

**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 of 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**