

CPC COOPERATIVE PATENT CLASSIFICATION

G PHYSICS (NOTES omitted)

INSTRUMENTS

G04 HOROLOGY

G04C ELECTROMECHANICAL CLOCKS OR WATCHES

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.

Electric winding of mechanical clocks; Independent electric clocks or watches

1/00 Winding mechanical clocks electrically

- 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
- 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
- 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 (clocks driven by synchronous motors [G04C 15/00](#))

- 3/001 . {Electromechanical switches for setting or display}
- 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}
- 3/033 . . using torsion pendulums; using conical pendulums
- 3/0335 . . . {using conical pendulums}
- 3/04 . wherein movement is regulated by a balance
- 3/042 . . {using mechanical coupling}
- 3/045 . . . {with constant impulses}
- 3/047 . . {using other coupling means, e.g. electrostrictive, magnetostrictive}
- 3/06 . . using electromagnetic coupling between electric power source and balance
- 3/061 . . . {the balance controlling contacts and mechanically driving the gear-train}
- 3/062 . . . {the balance controlling contacts, the gear-train or several gear-trains being driven electro-magnetically thereby}
- 3/063 . . . {the balance controlling contacts, the balance driving electro-magnet simultaneously driving the gear-train}

3/064	. . . {the balance controlling indirectly, i.e. without mechanical connection, contacts, e.g. by magnetic or optic means}	10/04	. with means for indicating the condition of the power supply
3/065	. . . {the balance controlling gear-train by means of static switches, e.g. transistor circuits (synchronisation of balance G04C 11/084)}	Electric clock installations; Primary and secondary clock systems; Synchronous-motor clocks	
3/066	. . . . {Constructional details, e.g. disposition of coils}	11/00	Synchronisation of independently-driven clocks
3/067	. . . . {Driving circuits with distinct detecting and driving coils}	11/002	. {by changing the driving speed}
3/068	. . . . . {provided with automatic control}	11/005	. {by changing the ratio of the driving-gear}
3/069	. . . . {Driving circuits using a single coil for detection and driving purposes}	11/007	. {by positioning of the index or by regulating the length of the pendulum in dependance on the time difference with a standard}
3/08	. wherein movement is regulated by a mechanical oscillator other than a pendulum or balance, e.g. by a tuning fork {, e.g. electrostatically}	11/02	. {by radio (time setting brought into action by radio G04C 9/02)}
3/10	. . driven by electromagnetic means	11/023	. . {provided with arrangements to prevent synchronisation by interfering signals}
3/101	. . . {constructional details}	11/026	. . {the time-piece preparing itself on set times on the reception of the synchronising signal}
3/102	. . . . {of the mechanical oscillator or of the coil}	11/04	. over a line
3/104	. . . . {of the pawl or the ratchet wheel}	11/043	. . {provided with arrangements to prevent synchronisation by interfering signals}
3/105	. . . . . {pawl and ratchet wheel being magnetically coupled}	11/046	. . {the time-piece preparing itself on set time on the reception of the synchronising signal}
3/107	. . . . {Controlling frequency or amplitude of the oscillating system (circuits G04C 3/108)}	11/06	. with direct mechanical action on the time-indicating means {(time setting G04C 9/00)}
3/108	. . . {Driving circuits}	11/08	. using an electro-magnet or-motor {for oscillation correction}
3/12	. . driven by piezoelectric means; driven by magneto-strictive means	11/081	. . {using an electro-magnet}
3/125	. . . {driven by magneto-strictive means}	11/082	. . . {acting on the pendulum (mutual synchronisation of pendulums G04C 13/028)}
3/14	. incorporating a stepping motor (G04C 3/02 - G04C 3/12 take precedence ; generating commutating pulses in primary clocks G04C 13/0463)	11/084	. . . {acting on the balance}
3/143	. . {Means to reduce power consumption by reducing pulse width or amplitude and related problems, e.g. detection of unwanted or missing step}	11/085	. . {using an electro-motor}
3/146	. . {incorporating two or more stepping motors or rotors}	11/087	. . . {acting on the pendulum (mutual synchronisation of pendulums G04C 13/028)}
3/16	. incorporating an electro-dynamic continuously rotating motor (G04C 3/02 - G04C 3/12 take precedence)	11/088	. . . {acting on the balance}
3/165	. . {comprising a mechanical regulating device influencing the electromotor}	13/00	Driving mechanisms for clocks by primary clocks
3/18	. incorporating electro-thermal or electro-pneumatic driving means	13/02	. Circuit arrangements; Electric clock installations
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)	13/021	. . {primary-secondary systems using transmission of singular pulses for driving directly secondary clocks step by step (G04C 13/03 takes precedence)}
5/005	. {Magnetic or electromagnetic means}	13/022	. . . {via existing power distribution lines}
9/00	Electrically-actuated devices for setting the time-indicating means (of secondary clocks G04C 13/03)	13/023	. . . {via existing transmission lines}
9/02	. {brought into action by radio transmission}	13/025	. . . {via special lines}
9/04	. by blocking the driving means	13/026	. . . {by radio}
9/06	. by decoupling the driving means (combined with blocking means G04C 9/04)	13/027	. . {primary-secondary systems using transmission of other driving signals, e.g. coded signals}
9/08	. by electric drive	13/028	. . {transmission systems for synchronisation of pendulum of secondary clocks by pendulums of primary clocks}
10/00	Arrangements of electric power supplies in time-pieces {(Mounting, assembling of components G04C 3/008)}	13/03	. . Pulse transmission systems with additional means for setting the time indication of secondary clocks {(G04C 13/028 takes precedence)}
10/02	. the power supply being a radioactive {or photovoltaic} source	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}	17/0041	. {by a combination of different types of indicating devices, e.g. flaps and drums}
13/0445	. . . . {for automatically correcting of or compensating for disturbances}	17/005	. {by discs (by drums G04C 17/0075)}
13/0454	. . . . {for automatically setting of secondary clocks after correction or after setting of primary clock}	17/0058	. . {with date indication}
13/0463	. . . {Arrangements for generating normal driving pulses}	17/0066	. . . {electromagnetically driven, e.g. intermittently (clocks incorporating a stepping motor G04C 3/14)}
13/0472	. . . . {by starting an independent mechanical driving devices, e.g. motor controlling the contacts}	17/0075	. {by drums or drum-like devices}
13/0481	. . . . {by switching on an electromagnetic driving device, e.g. electro-motor, controlling the contacts}	17/0083	. . {with date indication}
13/049	. . . . {by using current generating driving device}	17/0091	. {Combined electro-optical and electro-mechanical displays}
13/06	. . . Contact devices (for simultaneously winding several clocks G04C 1/00)	17/02	. by electric lamps
13/065	. . . . {controlled by a pendulum or a balance}	19/00	Producing optical time signals at prefixed times by electric means
13/08	. Secondary clocks actuated intermittently	19/02	. by electric lamps
13/10	. . by electromechanical step-advancing mechanisms {(independent clocks or watches incorporating a stepping motor G04C 3/14)}	19/04	. by indicating members moved electrically, e.g. flap, band
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)}	21/00	Producing acoustic time signals by electrical means
13/11	. . . with rotating armature	21/02	. Constructional details (G04C 21/04, G04C 21/16 take precedence)
13/12	. . by continuously-rotating electric motors {(independent clocks G04C 3/16; clocks driven by synchronous motors G04C 15/00)}	21/04	. Indicating the time of the day
13/14	. . by electrically-released mechanical driving mechanisms	21/06	. . by striking mechanism
15/00	Clocks driven by synchronous motors	21/08	. . . with snail
15/0009	. {without power-reserve}	21/10	. . . with locking plate
15/0018	. . {provided with hand-actuated starting device}	21/12	. . by electro-acoustic means
15/0027	. . {provided with automatic-starting device}	21/14	. . . Electro-acoustic time announcement, i.e. spoken
15/0036	. . {provided with means for indicating disturbance}	21/16	. producing the signals at adjustable fixed times
15/0045	. . {provided with means for checking sense of rotation}	21/18	. . by mechanically unlocking an electromechanical vibrator, e.g. actuated by the leakage flux of the electric driving means
15/0054	. {with power-reserve}	21/185	. . . {provided with means for sheeting off or temporarily stopping the signal}
15/0063	. {Synchronous clock systems, e.g. provided with radiolink or using transmission of alternating current via existing power distribution lines}	21/20	. . by closing a contact to ring an electromechanical alarm
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}	21/205	. . . {by the hand(s) or handlike members closing the contact}
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}	21/22	. . . put into action by the arbor of a mechanical alarm work
15/009	. {Lubricating}	21/24	. . . put into action by the spring of a mechanical alarm work
Indicating the time or producing time signals electrically		21/26	. . . put into action by the vibrations caused by the operation of a mechanical alarm work
17/00	Indicating the time optically by electric means (G04C 19/00 takes precedence)	21/28	. . by closing a contact to put into action electro-acoustic means, e.g. awakening by music
17/0008	. {by bands}	21/30	. . with provision for a number of operations at different times, e.g. ringing the bells in a school
17/0016	. . {with date indication}	21/305	. . . {by the hand(s) or handlike members closing the contacts}
17/0025	. {by flaps}	21/32	. . . giving indications at a number of places each at a different time, e.g. system of alarms in a hotel
17/0033	. . {with date indication}	21/323	. . . . {by the hand(s) or handlike members closing the contacts}
		21/326	. . . . {adjustable from the different places themselves}
		21/34	. . Devices on watches or similar portable timepieces
		21/36	. . Signal repeating devices
		21/38	. . Adjusting the duration of signals
		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)

- 23/02 . . Constructional details
- 23/04 . . . Housings, supports, shielding, or similar stationary parts
- 23/06 . . . Driving or regulating means
- 23/08 . . . Programming means
- 23/10 . . . for actuating any element which operates, or initiates the operation of, the device concerned
- 23/12 . . . Electric circuitry
- 23/14 . . Mechanisms continuously running to relate the operation(s) to the time of day
- 23/16 . . . acting only at one preselected time or during one adjustable time interval
- 23/18 . . . for operating one device at a number of different times
- 23/20 with contacts operated, or formed by clock hands or elements of similar form
- 23/22 with the actuating element carried by a disc
- 23/24 the actuating element controlling another element mechanically
- 23/26 . . . for operating a number of devices at different times
- 23/28 with contacts operated, or formed, by clock hands or elements of similar form
- 23/30 with the actuating element carried by a disc
- 23/32 the actuating element controlling another element mechanically
- 23/34 . . . with provision for automatic modification of the programme, e.g. on Sunday
- 23/342 . . . {some operations being performed at another time}
- 23/345 . . . {another programme being carried out}
- 23/347 . . . {some operations being overridden}
- 23/36 . . . by external influences
- 23/38 . . Mechanisms measuring a chosen time interval independently of the time of day at which interval starts
- 23/40 . . . using continuously-running mechanism
- 23/42 . . . acting only at the end of a single time interval
- 23/44 with provision for selection from a number of preset intervals
- 23/46 with provision for adjustment of the interval
(G04C 23/44 takes precedence)
- 23/48 . . . acting at the ends of successive time intervals
- 23/50 . . . with provision for modification of the interval(s) by external influences

99/00 Subject matter not provided for in other groups of this subclass