

**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](#) )

**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](#) )

**F42C 9/00**

**Time fuzes; Combined time and percussion or pressure-actuated fuzes; Fuzes for**

**timed self-destruction of ammunition**

- F42C 9/02 . the timing being caused by mechanical means
- F42C 9/04 .. by spring motor { [F42C 9/141](#) takes precedence; housings for fuzes specially adapted for winding or setting [F42C 19/02](#) }
- 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 {( [F42C 9/14](#) takes precedence )}
- F42C 9/10 . the timing being caused by combustion {( [F42C 9/14](#) 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 {( [F42C 9/141](#) to [F42C 9/148](#) 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
- F42C 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](#) to [F42B 3/18](#); optical initiators [F42B 3/113](#) })
- F42C 11/001 . { Electric circuits for fuzes characterised by the ammunition class or type ( [F42C 11/02](#) to [F42C 11/06](#) take precedence; mechanical fuzes having electric igniters for hand grenades or marine warheads [F42C 14/025](#), [F42C 14/045](#) ) }
- 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**