

CPC COOPERATIVE PATENT CLASSIFICATION

F MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING (NOTE omitted)

WEAPONS; BLASTING

F42 AMMUNITION; BLASTING (NOTES omitted)

F42C AMMUNITION FUZES (blasting cartridge initiators [F42B 3/10](#); chemical aspects [C06C](#)); ARMING OR SAFETY MEANS THEREFOR (filling fuzes [F42B 33/02](#); fitting or extracting primers in or from fuzes [F42B 33/04](#); containers for fuzes [F42B 39/30](#))

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| 1/00 | Impact fuzes, i.e. fuzes actuated only by ammunition impact | 9/00 | Time fuzes; Combined time and percussion or pressure-actuated fuzes; Fuzes for timed self-destruction of ammunition |
| 1/02 | . with firing-pin structurally combined with fuze | 9/02 | . the timing being caused by mechanical means |
| 1/04 | . . operating by inertia of members on impact | 9/04 | . . by spring motor { F42C 9/14 takes precedence; housings for fuzes specially adapted for winding or setting F42C 19/02 } |
| 1/06 | . . . for any direction of impact { (electric contact parts F42C 19/06) } | 9/041 | . . . { the clockwork activating a security device, e.g. for unlocking the firing-pin } |
| 1/08 | . . with delayed action after ignition of fuze (time fuzes F42C 9/00) { or after impact } | 9/043 | { and the firing-pin being activated by impact } |
| 1/09 | . . the fuze activating a propulsive charge for propelling the ammunition or the warhead into the air, e.g. in rebounding projectiles | 9/045 | { and the firing-pin being activated by a spring } |
| 1/10 | . without firing-pin | 9/046 | { and the activating spring being the spring of the clock-work mechanism } |
| 1/12 | . . with delayed action after ignition of fuze (time fuzes F42C 9/00) | 9/048 | . . . { Unlocking of clockwork mechanisms, e.g. by inertia or centrifugal forces; Means for disconnecting the clockwork mechanism from the setting mechanism } |
| 1/14 | . operating at a predetermined distance from ground or target by means of a protruding member | 9/06 | . . by flow of fluent material, e.g. shot, fluids |
| 3/00 | Fuzes actuated by exposure to a liquid, e.g. seawater (F42C 5/00 takes precedence; time fuzes F42C 9/00) | 9/08 | . the timing being caused by chemical action, e.g. of acids { (F42C 9/14 takes precedence) } |
| 5/00 | Fuzes actuated by exposure to a predetermined ambient fluid pressure { (fluid-pressure-operated switches H01H 35/24) } | 9/10 | . the timing being caused by combustion { (F42C 9/14 takes precedence) } |
| 5/02 | . barometric pressure | 9/12 | . . with ring combustion elements |
| 7/00 | Fuzes actuated by application of a predetermined mechanical force, e.g. tension, torsion, pressure (by ammunition impact F42C 1/00, by exposure to a predetermined ambient fluid pressure F42C 5/00) | 9/14 | . Double fuzes; Multiple fuzes |
| 7/02 | . Contact fuzes, i.e. fuzes actuated by mechanical contact between a stationary ammunition, e.g. a land mine, and a moving target, e.g. a person (F42C 7/12 takes precedence) | 9/141 | . . { Impact fuze in combination with a clockwork time fuze } |
| 7/04 | . . actuated by applying pressure on the ammunition head | 9/142 | . . { combined time and percussion fuzes in which the timing is caused by combustion } |
| 7/06 | . . . and comprising pneumatic or hydraulic retarding means | 9/144 | . . . { with ring or spiral combustion elements } |
| 7/08 | . . of release type, i.e. actuated by releasing pressure from the ammunition head | 9/145 | . . { combined time and percussion fuzes in which the timing is caused by chemical reaction } |
| 7/10 | . . of antenna type | 9/147 | . . { Impact fuze in combination with electric time fuze } |
| 7/12 | . Percussion fuzes of the double-action type, i.e. fuzes cocked and fired in a single movement, e.g. by pulling an incorporated percussion pin or hammer (percussion caps F42C 19/10) | 9/148 | . . { Proximity fuzes in combination with other fuzes } |
| | | 9/16 | . . for self-destruction of ammunition { (F42C 9/141 - F42C 9/148 take precedence) } |
| | | 9/18 | . . . when the spin rate falls below a predetermined limit, e.g. a spring force being stronger than the locking action of a centrifugally-operated lock |

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| 11/00 | Electric fuzes ({in combination with other fuzes F42C 9/14 }; proximity fuzes F42C 13/00 ; {safety or arming effected by electric means F42C 15/40 ; electric contact parts for fuzes F42C 19/06 }; electric igniters F42C 19/12 , { F42B 3/12 - F42B 3/18 ; optical initiators F42B 3/113 }) | 15/18 | • wherein a carrier for an element of the pyrotechnic or explosive train is moved (F42C 15/40 takes precedence) |
| 11/001 | • {Electric circuits for fuzes characterised by the ammunition class or type (F42C 11/02 - F42C 11/06 take precedence; mechanical fuzes having electric igniters for hand grenades or marine warheads F42C 14/025 , F42C 14/045)} | 15/184 | • . . using a slidable carrier |
| 11/002 | • . {Smart ammunition fuzes, i.e. having an integrated scanning, guiding and firing system} | 15/188 | • . . using a rotatable carrier |
| 11/003 | • . {for hand grenades} | 15/192 | • . . . rotatable in a plane which is parallel to the longitudinal axis of the projectile |
| 11/005 | • . {for marine warheads, e.g. torpedoes, mines, depth charges} | 15/196 | • by the action of centrifugal or inertia forces on the carrier body, e.g. the carrier having eccentrically mounted weights or eccentric centre of gravity |
| 11/006 | • . {for fall bombs} | 15/20 | • wherein a securing-pin or latch is removed to arm the fuze, e.g. removed from the firing-pin (F42C 9/041 and F42C 15/40 take precedence) |
| 11/007 | • . {for land mines} | 15/21 | • . using spring action (F42C 15/32 takes precedence) |
| 11/008 | • {Power generation in electric fuzes (F42C 11/02 , F42C 11/04 and F42C 15/295 take precedence)} | 15/22 | • . using centrifugal force (F42C 15/23 takes precedence) |
| 11/02 | • with piezo-crystal | 15/23 | • . by unwinding a flexible ribbon or tape |
| 11/04 | • with current induction | 15/24 | • wherein the safety or arming action is effected by inertia means (F42C 15/196 , F42C 15/20 take precedence) |
| 11/06 | • with time delay by electric circuitry | 15/26 | • . using centrifugal force |
| 11/065 | • . {Programmable electronic delay initiators in projectiles} | 15/28 | • operated by flow of fluent material, e.g. shot, fluids (F42C 15/26 takes precedence) |
| 13/00 | Proximity fuzes; Fuzes for remote detonation ({ F42C 9/148 takes precedence ; constructional details F42C 19/00 ; mounting of antennas F42B 30/006 }) | 15/285 | • . stored within the fuze housing |
| 13/003 | • {operated by variations in electrostatic field} | 15/29 | • . operated by fluidic oscillators; operated by dynamic fluid pressure, e.g. ram-air operated |
| 13/006 | • {for non-guided, spinning, braked or gravity-driven weapons, e.g. parachute-braked sub-munitions} | 15/295 | • . operated by a turbine or a propeller; Mounting means therefor |
| 13/02 | • operated by intensity of light or similar radiation | 15/30 | • . of propellant gases, i.e. derived from propulsive charge or rocket motor |
| 13/023 | • . {using active distance measurement} | 15/31 | • . generated by the combustion of a pyrotechnic or explosive charge within the fuze |
| 13/026 | • . {Remotely actuated projectile fuzes operated by optical transmission links} | 15/32 | • operated by change of fluid pressure (F42C 5/00 , F42C 15/29 take precedence) |
| 13/04 | • operated by radio waves | 15/33 | • . by breaking a vacuum or pressure container |
| 13/042 | • . {based on distance determination by coded radar techniques} | 15/34 | • wherein the safety or arming action is effected by a blocking-member in the pyrotechnic or explosive train between primer and main charge (F42C 15/18 , F42C 15/40 take precedence) |
| 13/045 | • . {using transmission of F.M. waves} | 15/36 | • wherein arming is effected by combustion or fusion of an element; {Arming methods using temperature gradients} (F42C 15/31 takes precedence) |
| 13/047 | • . {Remotely actuated projectile fuzes operated by radio transmission links} | 15/38 | • wherein arming is effected by chemical action (F42C 3/00 takes precedence) |
| 13/06 | • operated by sound waves | 15/40 | • wherein the safety or arming action is effected electrically |
| 13/08 | • operated by variations in magnetic field | 15/42 | • . from a remote location, e.g. for controlled mines or mine fields |
| 14/00 | {Mechanical} fuzes characterised by the ammunition class or type (F42C 1/00 , { F42C 7/00 , F42C 9/00 , F42C 11/001 }, F42C 13/00 , F42C 15/00 take precedence) | 15/44 | • Arrangements for disarming, or for rendering harmless, fuzes after arming, e.g. after launch |
| 14/02 | • for hand grenades | 17/00 | Fuze-setting apparatus |
| 14/025 | • . {having electric igniters} | 17/02 | • Fuze-setting keys |
| 14/04 | • for torpedoes, marine mines or depth charges (influenced marine mines F42B 22/04) | 17/04 | • for electric fuzes |
| 14/045 | • . {having electric igniters} | 19/00 | Details of fuzes (except F42C 15/00) |
| 14/06 | • for fall bombs | 19/02 | • Fuze bodies; Fuze housings |
| 14/08 | • for land mines | 19/04 | • Protective caps |
| 15/00 | Arming-means in fuzes; Safety means for preventing premature detonation of fuzes or charges | | |
| 15/005 | • {Combination-type safety mechanisms, i.e. two or more safeties are moved in a predetermined sequence to each other} | | |
| 15/16 | • wherein the firing pin is displaced out of the action line for safety (F42C 15/40 takes precedence) | | |

- 19/06 . Electric contact parts specially adapted for use with electric fuzes {(switches operated by change of speed [H01H 35/06](#); switches operated by change of acceleration, e.g. shock or vibration, inertia switches [H01H 35/14](#); fluid-pressure-operated switches [H01H 35/24](#)}
- 19/07 . . Nose-contacts for projectiles or missiles
- 19/08 . Primers (initiators for blasting cartridges [F42B 3/10](#); ignition means for rocket engine plants [F02K 9/95](#)); Detonators
- 19/0803 . . {characterised by the combination of per se known chemical composition in the priming substance}
- 19/0807 . . {characterised by the particular configuration of the transmission channels from the priming energy source to the charge to be ignited, e.g. multiple channels, nozzles, diaphragms or filters}
- 19/0811 . . {characterised by the generation of a plasma for initiating the charge to be ignited}
- 19/0815 . . {Intermediate ignition capsules, i.e. self-contained primary pyrotechnic module transmitting the initial firing signal to the secondary explosive, e.g. using electric, radio frequency, optical or percussion signals to the secondary explosive (initiators for blasting cartridges or air bags [F42B 3/10](#))}
- 19/0819 . . {Primers or igniters for the initiation of rocket motors, i.e. pyrotechnical aspects thereof}
- 19/0823 . . {Primers or igniters for the initiation or the propellant charge in a cartridge ammunition (primers for caseless ammunition [F42C 19/085](#))}
- 19/0826 . . . {comprising an elongated perforated tube, i.e. flame tube, for the transmission of the initial energy to the propellant charge, e.g. used for artillery shells and kinetic energy penetrators}
- 19/083 . . . {characterised by the shape and configuration of the base element embedded in the cartridge bottom, e.g. the housing for the squib or percussion cap}
- 19/0834 . . . {Arrangements of a multiplicity of primers or detonators dispersed within a propellant charge for increased efficiency}
- 19/0838 . . {Primers or igniters for the initiation or the explosive charge in a warhead ([F42C 19/095](#) takes precedence)}
- 19/0842 . . . {Arrangements of a multiplicity of primers or detonators, dispersed within a warhead, for multiple mode selection}
- 19/0846 . . . {Arrangements of a multiplicity of primers or detonators, dispersed within a warhead, for increased efficiency}
- 19/085 . . Primers for caseless ammunition
- 19/09 . . Primers or detonators containing a hollow charge
- 19/095 . . Arrangements of a multiplicity of primers or detonators, dispersed around a warhead, one of the primers or detonators being selected for directional detonation effects
- 19/10 . . Percussion caps
- 19/12 . . electric
- 19/14 . . . operable also in the percussion mode
- 21/00** **Checking fuzes; Testing fuzes**
- 99/00** **Subject matter not provided for in other groups of this subclass**