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)

WARNING
In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

1/00 Impact fuzes, i.e. fuzes actuated only by ammunition impact
1/02 . with firing-pin structurally combined with fuze
1/04 . . operating by inertia of members on impact
1/06 . . . for any direction of impact {electric contact parts F42C 19/06}]
1/08 . . with delayed action after ignition of fuze (time fuzes F42C 9/00) {or after impact}
1/09 . . the fuze activating a propulsive charge for propelling the ammunition or the warhead into the air, e.g. in rebounding projectiles
1/10 . without firing-pin
1/12 . . with delayed action after ignition of fuze (time fuzes F42C 9/00)
1/14 . operating at a predetermined distance from ground or target by means of a protruding member

3/00 Fuzes actuated by exposure to a liquid, e.g. seawater (F42C 5/00 takes precedence; time fuzes F42C 9/00)

5/00 Fuzes actuated by exposure to a predetermined ambient fluid pressure {fluid-pressure-operated switches H01H 35/24]}
5/02 . barometric pressure

7/00 Fuzes actuated by application of a predetermined mechanical force, e.g. tension, torsion, pressure (by ammunition impact F42C 1/10, by exposure to a predetermined ambient fluid pressure F42C 5/00)
7/02 . Contact fuzes, i.e. fuzes acted upon 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)
7/04 . . acted by applying pressure on the ammunition head
7/06 . . . and comprising pneumatic or hydraulic retarding means
7/08 . . of release type, i.e. acted by releasing pressure from the ammunition head
7/10 . . of antenna type

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 (perception caps F42C 19/10)

9/00 Time fuzes; Combined time and percussion or pressure-actuated fuzes; Fuzes for timed self-destruction of ammunition
9/02 . the timing being caused by mechanical means
9/04 . . by spring motor {F42C 9/141 takes precedence; housings for fuzes specially adapted for winding or setting F42C 19/02}
9/041 . . . [the clockwork activating a security device, e.g. for unlocking the firing-pin]
9/043 . . . . . [and the firing-pin being actuated by impact]
9/045 . . . . . [and the firing-pin being actuated by a spring]
9/046 . . . . . [and the activating spring being the spring of the clock-work mechanism]
9/048 . . . [Unlocking of clockwork mechanisms, e.g. by inertia or centrifugal forces; Means for disconnecting the clockwork mechanism from the setting mechanism]
9/06 . . by flow of fluent material, e.g. shot, fluids
9/08 . . the timing being caused by chemical action, e.g. of acids {F42C 9/14 takes precedence}
9/10 . . the timing being caused by combustion {F42C 9/14 takes precedence}
9/12 . . with ring combustion elements
9/14 . Double fuzes; Multiple fuzes
9/141 . . . [Impact fuze in combination with a clockwork time fuze]
9/142 . . . . [combined time and percussion fuzes in which the timing is caused by combustion]
9/144 . . . . [with ring or spiral combustion elements]
9/145 . . . [combined time and percussion fuzes in which the timing is caused by chemical reaction]
9/147 . . [Impact fuze in combination with electric time fuze]
9/148 . . . [Proximity fuzes in combination with other fuzes]
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 - F42B 3/18; optical initiators F42B 3/113))

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)

11/002 . { Smart ammunition fuzes, i.e. having an integrated scanning, guiding and firing system

11/003 . { for hand grenades

11/005 . { for marine warheads, e.g. torpedoes, mines, depth charges

11/006 . { for fall bombs

11/007 . { for land mines

11/008 . { Power generation in electric fuzes (F42C 11/02, F42C 11/04 and F42C 15/295 take precedence)

11/02 . with piezo-crystal

11/04 . with current induction

11/06 . with time delay by electric circuitry

11/065 . { Programmable electronic delay initiators in projectiles

13/00 Proximity fuzes; Fuzes for remote detonation (F42C 19/148 takes precedence; constructional details F42C 19/00; mounting of antennas F42B 30/006)

13/003 . { operated by variations in electrostatic field

13/006 . { for non-guided, spinning, braked or gravity-driven weapons, e.g. parachute-braked sub-munitions

13/02 . operated by intensity of light or similar radiation

13/023 . { using active distance measurement

13/026 . { Remotely actuated projectile fuzes operated by optical transmission links

13/04 . operated by radio waves

13/042 . { based on distance determination by coded radar techniques

13/045 . { using transmission of F.M. waves

13/047 . { Remotely actuated projectile fuzes operated by radio transmission links

13/06 . operated by sound waves

13/08 . operated by variations in magnetic field

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)

14/02 . for hand grenades

14/025 . { having electric igniters

14/04 . for torpedoes, marine mines or depth charges (influenced marine mines F42B 22/04)

14/045 . { having electric igniters

14/06 . for fall bombs

14/08 . for land mines

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)

15/18 . wherein a carrier for an element of the pyrotechnic or explosive train is moved (F42C 15/40 takes precedence)

15/184 . { using a slideable carrier

15/188 . { using a rotateable carrier

15/192 . { rotateable in a plane which is parallel to the longitudinal axis of the projectile

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

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)

15/21 . { using spring action (F42C 15/32 takes precedence)

15/22 . { using centrifugal force (F42C 15/23 takes precedence)

15/23 . { by unwinding a flexible ribbon or tape

15/24 . wherein the safety or arming action is effected by inertia means (F42C 15/196, F42C 15/20 take precedence)

15/26 . { using centrifugal force

15/28 . { operated by flow of fluent material, e.g. shot, fluids (F42C 15/26 takes precedence)

15/285 . { stored within the fuze housing

15/29 . { operated by fluidic oscillators; operated by dynamic fluid pressure, e.g. ram-air operated

15/295 . { operated by a turbine or a propeller; Mounting means therefor

15/30 . { of propellant gases, i.e. derived from propulsive charge or rocket motor

15/31 . { generated by the combustion of a pyrotechnic or explosive charge within the fuze

15/32 . { operated by change of fluid pressure (F42C 5/00, F42C 15/29 take precedence)

15/33 . { by breaking a vacuum or pressure container

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)

15/36 . { wherein arming is effected by combustion or fusion of an element; (Arming methods using temperature gradients) (F42C 15/31 takes precedence)

15/38 . { wherein arming is effected by chemical action (F42C 3/00 takes precedence)

15/40 . { wherein the safety or arming action is effected electrically

15/42 . { from a remote location, e.g. for controlled mines or mine fields

15/44 . { Arrangements for disarming, or for rendering harmless, fuzes after arming, e.g. after launch

17/00 Fuze-setting apparatus

17/002 . Fuze-setting keys

17/004 . for electric fuzes
<table>
<thead>
<tr>
<th>19/00</th>
<th>Details of fuzes (except F42C 15/00)</th>
<th>99/00</th>
<th>Subject matter not provided for in other groups of this subclass</th>
</tr>
</thead>
<tbody>
<tr>
<td>19/02</td>
<td>. Fuze bodies; Fuze housings</td>
<td></td>
<td></td>
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<tr>
<td>19/04</td>
<td>. Protective caps</td>
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<tr>
<td>19/06</td>
<td>. Electric contact parts specially adapted for use with electric fuzes (1) (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)</td>
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<tr>
<td>19/07</td>
<td>. . Nose-contacts for projectiles or missiles</td>
<td></td>
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<tr>
<td>19/08</td>
<td>. Primers (initiators for blasting cartridges F42B 3/10; ignition means for rocket engine plants F02K 9/95); Detonators</td>
<td></td>
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<tr>
<td>19/0803</td>
<td>. . {characterised by the combination of per se known chemical composition in the priming substance}</td>
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<tr>
<td>19/0807</td>
<td>. . {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}</td>
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<tr>
<td>19/0811</td>
<td>. . {characterised by the generation of a plasma for initiating the charge to be ignited}</td>
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<tr>
<td>19/0815</td>
<td>. . {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)}</td>
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<tr>
<td>19/0819</td>
<td>. . {Primers or igniters for the initiation of rocket motors, i.e. pyrotechnical aspects thereof}</td>
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<tr>
<td>19/0823</td>
<td>. . {Primers or igniters for the initiation or the propellant charge in a cartridge ammunition (primers for caseless ammunition F42C 19/085)}</td>
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</tr>
<tr>
<td>19/0826</td>
<td>. . {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}</td>
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<tr>
<td>19/083</td>
<td>. . {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}</td>
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<tr>
<td>19/0834</td>
<td>. . {Arrangements of a multiplicity of primers or detonators dispersed within a propellant charge for increased efficiency}</td>
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<tr>
<td>19/0838</td>
<td>. . {Primers or igniters for the initiation or the explosive charge in a warhead (F42C 19/095 takes precedence)}</td>
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<tr>
<td>19/0842</td>
<td>. . {Arrangements of a multiplicity of primers or detonators, dispersed within a warhead, for multiple mode selection}</td>
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<tr>
<td>19/0846</td>
<td>. . {Arrangements of a multiplicity of primers or detonators, dispersed within a warhead, for increased efficiency}</td>
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<tr>
<td>19/085</td>
<td>. . Primers for caseless ammunition</td>
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<tr>
<td>19/09</td>
<td>. . Primers or detonators containing a hollow charge</td>
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<tr>
<td>19/095</td>
<td>. . Arrangements of a multiplicity of primers or detonators, dispersed around a warhead, one of the primers or detonators being selected for directional detonation effects</td>
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<tr>
<td>19/10</td>
<td>. . Percussion caps</td>
<td></td>
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<tr>
<td>19/12</td>
<td>. . electric</td>
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<tr>
<td>19/14</td>
<td>. . operable also in the percussion mode</td>
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**21/00** Checking fuzes; Testing fuzes