

**CPC****COOPERATIVE PATENT CLASSIFICATION****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](#))

**Guidance heading:****F42C 1/00**

**Impact fuzes, i.e. fuzes actuated only by ammunition impact**

## F42C 1/02

- . with firing-pin structurally combined with fuze

## F42C 1/04

- . . operating by inertia of members on impact

## F42C 1/06

- . . . for any direction of impact {[electric contact parts F42C 19/06](#) }

## F42C 1/08

- . . with delayed action after ignition of fuze ([time fuzes F42C 9/00](#)) {[or after impact](#) }

## F42C 1/09

- . . the fuze activating a propulsive charge for propelling the ammunition or the warhead into the air, e.g. in rebounding projectiles

## F42C 1/10

- . without firing-pin

## F42C 1/12

- . . with delayed action after ignition of fuze ([time fuzes F42C 9/00](#))

## F42C 1/14

- . operating at a predetermined distance from ground or target by means of a protruding member

**F42C 3/00**

**Fuzes actuated by exposure to a liquid, e.g. seawater** ([F42C 5/00](#) takes precedence; [time fuzes F42C 9/00](#))

**F42C 5/00**

**Fuzes actuated by exposure to a predetermined ambient fluid pressure** { ([Fluid-pressure-operated switches H01H 35/24](#)) }

## F42C 5/02

- . barometric pressure

**F42C 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](#))

## F42C 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)

## F42C 7/04

- . . actuated by applying pressure on the ammunition head

## F42C 7/06

- . . . and comprising pneumatic or hydraulic retarding means

## F42C 7/08

- . . of release type, i.e. actuated by releasing pressure from the ammunition head

## F42C 7/10

- . . of antenna type

## F42C 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](#))

<b>F42C 9/00</b>	<b>Time fuzes; Combined time and percussion or pressure-actuated fuzes; Fuzes for timed self-destruction of ammunition</b>
F42C 9/02	. the timing being caused by mechanical means
F42C 9/04	.. by spring motor { <a href="#">F42C 9/141</a> takes precedence; housings for fuzes specially adapted for winding or setting <a href="#">F42C 19/02</a> }
F42C 9/041	... {the clockwork activating a security device, e.g. for unlocking the firing-pin }
F42C 9/043	.... {and the firing-pin being activated by impact }
F42C 9/045	.... {and the firing-pin being activated by a spring }
F42C 9/046	..... {and the activating spring being the spring of the clock-work mechanism }
F42C 9/048	... {Unlocking of clockwork mechanisms, e.g. by inertia or centrifugal forces; Means for disconnecting the clockwork mechanism from the setting mechanism }
F42C 9/06	.. by flow of fluent material, e.g. shot, fluids
F42C 9/08	. the timing being caused by chemical action, e.g. of acids { ( <a href="#">F42C 9/14</a> takes precedence) }
F42C 9/10	. the timing being caused by combustion { ( <a href="#">F42C 9/14</a> takes precedence) }
F42C 9/12	.. with ring combustion elements
F42C 9/14	. Double fuzes; Multiple fuzes
F42C 9/141	.. {Impact fuze in combination with a clockwork time fuze }
F42C 9/142	.. {combined time and percussion fuzes in which the timing is caused by combustion }
F42C 9/144	... {with ring or spiral combustion elements }
F42C 9/145	.. {combined time and percussion fuzes in which the timing is caused by chemical reaction }
F42C 9/147	.. {Impact fuze in combination with electric time fuze }
F42C 9/148	.. {Proximity fuzes in combination with other fuzes }
F42C 9/16	.. for self-destruction of ammunition { ( <a href="#">F42C 9/141</a> to <a href="#">F42C 9/148</a> take precedence) }
F42C 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
<b>F42C 11/00</b>	<b>Electric fuzes</b> ( {in combination with other fuzes <a href="#">F42C 9/14</a> }; proximity fuzes <a href="#">F42C 13/00</a> ; {safety or arming effected by electric means <a href="#">F42C 15/40</a> ; electric contact parts for fuzes <a href="#">F42C 19/06</a> }; electric igniters <a href="#">F42C 19/12</a> , { <a href="#">F42B 3/12</a> to <a href="#">F42B 3/18</a> ; optical initiators <a href="#">F42B 3/113</a> })
F42C 11/001	. {Electric circuits for fuzes characterised by the ammunition class or type ( <a href="#">F42C 11/02</a> to <a href="#">F42C 11/06</a> take precedence; mechanical fuzes having electric igniters for hand grenades or marine warheads <a href="#">F42C 14/025</a> , <a href="#">F42C 14/045</a> ) }
F42C 11/002	.. {Smart ammunition fuzes, i.e. having an integrated scanning, guiding and firing system }
F42C 11/003	.. {for hand grenades }
F42C 11/005	.. {for marine warheads, e.g. torpedoes, mines, depth charges }
F42C 11/006	.. {for fall bombs }

- F42C 11/007 . . {for land mines }
- F42C 11/008 . { Power generation in electric fuzes ([F42C 11/02](#), [F42C 11/04](#) and [F42C 15/295](#) take precedence) }
- F42C 11/02 . with piezo-crystal
- F42C 11/04 . with current induction
- F42C 11/06 . with time delay by electric circuitry
- F42C 11/065 . . {Programmable electronic delay initiators in projectiles }
- F42C 13/00** **Proximity fuzes; Fuzes for remote detonation** { ([F42C 9/148](#) takes precedence; constructional details [F42C 19/00](#); mounting of antennas [F42B 30/006](#)) }
- F42C 13/003 . {operated by variations in electrostatic field }
- F42C 13/006 . {for non-guided, spinning, braked or gravity-driven weapons, e.g. parachute-braked sub-munitions }
- F42C 13/02 . operated by intensity of light or similar radiation
- F42C 13/023 . . {using active distance measurement }
- F42C 13/026 . . {Remotely actuated projectile fuzes operated by optical transmission links }
- F42C 13/04 . operated by radio waves
- F42C 13/042 . . {based on distance determination by coded radar techniques }
- F42C 13/045 . . {using transmission of F.M. waves }
- F42C 13/047 . . {Remotely actuated projectile fuzes operated by radio transmission links }
- F42C 13/06 . operated by sound waves
- F42C 13/08 . operated by variations in magnetic field
- F42C 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)
- F42C 14/02 . for hand grenades
- F42C 14/025 . . {having electric igniters }
- F42C 14/04 . for torpedoes, marine mines or depth charges ([influenced marine mines](#) [F42B 22/04](#))
- F42C 14/045 . . {having electric igniters }
- F42C 14/06 . for fall bombs
- F42C 14/08 . for land mines
- F42C 15/00** **Arming-means in fuzes; Safety means for preventing premature detonation of fuzes or charges**

- F42C 15/005 . Combination-type safety mechanisms i.e. two or more safeties are moved in a predetermined sequence to each other
- F42C 15/16 . wherein the firing pin is displaced out of the action line for safety ([F42C 15/40 takes precedence](#))
- F42C 15/18 . wherein a carrier for an element of the pyrotechnic or explosive train is moved ([F42C 15/40 takes precedence](#))
- F42C 15/184 . . using a slidable carrier
- F42C 15/188 . . using a rotatable carrier
- F42C 15/192 . . . rotatable in a plane which is parallel to the longitudinal axis of the projectile
- F42C 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
- F42C 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](#))
- F42C 15/21 . . using spring action ([F42C 15/32 takes precedence](#))
- F42C 15/22 . . using centrifugal force ([F42C 15/23 takes precedence](#))
- F42C 15/23 . . by unwinding a flexible ribbon or tape
- F42C 15/24 . wherein the safety or arming action is effected by inertia means ([F42C 15/196](#), [F42C 15/20 take precedence](#))
- F42C 15/26 . . using centrifugal force
- F42C 15/28 . operated by flow of fluent material, e.g. shot, fluids ([F42C 15/26 takes precedence](#))
- F42C 15/285 . . stored within the fuze housing
- F42C 15/29 . . operated by fluidic oscillators; operated by dynamic fluid pressure, e.g. ram-air operated
- F42C 15/295 . . operated by a turbine or a propeller; Mounting means therefor
- F42C 15/30 . . of propellant gases, i.e. derived from propulsive charge or rocket motor
- F42C 15/31 . . generated by the combustion of a pyrotechnic or explosive charge within the fuze
- F42C 15/32 . operated by change of fluid pressure ([F42C 5/00](#), [F42C 15/29 take precedence](#))
- F42C 15/33 . . by breaking a vacuum or pressure container
- F42C 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](#))
- F42C 15/36 . wherein arming is effected by combustion or fusion of an element; {[Arming methods using temperature gradients](#) } ([F42C 15/31 takes precedence](#))
- F42C 15/38 . wherein arming is effected by chemical action ([F42C 3/00 takes precedence](#))
- F42C 15/40 . wherein the safety or arming action is effected electrically
- F42C 15/42 . . from a remote location, e.g. for controlled mines or mine fields
- F42C 15/44 . Arrangements for disarming, or for rendering harmless, fuzes after arming, e.g. after launch

**F42C 17/00 Fuze-setting apparatus**

F42C 17/02 . Fuze-setting keys

F42C 17/04 . for electric fuzes

**F42C 19/00 Details of fuzes (except [F42C 15/00](#))**

F42C 19/02 . Fuze bodies; Fuze housings

F42C 19/04 . Protective caps

F42C 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](#) }

F42C 19/07 . . Nose-contacts for projectiles or missiles

F42C 19/08 . Primers (initiators for blasting cartridges [F42B 3/10](#); ignition means for rocket engine plants [F02K 9/95](#)) ; Detonators

F42C 19/0803 . . { characterised by the combination of per se known chemical composition in the priming substance }

F42C 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 }

F42C 19/0811 . . { characterised by the generation of a plasma for initiating the charge to be ignited }

F42C 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](#)) }

F42C 19/0819 . . { Primers or igniters for the initiation of rocket motors, i.e. pyrotechnical aspects thereof }

F42C 19/0823 . . { Primers or igniters for the initiation or the propellant charge in a cartridge ammunition (primers for caseless ammunition [F42C 19/085](#)) }

F42C 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 }

F42C 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 }

F42C 19/0834 . . . { Arrangements of a multiplicity of primers or detonators dispersed within a propellant charge for increased efficiency }

F42C 19/0838 . . { Primers or igniters for the initiation or the explosive charge in a warhead ([F42C 19/095](#) takes precedence) }

F42C 19/0842 . . . { Arrangements of a multiplicity of primers or detonators, dispersed within a warhead, for multiple mode selection }

F42C 19/0846 . . . { Arrangements of a multiplicity of primers or detonators, dispersed within a warhead, for increased efficiency }

F42C 19/085 . . Primers for caseless ammunition

F42C 19/09 . . Primers or detonators containing a hollow charge

- F42C 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
- F42C 19/10
  - . . Percussion caps
- F42C 19/12
  - . . electric
- F42C 19/14
  - . . . operable also in the percussion mode
- F42C 21/00**
  - Checking fuzes; Testing fuzes**
- F42C 99/00**
  - Subject matter not provided for in other groups of this subclass**