

# CPC COOPERATIVE PATENT CLASSIFICATION

**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](#)

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| <p><b>1/00</b> Apparatus which can be set and started to measure-off predetermined or adjustably-fixed time intervals without driving mechanisms, e.g. egg timer (electric time and time-programme switches <a href="#">H01H 43/00</a>)</p> <p>1/005 . {using electronic timing, e.g. counting means (pulse time delay arrangements <a href="#">H03K 5/13</a>; modifications of electronic switches for introducing a time delay before switching <a href="#">H03K 17/28</a>)}</p> <p>1/02 . by consuming prefixed quantities of materials, e.g. by burning candle</p> <p>1/04 . by movement or acceleration due to gravity</p> <p>1/06 . . by flowing-away of a prefixed quantity of fine-granular or liquid materials, e.g. sand-glass, water-clock</p> <p>1/063 . . . {using acoustic signalling}</p> <p>1/066 . . . {using electrical contact device}</p> <p>1/08 . . by a body falling a prefixed distance in air or in a viscous material</p> <p><b>3/00</b> Apparatus which can be set and started to measure-off predetermined or adjustably-fixed time intervals with driving mechanisms, e.g. dosimeter with clockwork (electric time or time-programme switches <a href="#">H01H 43/00</a>)</p> <p>3/02 . with mechanical driving mechanisms</p> <p>3/022 . . {using mechanical signalling device}</p> <p>3/025 . . {mechanically actuated (cigar or cigarette receptacles or boxes with means for limiting the frequency of smoking <a href="#">A24F 15/005</a>)}</p> <p>3/027 . . {using electrical contacts, e.g. for actuating electro-acoustic device}</p> <p>3/04 . . Additional arrangements in connection with ordinary non-electric clocks for this purpose</p> <p>3/06 . with electric driving mechanisms</p> <p>3/08 . . Additional arrangements in connection with ordinary electric clocks for this purpose</p> <p><b>5/00</b> Apparatus for producing preselected time intervals for use as timing standards (generating clock signals for electric digital computers <a href="#">G06F 1/04</a>; regulating frequency in general <a href="#">H03C</a>, <a href="#">H03L</a>)</p> | <p>5/02 . Metronomes {(periodic signalisation by acoustic signals in general <a href="#">G04B 21/005</a>)}</p> <p>5/022 . . {Mechanic metronomes}</p> <p>5/025 . . {Electronic metronomes (rhytm generation for electrophonic musical instruments <a href="#">G10H 1/36</a>)}</p> <p>5/027 . . {using electro-mechanical driving, e.g. of optical scanned recordings (electrophonic musical instruments in which tones are generated by electromechanical means, e.g. by using pick-up means for reading recorded waves <a href="#">G10H 3/00</a>)}</p> <p>5/04 . using oscillators with electromechanical resonators {producing electric oscillations or timing pulses}</p> <p>5/06 . . using piezoelectric resonators</p> <p>5/063 . . . {Constructional details (details of resonators in general <a href="#">H03H 9/02</a>)}</p> <p>5/066 . . . . {Trimmer condensators (capacitors in general <a href="#">H01G</a>)}</p> <p>5/08 . . using magnetostrictive resonators</p> <p>5/10 . using electric or electronic resonators (<a href="#">G04F 5/14</a> takes precedence)</p> <p>5/12 . using fluidic devices</p> <p>5/14 . using atomic clocks</p> <p>5/145 . . {using Coherent Population Trapping}</p> <p>5/16 . using pulses produced by radioisotopes</p> <p><b>7/00</b> Apparatus for measuring unknown time intervals by mechanical means</p> <p>7/02 . by measuring the distance of fall or the final velocity of a falling body</p> <p>7/04 . using a mechanical oscillator</p> <p><b>WARNING</b></p> <p>The subgroups of <a href="#">G04F 7/04</a> are not complete pending reclassification; see also this group</p> <p>7/06 . . running only during the time interval to be measured, e.g. stop-watch</p> <p>7/062 . . . {with reset mechanisms}</p> <p>7/065 . . . {with start-stop control arrangements}</p> <p>7/067 . . . . {with a single push-button or actuation member for start-stop and reset}</p> <p>7/08 . . Watches or clocks with stop devices, e.g. chronograph</p> <p>7/0804 . . . {with reset mechanisms}</p> |
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- 7/0809 . . . . {with single hammers, i.e. one hammer acts on each counter}
- 7/0814 . . . . {with double hammer, i.e. one hammer acts on two counters}
- 7/0819 . . . . {with triple hammer, i.e. one hammer acts on three counters}
- 7/0823 . . . {with couplings between the chronograph mechanism and the base movement}
- 7/0828 . . . . {acting in the plane of the movement}
- 7/0833 . . . . {acting perpendicular to the plane of the movement}
- 7/0838 . . . . {involving a tilting movement}
- 7/0842 . . . {with start-stop control mechanisms}
- 7/0847 . . . . {with column wheel}
- 7/0852 . . . . {with member having a rotational two-way movement, e.g. navette}
- 7/0857 . . . . {with single push-button or actuation member for start-stop and reset}
- 7/0861 . . . . {actuated by other than push-buttons, e.g. bezel or lever}
- 7/0866 . . . {Special arrangements}
- 7/0871 . . . . {with multiple chronograph functions, i.e. to count multiple running times (alternate time counting G07C)}
- 7/0876 . . . . {Split-time function, e.g. rattrapante}
- 7/088 . . . . {with display of fraction of seconds, e.g. foudroyante}
- 7/0885 . . . . {Modular constructions involving interchangeability with one or more chronograph modules on a single base movement}
- 7/089 . . . . {indicating measured time by other than hands, e.g. numbered bands, drums, discs or sheet (current time indication other than by hand G04B 19/20)}
- 7/0895 . . . . {with a separate barrel for the chronograph functions (barrel in a separable module G04F 7/0885)}
- 7/10 . Means used apart from the time-piece for starting or stopping same {(see provisionally too : G04F 8/08)}
- 8/00 Apparatus for measuring unknown time intervals by electromechanical means**
- 8/003 . {using continuously running driving means}
- 8/006 . {running only during the time interval to be measured, e.g. stop-watch}
- 8/02 . using an electromechanical oscillator {(G04F 5/00, G04F 10/00 take precedence)}
- 8/04 . . using a piezoelectric oscillator {not used}
- 8/06 . . using a magnetostrictive oscillator {not used}
- 8/08 . Means used apart from the time-piece for starting or stopping same
- 10/00 Apparatus for measuring unknown time intervals by electric means {(timing devices for clocks or watches for comparing the rate of the oscillating member with a standard G04D 7/12; radar systems, analogous systems G01S 7/00; measuring frequency G01R 23/00; measuring phase angle G01R 25/00)}**
- 10/005 . {Time-to-digital converters [TDC] (analog-to-digital converters with intermediate conversion to time or phase H03M 1/50, H03M 1/60)}
- 10/02 . using oscillators with passive electric resonator, e.g. lumped LC {(G04F 10/04, G04F 10/06 and G04F 10/10 take precedence)}
- 10/04 . by counting pulses or half-cycles of an alternating current {(G04F 10/005 takes precedence)}
- 10/06 . by measuring phase {(G04F 10/005 takes precedence)}
- 10/10 . by measuring electric or magnetic quantities changing in proportion to time
- 10/105 . . {with conversion of the time-intervals}
- 13/00 Apparatus for measuring unknown time intervals by means not provided for in groups G04F 5/00 - G04F 10/00**
- 13/02 . using optical means
- 13/023 . . {using cathode-ray oscilloscopes (circuits for inserting reference time markers for cathode-ray oscilloscopes G01R 13/305)}
- 13/026 . . {Measuring duration of ultra-short light pulses, e.g. in the pico-second range; particular detecting devices therefor (non-linear optics G02F 1/35; monitoring arrangements for lasers in general H01S 3/0014; photometry, radiation pyrometry G01J 1/00, G01J 5/00)}
- 13/04 . using electrochemical means
- 13/06 . using fluidic means