Control systems or devices for cranes
B66C 13/56 Arrangements of handles or pedals for crane operation
E02F 9/20 Control devices for dredging or soil shifting machines
F16C 3/28 Adjustable cranks or eccentrics
F16D 43/00 Automatic clutches
{ F16H 59/00 to F16H 63/00 Speed changing or reversing mechanisms for gearings conveying rotary motion }
F16K 31/00, F16K 33/00 Controls for valves
F16P 3/00 Safety devices acting in conjunction with the control or operation of a machine
F16P 7/02 Stopping machines on occurence of dangerous conditions therein
G02B 21/32 Micromanipulators structurally combined with microscopes
G04B 1/00 to G04B 18/00 Driving mechanisms in clocks or watches
G06C Digital computers in which all the computation is effected mechanically
G06F 3/02 Manual computer input arrangements
G06K 11/00 Converting a pattern of mechanical parameters into electric signals
G21C 7/08 Displacement of solid control elements in nuclear reactors
H01H Mechanisms for operating switch contacts
H03J 1/00 Mechanical control of resonant circuits.

G06 COMPUTING; CALCULATING; COUNTING (score computers for games A63B 71/06, A63D 15/20, A63F 1/18; combinations of writing implements with computing devices B43K 29/08)

NOTE

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

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

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;

In those subclasses which include simulators:

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

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;

measurement of an individual variable to serve as an input to a simulator is in G01 { 21E; 42; 119 }

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 ;

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

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

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 A63F 1/18; 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 G07G 1/00)

NOTE

Details of mechanisms covered in main groups G06C 9/00, G06C 11/00 or G06C 15/00, which are applicable to mechanical counters driven only through the lowest denomination, are classified in G06M

G06D **DIGITAL FLUID-PRESSURE COMPUTING DEVICES**

NOTE

This subclass includes all devices in which at least one computing function is performed by hydraulic or pneumatic means

G06E **OPTICAL COMPUTING DEVICES;** { COMPUTING DEVICES USING OTHER RADIATIONS WITH SIMILAR PROPERTIES } (optical logic elements per se G02F 3/00; digital storage using optical elements G11C 13/04)

NOTE

This subclass covers all devices in which at least one computing function is performed by optical means.

If other aspects, for example mechanical, fluid pressure or electrical computing, are of interest, classification is also made in the relevant subclass for such aspects.

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)

NOTE

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

- "handling" includes processing or transporting of data;
- "data processing equipment" means an association of an electric digital data processor classifiable under group G06F 7/00, with one or more arrangements classifiable under groups G06F 1/00 to G06F 5/00 and G06F 9/00 to G06F 13/00.

WARNING

The following IPC groups are not used in the CPC classification scheme. Subject matter covered by these groups is classified in the following CPC groups:
G06F 3/18 covered by G06F 3/00, G06K 11/00
G06F 7/04 covered by G06F 7/02
G06F 9/302-G06F 9/318 covered by G06F 9/30
- G06F 9/40 covered by G06F 9/4425 and subgroups - G06F 9/42 covered by G06F 9/4426 and subgroups - G06F 9/45 covered by G06F 8/41 and subgroups

G06G **ANALOGUE COMPUTERS** (analogue optical computing devices G06E 3/00)

G06J **HYBRID COMPUTING ARRANGEMENTS** (optical hybrid computing devices G06E 3/00; { fuzzy computing G06N 7/02 }; neural networks for image data processing G06T ; analog/digital conversion, in general H03M 1/00)

NOTE

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

- "hybrid computing arrangement" is an arrangement in which part of the computation is digital and part is analogue.

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

NOTE

This subclass covers:

- marking, sensing, and conveying of record carriers;
- recognising characters or other data;
- presenting visually or otherwise the data recognised or the result of a computation.

This subclass does not cover printing per se.

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 H04L 12/08)

NOTE

This subclass covers:

- stepping or continuously-moving mechanical counters operated through one or more inputs applied to the lowest order mechanically or electrically;
- counting systems involving applications of either mechanical, electrical, or electronic counters.

G06N **COMPUTER SYSTEMS BASED ON SPECIFIC COMPUTATIONAL MODELS**

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**

NOTE

Groups G06Q 10/00 to G06Q 50/00 and G06Q 99/00 only cover systems or methods that involve significant data processing operations, i.e. data processing operations that need to be carried out by a technological, e.g. computing, system or device.
Group G06Q 90/00 covers systems or methods that do not involve significant data processing, when both of the following conditions are fulfilled:
the systems or methods are specially adapted for the purposes mentioned in

the subclass title or the titles of groups G06Q 10/00 to G06Q 50/00; and

the systems or methods cannot be classified elsewhere in the IPC, for example by applying the principles described in paragraph 96 of the Guide.

When classifying such systems or methods in group G06Q 90/00, additional classification may be made in the most closely related group of this or any other subclass, if this classification gives information about the application of the systems or methods that could be of interest for searching. Such non-obligatory classification must be given as "additional information".

When classifying in groups G06Q 10/00 to G06Q 40/00, systems or methods that are specially adapted for a specific business sector must also be classified in group G06Q 50/00, when the special adaptation is determined to be novel and non-obvious.

In this subclass, the first place priority rule is applied, i.e. at each hierarchical level, classification is made in the first appropriate place.

WARNING

G06Q has been largely refined to bring most of the former USPC 705 groups into ECLA, prior to CPC launch. Therefore, most of the new G06Q subdivisions are not complete pending reclassification. Users are invited to systematically consult also the hierarchically higher groups, up to the first valid IPC group. For example, while searching in G06Q 50/2053, it is appropriate to consult also G06Q 50/205 and G06Q 50/20

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

NOTE

This subclass covers:
- arrangements for geometrically modelling objects, whether the final model is used for display of an image of the object or for some other purpose, such as manufacture of a corresponding object;
- arrangements for analysing the geometric attributes of an image of an object.

This subclass does not cover:
- reading or recognising printed or written characters or recognising patterns, e.g. fingerprints, which is covered by subclass G06K ;
- modification of image data to allow display using multiple viewports, which is covered by subclass G09G ;
- circuits for generating functions for visual indicators, which are covered by subclass G09G ;
- scanning of documents or the like in pictorial communication, which is covered by subclass H04N .

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:
G06T 1/40 covered by G06T 1/20

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 A61B 5/103; 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

NOTE

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

? "coins" also covers tokens of similar nature;
? "paper currency or similar valuable papers" covers banknotes, bills, cheques, vouchers, securities, bonds or the like.

This suclass covers handling of "coins" or "paper currency" insofar as they carry distinctive value features representative of money or the like.

Informative references: - sorting in general B07C - handling paper sheets in general B65H - counting by weighing G01G - counting of objects in general, i.e. without discriminating of denominations, G06M

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups: G07D 13/00 covered by G07D 11/00 and subgroup.

G07F COIN-FREED OR LIKE APPARATUS (coin sorting G07D 3/00; coin testing G07D 5/00; { handling coins or paper currencies apart from payment activated apparatus G07D ; payment architectures, schemes or protocols G06Q 20/00 })

NOTE

This subclass does not cover constructions or details of apparatus which includes,

or is combined with, coin-actuated mechanisms but is not specially adapted or modified for use therewith. Such constructions or details are covered by the relevant subclass for the particular apparatus.

In this subclass, the following term are used with the meaning indicated: o { - "coin-freed" means "payment activated" } o "coins" covers also tokens or the like.

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups :
- G07F 7/12 covered by G07F 7/08E

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)

G08B SIGNALLING OR CALLING SYSTEMS; ORDER TELEGRAPHS; ALARM SYSTEMS (signalling arrangements on vehicles B60Q , B62D 41/00; railway signalling systems or devices B61L ; on cycles B62J 3/00, B62J 6/00; safes or strong-rooms with alarm devices E05G ; signalling or alarm devices in mines E21F 17/18; 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 H04B 5/00, H04B 7/00; selecting arrangements H04Q 7/00, H04Q 9/00; loudspeakers, microphones, gramophone pick-ups or like acoustic electromechanical transducers H04R)

NOTE

This subclass covers also means for identifying or incapacitating burglars or the like.

This subclass does not cover:

the mere provision of an audible or visible signalling device on measuring or switching apparatus;

alarm systems for indicating that a specific variable has exceeded, or fallen below, a predetermined value, which are covered by the relevant subclasses of class G01 for the measurement of that variable.

alarms for specific processes or types of machines or apparatus, which are covered by the relevant subclasses for the processes, machines, or apparatus.

In this subclass, the following term is used with the meaning indicated:
- "systems" may cover also devices peculiar thereto.

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 G01D 5/00; means for converting the output of the sensing member into a different variable G01D 5/00; self-balancing bridges G01R ; position control in general G05D 3/00; mechanical control systems G05G ; systems for transmitting "on/off" signals only, systems for transmitting alarm conditions G08B ; order telegraph systems G08B 9/00; generating electric pulses H03K ; coding, decoding or code conversion H03M ; transmission of digital information H04L ; selective calling from one station to another H04Q 9/00)

G08G **TRAFFIC CONTROL SYSTEMS** (guiding railway traffic, ensuring the safety of railway traffic B61L ; arrangement of road signs or traffic signals E01F 9/00; radar or analogous systems, sonar systems, lidar systems specially adapted for traffic control G01S 13/91, G01S 15/88, G01S 17/88; { radar or analogous systems, sonar systems, lidar systems specially adapted for anti-collision purposes G01S 13/93, G01S 15/93, G01S 17/93 }) **C2010.02**

NOTE

This subclass covers:

- identification of traffic offenders; - indicating the position of vehicles for traffic control purposes; - navigation systems for traffic control purposes, i.e. systems in which the navigation is not performed autonomously by or in the vehicles, but where the vehicles are guided by instructions transmitted to them; - indication of free spaces in parking areas.

This subclass does not cover:

- arrangements for measuring levels and bearings for surveillance and navigation, which are covered by G01C ; - radio navigation systems, e.g. for locating, measuring distances or velocity, which are covered by G01S ; - details of display instrumentation, which are covered by G09F , G09G

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 A61B 5/16; games, sports, amusements A63 ; projectors, projector screens G03B)

NOTE

This subclass covers:

- simulators regarded as teaching or training devices, which is the case if they give perceptible sensations having a likeness to the sensations a student would experience in reality in response to actions taken by him;
- models of buildings, installations, or the like.

This subclass does not cover:

- simulators which demonstrate, by means involving computing, the function of apparatus or of a system, which are covered by class G06 , if no provision exists elsewhere
- components of simulators, if identical with real devices or machines, which are covered by the relevant subclasses for these devices or machines (and not by class G09).

G09C **CODING OR CIPHERING APPARATUS FOR CRYPTOGRAPHIC OR OTHER PURPOSES INVOLVING THE NEED FOR SECRECY** (secret transmission H04K ; arrangements for secret telegraphic communication H04L 9/00)

G09D **RAILWAY OR LIKE TIME OR FARE TABLES; PERPETUAL CALENDARS** (calendar blocks B42D 5/04; 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 B44F 1/00; disposition of road signs or traffic signals E01F 9/00; lighting in general F21 ; arrangements for controlling light beams G02F 1/00; visible signalling arrangements or devices G08B 5/00; traffic control systems G08G ; arrangements or circuits for control of indicating devices using static means to present variable information G09G , { G06F 3/14 }; static indicating arrangements comprising integral associations of a plurality of light sources H01J , H01K , H01L , H05B 33/12)

NOTE

In this subclass, the following term is used with the meaning indicated :

- "sign" designates a mark or indication serving to make something recognisable, the information presented being non-varying, even if it is flashing; by way of example it covers, therefore, advertising hoardings, or luminous, or light reflecting, safety arrangements.

Attention is drawn to the Notes following the titles of class B81 and subclass B81B relating to "micro-structural devices" and "micro-structural systems".

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 G01R 3/00; devices or arrangements for the control of light beams G02F 1/00; indicating of time by visual means G04B 19/00, G04C 17/00, G04G 9/00; arrangements for transferring data between computers and peripheral equipment G06F 3/00; visible signalling arrangements or devices G08B 5/00; 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 G09F 9/00; static indicating arrangements comprising integral associations of a number of light sources H01J , H01K , H01L , H05B 33/12; circuits in pulse counters for indicating the result H03K 21/18; 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)

NOTE

This subclass covers indicator consoles, i.e. arrangements or circuits for processing control signals to achieve the display, e.g. for the calling up, reception, storage, regeneration, coding, decoding, addressing of control signals.

This subclass does not cover the structural details of the indicating devices, such as panels or tubes per se, or assemblies of individual light sources, which are covered by the relevant subclasses, e.g. H01J , H01K , H01L , G02F , G09F , H05B .

Contrary to subclass H04N , in which are classified display devices capable of representing continuous brightness value scales, this subclass is limited to devices using only a discrete number of brightness values, e.g. visible/non-visible.

The visual effect may be produced by a luminescent screen scanned by an electron beam, directly by controlled light sources, by projection of light, from controlled light sources onto characters, symbols, or elements thereof drawn on a support, or by electric, magnetic, or acoustic control of the parameters of light rays from an independent source.

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

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G09G 5/32 covered by G09G 5/42
G09G 5/37 covered by G09G 5/39
G09G 5/373 covered by G09G 5/39
G09G 5/377 covered by G09G 5/39
G09G 5/38 covered by G09G 5/42
G09G 5/397 covered by G09G 5/395, G09G 5/399
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G10 MUSICAL INSTRUMENTS; ACOUSTICS

NOTE

This class covers all sound-emitting devices, in general, whether or not they may be considered as being musical.

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

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

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.

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.

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)

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

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)

NOTE

This subclass covers certain stringed musical instruments that can optionally include a keyboard, e.g. zithers.

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 .

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

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 .

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)

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

NOTE

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 loud-speaker or equivalent instrument.

G10K **SOUND-PRODUCING DEVICES** (sound-producing toys A63H 5/00; 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 G01S 15/00; generating seismic energy G01V 1/02; signalling or calling arrangements, alarm arrangements G08B ; piezo-electric electrostrictive or magnetostrictive elements in general H01L 41/00; transmission systems using infrasonic, sonic, or ultrasonic waves H04B 11/00; loudspeakers, microphones, gramophone pick-ups or like acoustic electromechanical transducers H04R)

NOTE

This subclass covers arrangements for generating mechanical vibrations in fluids.

This subclass covers also the production of sounds which may not be audible to human beings but which are audible to animals.

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.

G10L **SPEECH ANALYSIS OR SYNTHESIS; SPEECH RECOGNITION; SPEECH OR VOICE PROCESSING; SPEECH OR AUDIO CODING OR DECODING**

NOTE

This subclass does not cover:
devices for the storage of speech 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.

G11 INFORMATION STORAGE

G11B INFORMATION STORAGE BASED ON RELATIVE MOVEMENT BETWEEN RECORD CARRIER AND TRANSDUCER ({ producing carriers of sound records for needle playback B29C 39/00 }; 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 G06K 1/18; printing of data from record carriers G06K 3/00; arrangements for producing a permanent visual presentation of the output data G06K 15/00; 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 H04B 1/20; circuits { or arrangements } specially adapted for { pictorial or } television signal recording { H04N 1/21 }, H04N 5/76, H04N 9/79; loudspeakers, microphones, gramophone pick-ups or like acoustic electromechanical transducers or circuits therefor H04R)

NOTE

This subclass covers :

- recording or playback of information by relative movement between a record track and a transducer, the transducer directly producing, or being directly actuated by, modulation in the track being recorded or played-back, and the extent of modulation corresponding to the signal being recorded or played-back;
- apparatus and machines for recording or playback, and parts thereof such as heads;
- record carriers for use with such apparatus and machines;
- associated working of other apparatus with such apparatus and machines;
- { relative positioning or movement of transducers and record carriers before, during or after transducing operation, e.g. for accessing record carriers or parts thereof, or for track change, selection or acquisition or for track following or for accessing parts of tracks; }
- { driving or moving of heads or record carriers or both

heads and record carriers
for increasing, maintaining or decreasing the relative speed before, during or after
transducing operation }

In this subclass, the following terms or expressions are used with the meanings indicated :

- "head" includes any means for converting sinusoidal or non-sinusoidal electric
wave-forms into variations of the physical condition of at least the adjacent surface
of the record carrier, or vice versa;
- "record carrier" means 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 relatively to the record carrier.

Documents concerning relative positioning or movement of transducers and record carriers are classified in groups G11B 3/00 to G11B 7/00 and G11B 21/00 when only the transducer is controlled and in groups G11B 15/00, G11B 17/00 and G11B 19/00 when only the record carrier is controlled. When both record carrier and head are controlled, the documents are classified in G11B 15/18B, G11B 15/1816, G11B 19/00 and G11B 27/00A.
When a plurality of record carriers are controlled, the documents are classified in G11B 15/68, G11B 17/08, G11B 17/22 and G11B 27/00A.

By "access" is meant an operation including a relative movement for positioning between record carrier and head before, during or after transducing; this operation including "seek", "select", "change", "acquire" and "follow" functions for at least a part of a track on at least one record carrier. By "programmed access" is meant a sequence of access operations the result of the sequence being to acquire a wanted sequence of parts of tracks or a wanted sequence of tracks. Relative movement between head and record carrier also covers the movement of a coupling beam such as a light beam between the head and a stationary record carrier.

"Movement of the head" also covers any virtual movement or any physical movement such as obtained by switching between successive transducing parts of the head or by moving the transducing zone of the head, i.e. by "scanning". If different transducing parts of the head are switchable, the number of transducing parts should be much smaller than the number of individual storage areas of the record carrier.

Attention is drawn to the notes of subclass G11C .

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

G11B 5/65 covered by G11B 5/64 to G11B 5/64D3
G11B 5/667 covered by G11B 5/66
G11B 5/673 covered by G11B 5/66
G11B 7/16 covered by G11B 7/135
G11B 7/18 covered by G11B 7/135
G11B 7/30 covered by G11B 7/00
G11B 9/12-G11B 9/14 covered by G11B 9/00

G11B 11/24-G11B 11/26 covered by G11B 11/00
G11B 13/08 covered by G11B

G11C STATIC STORES (information storage based on relative movement between record carrier and transducer G11B ; semiconductor devices for storage H01L , e.g. H01L 27/108 to H01L 27/115; pulse technique in general H03K , e.g. electronic switches H03K 17/00; { using a static store as a picture recording medium H04N 5/907 })

NOTE

This subclass covers devices or arrangements for storage of digital or analogue information in which no relative movement takes place between an information storage element and a transducer; which incorporate a selecting-device for writing-in or reading-out the information into or from the store

This subclass does not cover elements not adapted for storage and not provided with such means as referred to in Note (3) below, which elements are classified in the appropriate subclass, e.g. of H01 , H03K .

In this subclass, the following terms are used with the meaning indicated:
- "storage element" is an element which can hold at least one item of information and is provided with means for writing-in or reading-out this information;
- "memory" is a device, including storage elements, which can hold information to be extracted when desired.

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

G11C 8/02 covered by G11C 8/00, H03K 17/00
G11C 11/4193 covered by G11C 11/00
G11C 11/4195 covered by G11C 11/00
G11C 11/4197 covered by G11C 11/00

G12 INSTRUMENT DETAILS

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

NOTE

This subclass covers only details which are not restricted to measuring instruments or to any other apparatus covered by a single class.

This subclass does not cover:

- details covered by any other subclass in section A, F, G or H. In particular, details restricted to the measuring instruments are covered by the relevant subclasses of class G01 , e.g. G01D ; - constructional details restricted to electric apparatus, e.g. casings, screenings, which are covered by subclass H05K or the relevant subclass in section H.

Attention is drawn to the Notes following the title of section G, especially as regards to the definition of the term "measuring" in Note (2) following the title of class G01 .

SUBSECTION: Nucleonics

G21 NUCLEAR PHYSICS; NUCLEAR ENGINEERING

G21B FUSION REACTORS (uncontrolled reactors G21J)

G21C NUCLEAR REACTORS (analogue computers therefor G06G 7/54; fusion reactors, hybrid fission-fusion reactors G21B ; nuclear explosives G21J)

WARNING

The following IPC groups are not used in the CPC scheme:
- G21C 1/01 covered by all other groups of G21C
- G21C 19/33 covered by all other subgroups of G21C 19/34

G21D NUCLEAR POWER PLANT (electric or magnetic analogue computers, e.g. simulators, for nuclear physics G06G 7/54)

G21F PROTECTION AGAINST X-RADIATION, GAMMA RADIATION, CORPUSCULAR RADIATION OR PARTICLE BOMBARDMENT; TREATING RADIOACTIVELY CONTAMINATED MATERIAL; DECONTAMINATION ARRANGEMENTS THEREFOR (radiation protection by pharmaceutical means A61K 7/40; in cosmonautic vehicles B64G ; combined with a reactor G21C 11/00; combined with X-ray tubes H01J 35/16; combined with X-ray apparatus H05G 1/02)

G21G CONVERSION OF CHEMICAL ELEMENTS; RADIOACTIVE SOURCES (applications of radiation in general G21H 5/00; 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 H01L 31/00)

G21J **NUCLEAR EXPLOSIVES; APPLICATIONS THEREOF** (electric or magnetic analogue computers, e.g. simulators, for nuclear physics G06G 7/54)

NOTE

This subclass covers uncontrollable fission or fusion reactions.

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

NOTE

"particle" means a molecular, atomic or subatomic particle

WARNING

- G21K 3/00 covered by G21K 1/10

G21Y **INDEXING SCHEME RELATING TO NUCLEAR REACTORS, POWER PLANTS AND EXPLOSIVES, TO PROTECTION AGAINST RADIATION, TO THE TREATMENT OF RADIOACTIVELY CONTAMINATED MATERIAL, TO APPLICATIONS OF RADIOACTIVE SOURCES AND TO THE UTILISATION OF COSMIC RADIATION**

NOTE

This subclass constitutes an internal scheme for indexing only, relating to problems (G21Y 2002/00) or solutions (G21Y 2004/00).