

CPC COOPERATIVE PATENT CLASSIFICATION

G PHYSICS (NOTES omitted)

INSTRUMENTS

G04 HOROLOGY

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.

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

Electric winding of mechanical clocks; Independent electric clocks or watches

- 1/00** Winding mechanical clocks electrically (winding mechanically G04B 3/00 {; electrical winding of spring driven arrangements for grammophones G11B 19/20})
- 1/003 . {by electro-thermal or electro-pneumatic arrangements}
- 1/006 . {for clocksystems (G04C 1/02 - G04C 1/04 take precedence)}
- 1/02 . by electromagnets
- 1/022 . . {with snap-acting armature}
- 1/024 . . . {winding-up springs}
- 1/026 . . {having unipolar rotating armature (two-pole or multi-pole arrangements G04C 1/04, G04C 1/06, G04C 1/08)}
- 1/028 . . {with linearly moving armature}
- 1/04 . by electric motors with rotating or with reciprocating movement {(in general H02K 33/00)}
- 1/06 . . winding-up springs
- 1/062 . . . {by oscillating movement}
- 1/065 . . . {by continuous rotating movement}
- 1/067 . . . {by stepping rotating movement}
- 1/08 . . raising weights
- 1/082 . . . {by oscillating movement}
- 1/085 . . . {by continuously rotating movement}
- 1/087 . . . {by stepping rotating movement}
- 1/10 . Protection against overwinding (in mechanical clocks or watches G04B 1/20, G04B 3/06, G04B 3/10; {G04B 5/24, G04B 9/02})
- 1/12 . . of the spring
- 1/14 . . of the weights
- 3/00** Electromechanical clocks or watches independent of other time-pieces and in which the movement is maintained by electric means {(synchronisation G04C 11/00)}

- 3/001 . {Electromechanical switches for setting or display (in general H01H)}
- 3/002 . . {Position, e.g. inclination dependent switches}
- 3/004 . . {Magnetically controlled}
- 3/005 . . {Multiple switches (G04C 3/004 takes precedence)}
- 3/007 . . {Electromechanical contact-making and breaking devices acting as pulse generators for setting}
- 3/008 . {Mounting, assembling of components}
- 3/02 . wherein movement is regulated by a pendulum
- 3/021 . . {using mechanical coupling (using more than one pendulum G04C 3/025; using torsion pendulums G04C 3/033; using conical pendulums G04C 3/0335)}
- 3/022 . . . {with constant impulses}
- 3/024 . . {using other coupling means, e.g. electrostrictive, magnetostrictive}
- 3/025 . . {using more than one pendulum (synchronisation between primary and secondary pendulums G04C 13/028)}
- 3/027 . . using electromagnetic coupling between electric power source and pendulum (G04C 3/033 takes precedence)
- 3/0271 . . . {the pendulum controlling contacts and mechanically driving the gear-train (constructional details of contact devices G04C 13/06, G04C 23/06)}
- 3/0273 . . . {the pendulum controlling contacts, thereby electromagnetically driving the gear-train or several gear-trains (generating driving pulses in primary clocks G04C 13/0463)}
- 3/0275 . . . {the pendulum controlling contacts, the pendulum driving electro-magnet simultaneously driving the gear-train}
- 3/0276 . . . {the pendulum controlling indirectly, i.e. without mechanical connection, contacts, e.g. by magnetic or optic means}

3/0278	. . . {the pendulum controlling the gear-train by means of static switches, e.g. transistor circuits}	3/16	. incorporating an electro-dynamic continuously rotating motor (G04C 3/02 - G04C 3/12 take precedence; clocks driven by synchronous motors G04C 15/00 ; {apparatus which can be set and started to measure-off predetermined or adjustably-fixed time intervals with electric driving means, e.g. incorporating clocks G04F 3/06 , G04F 3/08 ; electromechanical stop watches G04F 8/00 })
3/033	. . using torsion pendulums; using conical pendulums (construction thereof G04B 17/00)		
3/0335	. . . {using conical pendulums (construction thereof G04B 17/30)}		
3/04	. wherein movement is regulated by a balance {(construction thereof G04B 17/063)}	3/165	. . {comprising a mechanical regulating device influencing the electromotor (constructional details of the mechanical regulating device G04B 17/00)}
3/042	. . {using mechanical coupling}		
3/045	. . . {with constant impulses}		
3/047	. . {using other coupling means, e.g. electrostrictive, magnetostrictive}	3/18	. incorporating electro-thermal or electro-pneumatic driving means
3/06	. . using electromagnetic coupling between electric power source and balance	5/00	Electric or magnetic means for converting oscillatory to rotary motion in time-pieces, i.e. electric or magnetic escapements (regulators G04C 3/00)
3/061	. . . {the balance controlling contacts and mechanically driving the gear-train}	5/005	. {Magnetic or electromagnetic means}
3/062	. . . {the balance controlling contacts, the gear-train or several gear-trains being driven electro-magnetically thereby}	9/00	Electrically-actuated devices for setting the time-indicating means (of secondary clocks G04C 13/03; radio-controlled time-pieces G04R)
3/063	. . . {the balance controlling contacts, the balance driving electro-magnet simultaneously driving the gear-train}	9/02	. {brought into action by radio transmission}
3/064	. . . {the balance controlling indirectly, i.e. without mechanical connection, contacts, e.g. by magnetic or optic means}	9/04	. by blocking the driving means {(see provisionally G04C 9/00)}
3/065	. . . {the balance controlling gear-train by means of static switches, e.g. transistor circuits (synchronisation of balance G04C 11/084)}	9/06	. by decoupling the driving means (combined with blocking means G04C 9/04 {see provisionally G04C 9/00 })
3/066	. . . . {Constructional details, e.g. disposition of coils}	9/08	. by electric drive, {(i.e. for mechanical clocks; see provisionally G04C 9/00)}
3/067	. . . . {Driving circuits with distinct detecting and driving coils}	10/00	Arrangements of electric power supplies in time pieces {(circuits G04G 19/00; mounting, assembling of components of electromechanical watches G04C 3/008, of electronic watches G04G 17/00)}
3/068	. . . . . {provided with automatic control}		
3/069	. . . . . {Driving circuits using a single coil for detection and driving purposes}	10/02	. the power supply being a radioactive {or photovoltaic} source
3/08	. wherein movement is regulated by a mechanical oscillator other than a pendulum or balance, e.g. by a tuning fork {, e.g. electrostatically}	10/04	. with means for indicating the condition of the power supply {(in general G01R 31/36)}
3/10	. . driven by electromagnetic means		
3/101	. . . {constructional details}		
3/102	. . . . {of the mechanical oscillator or of the coil}		
3/104	. . . . . {of the pawl or the ratched-wheel (in general G04B 11/04 , G04C 11/005)}	Electric clock installations; Primary and secondary clock systems; Synchronous-motor clocks	
3/105	. . . . . {pawl and ratched-wheel being magnetically coupled}	11/00	Synchronisation of independently-driven clocks (radio-controlled time-pieces G04R)
3/107	. . . . . {Controlling frequency or amplitude of the oscillating system (circuits G04C 3/108)}	11/002	. {by changing the driving speed}
3/108	. . . {Driving circuits}	11/005	. {by changing the ratio of the driving-gear}
3/12	. . driven by piezoelectric means; driven by magneto-strictive means	11/007	. {by positioning of the index or by regulating the length of the pendulum in dependance on the time difference with a standard}
3/125	. . . {driven by magneto-strictive means}	11/02	. {by radio (time setting brought into action by radio G04C 9/02)}
3/14	. incorporating a stepping motor (G04C 3/02 - G04C 3/12 take precedence {; generating commutating pulses in primary clocks G04C 13/0463 })	11/023	. . {provided with arrangements to prevent synchronisation by interfering signals}
3/143	. . {Means to reduce power consumption by reducing pulse width or amplitude and related problems, e.g. detection of unwanted or missing step}	11/026	. . {the time-piece preparing itself on set times on the reception of the synchronising signal}
3/146	. . {incorporating two or more stepping motors or rotors}	11/04	. over a line (transmitting time signals over telephone networks H04M 11/06 {; time setting G04C 9/00 })
		11/043	. . {provided with arrangements to prevent synchronisation by interfering signals}
		11/046	. . {the time-piece preparing itself on set time on the reception of the synchronising signal}
		11/06	. with direct mechanical action on the time-indicating means {(time setting G04C 9/00)}

- 11/08 . . . using an electro-magnet or-motor {for oscillation correction}
- 11/081 . . . {using an electro-magnet}
- 11/082 . . . {acting on the pendulum (mutual synchronisation of pendulums [G04C 13/028](#))}
- 11/084 . . . {acting on the balance}
- 11/085 . . . {using an electro-motor}
- 11/087 . . . {acting on the pendulum (mutual synchronisation of pendulums [G04C 13/028](#))}
- 11/088 . . . {acting on the balance}
- 13/00 Driving mechanisms for clocks by primary clocks**
- 13/02 . . . Circuit arrangements; Electric clock installations
- 13/021 . . . {primary-secondary systems using transmission of singular pulses for driving directly secondary clocks step by step ([G04C 13/03](#) takes precedence)}
- 13/022 . . . {via existing power distribution lines}
- 13/023 . . . {via existing transmission lines (transmitting time signals over telephone networks [H04M 11/06](#))}
- 13/025 . . . {via special lines}
- 13/026 . . . {by radio}
- 13/027 . . . {primary-secondary systems using transmission of other driving signals, e.g. coded signals}
- 13/028 . . . {transmission systems for synchronisation of pendulum of secondary clocks by pendulums of primary clocks}
- 13/03 . . . Pulse transmission systems with additional means for setting the time indication of secondary clocks ([G04C 13/028](#) takes precedence)}
- 13/04 . . . Primary clocks
- 13/0409 . . . {monitoring or controlling primary clock or system with more than one primary clock, e.g. for switching-over to standby motor or power system}
- 13/0418 {by using devices similar to secondary clocks}
- 13/0427 {Systems in which secondary clocks function as primary clocks for other secondary clocks (synchronisation of independently-driven clocks [G04C 11/00](#), setting [G04C 9/00](#))}
- 13/0436 {provided with supplementary means for setting or changing the time indication of the secondary clocks}
- 13/0445 {for automatically correcting of or compensating for disturbances}
- 13/0454 {for automatically setting of secondary clocks after correction or after setting of primary clock}
- 13/0463 {Arrangements for generating normal driving pulses}
- 13/0472 {by starting an independent mechanical driving devices, e.g. motor controlling the contacts}
- 13/0481 {by switching on an electromagnetic driving device, e.g. electro-motor, controlling the contacts}
- 13/049 {by using current generating driving device}
- 13/06 Contact devices (for simultaneously winding several clocks [G04C 1/00](#))
- 13/065 {controlled by a pendulum or a balance}
- 13/08 Secondary clocks actuated intermittently
- 13/10 . . . by electromechanical step advancing mechanisms {independent clocks or watches incorporating a stepping motor [G04C 3/14](#); stepping motors in general [H02K 33/00](#)}
- 13/105 {setting the time-indicating means (adjusting independently-driven clocks [G04C 9/00](#), [G04C 11/00](#); primary-secondary systems with setting means [G04C 13/03](#))}
- 13/11 with rotating armature
- 13/12 . . . by continuously-rotating electric motors {(independent clocks [G04C 3/16](#); clocks driven by synchronous motors [G04C 15/00](#))}
- 13/14 . . . by electrically-released mechanical driving mechanisms
- 15/00 Clocks driven by synchronous motors**
- 15/0009 . . . {without power-reserve}
- 15/0018 . . . {provided with hand-actuated starting device}
- 15/0027 . . . {provided with automatic-starting device}
- 15/0036 . . . {provided with means for indicating disturbance}
- 15/0045 . . . {provided with means for checking sense of rotation}
- 15/0054 . . . {with power-reserve}
- 15/0063 . . . {Synchronous clock systems, e.g. provided with radiolink or using transmission of alternating current via existing power distribution lines}
- 15/0072 . . . {Setting the time-indicating means, e.g. by controlling the frequency or by changing the drive of the separate clocks by using an auxiliary motor}
- 15/0081 . . . {Automatic stabilisation of net frequency with regard to time, e.g. by comparing one of the clocks with an independent clock, means being provided for automatic compensation of disturbances}
- 15/009 . . . {Lubricating}
- Indicating the time or producing time signals electrically**
- 17/00 Indicating the time optically by electric means ([G04C 19/00](#) takes precedence; by mechanical means [G04B 19/00](#), [G04B 19/20](#))**
- 17/0008 . . . {by bands}
- 17/0016 . . . {with date indication}
- 17/0025 . . . {by flaps}
- 17/0033 . . . {with date indication}
- 17/0041 . . . {by a combination of different types of indicating devices, e.g. flaps and drums}
- 17/005 . . . {by discs (by drums [G04C 17/0075](#))}
- 17/0058 . . . {with date indication}
- 17/0066 . . . {electromagnetically driven, e.g. intermittently (clocks incorporating a stepping motor [G04C 3/14](#))}
- 17/0075 . . . {by drums or drum-like devices}
- 17/0083 . . . {with date indication}
- 17/0091 . . . {Combined electro-optical and electro-mechanical displays (see provisionally also [G04G 9/0082](#))}
- 17/02 . . . by electric lamps
- 19/00 Producing optical time signals at prefixed times by electric means**
- 19/02 . . . by electric lamps
- 19/04 . . . by indicating members moved electrically, e.g. flap, band

<p>21/00 Producing acoustic time signals by electrical means {(for mechanical clocks or watches G04B 21/08, G04B 25/00)}</p> <p>21/02 . Constructional details (G04C 21/04, G04C 21/16 take precedence {sound producing devices in general G10K, e.g. G10K 1/00})</p> <p>21/04 . Indicating the time of the day (acoustic indication of time G04B 21/00)</p> <p>21/06 . . by striking mechanism</p> <p>21/08 . . . with snail</p> <p>21/10 . . . with locking plate</p> <p>21/12 . . by electro-acoustic means</p> <p>21/14 . . . Electro-acoustic time announcement, i.e. spoken</p> <p>21/16 . producing the signals at adjustable fixed times</p> <p>21/18 . . by mechanically unlocking an electromechanical vibrator, e.g. actuated by the leakage flux of the electric driving means</p> <p>21/185 . . . {provided with means for sheeting off or temporarily stopping the signal}</p> <p>21/20 . . by closing a contact to ring an electromechanical alarm</p> <p>21/205 . . . {by the hand(s) or handlike members closing the contact}</p> <p>21/22 . . . put into action by the arbor of a mechanical alarm work</p> <p>21/24 . . . put into action by the spring of a mechanical alarm work</p> <p>21/26 . . . put into action by the vibrations caused by the operation of a mechanical alarm work</p> <p>21/28 . . by closing a contact to put into action electro-acoustic means, e.g. awakening by music</p> <p>21/30 . . with provision for a number of operations at different times, e.g. ringing the bells in a school</p> <p>21/305 . . . {by the hand(s) or handlike members closing the contacts}</p> <p>21/32 . . . giving indications at a number of places each at a different time, e.g. system of alarms in a hotel</p> <p>21/323 {by the hand(s) or handlike members closing the contacts}</p> <p>21/326 {adjustable from the different places themselves}</p> <p>21/34 . . Devices on watches or similar portable timepieces</p> <p>21/36 . . Signal repeating devices</p> <p>21/38 . . Adjusting the duration of signals</p> <p>23/00 Clocks with attached or built-in means operating any device at preselected times or after preselected time-intervals (if restricted to producing acoustic time signals by electrical means G04C 21/00; mechanical alarm clocks G04B 23/02; apparatus which can be set and started to measure-off predetermined intervals G04F 3/06; time or time-programme switches which automatically terminate their operation after the programme is completed H01H 43/00)</p> <p>23/02 . Constructional details</p> <p>23/04 . . Housings, supports, shielding, or similar stationary parts</p> <p>23/06 . . Driving or regulating means</p> <p>23/08 . . Programming means</p> <p>23/10 . . for actuating any element which operates, or initiates the operation of, the device concerned</p> <p>23/12 . . Electric circuitry</p>	<p>23/14 . Mechanisms continuously running to relate the operation(s) to the time of day</p> <p>23/16 . . acting only at one preselected time or during one adjustable time interval</p> <p>23/18 . . for operating one device at a number of different times</p> <p>23/20 . . . with contacts operated, or formed by clock hands or elements of similar form</p> <p>23/22 . . . with the actuating element carried by a disc</p> <p>23/24 the actuating element controlling another element mechanically</p> <p>23/26 . . for operating a number of devices at different times</p> <p>23/28 . . . with contacts operated, or formed, by clock hands or elements of similar form</p> <p>23/30 . . . with the actuating element carried by a disc</p> <p>23/32 the actuating element controlling another element mechanically</p> <p>23/34 . . with provision for automatic modification of the programme, e.g. on Sunday</p> <p>23/342 . . . {some operations being performed at another time}</p> <p>23/345 . . . {another programme being carried out}</p> <p>23/347 . . . {some operations being overridden}</p> <p>23/36 . . . by external influences</p> <p>23/38 . Mechanisms measuring a chosen time interval independently of the time of day at which interval starts</p> <p>23/40 . . using continuously-running mechanism</p> <p>23/42 . . acting only at the end of a single time interval</p> <p>23/44 . . . with provision for selection from a number of preset intervals</p> <p>23/46 . . . with provision for adjustment of the interval (G04C 23/44 takes precedence)</p> <p>23/48 . . acting at the ends of successive time intervals</p> <p>23/50 . . with provision for modification of the interval(s) by external influences</p>
<p>99/00 Subject matter not provided for in other groups of this subclass</p>	