SECTION F — MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING

F42 AMMUNITION; BLASTING

Note(s) [2, 4, 5]

1. This class covers also means for practice or training which may have aspects of simulation, although simulators are generally covered by class G09.
2. In this class, the following terms or expressions are used with the meanings indicated:
   - "primer" effects the first explosive step in the sequence of explosion;
   - "percussion cap" means a primer which is struck to explode;
   - "igniter" effects the first spark-producing or heat-producing step but may not be explosive;
   - "firing-means" or "initiator" (used respectively in the arts of weaponry and blasting) means a device acting directly on the primer, which device may or may not form part of the fuze;
   - "detonator" or "detonator charge" means a charge used to amplify the explosion of the primer;
   - "fuze" means an assembly or mechanism which incorporates safety and arming means in order that the explosion can only take place under certain conditions; this assembly or mechanism determines also the moment (instantaneous or delayed) or the manner, e.g. impact, proximity, hydrostatic pressure, of the firing;
   - "ammunition" covers propulsive charge and projectile whether or not forming a single body, unless otherwise made clear;
   - "projectile", "missile" or "projectile or missile" means any body which is projected or propelled;
   - "guided missile" means projectile or missile which is guided during at least part of its trajectory;
   - "rocket" means projectile or missile which is self-propelled, during at least part of its trajectory, by a rocket engine, i.e. by a jet-propulsion engine carrying both fuel and oxidant therefor;
   - "fuse" or "fuse cord" means a continuous train of explosive enclosed in a usually flexible cord or cable for setting-off an explosive charge in the art of blasting.

F42B EXPLOSIVE CHARGES, e.g. FOR BLASTING; FIREWORKS; AMMUNITION (explosive compositions C06B; fuzes F42C; blasting F42D) **[2, 5]**

Subclass index

1/00 Explosive charges characterised by form or shape but not dependent on shape of container [1, 2006.01]

1/02 • Shaped or hollow charges (blasting cartridges with cavities in the charge F42B 3/08; oil-winning using shaped-charge perforators E21B 43/116) **[1, 2006.01]**

1/024 • • provided with embedded bodies of inert material **[5, 2006.01]**

1/028 • • characterised by the form of the liner **[5, 2006.01]**

1/032 • • characterised by the material of the liner **[5, 2006.01]**

1/036 • • Manufacturing processes therefor **[5, 2006.01]**

1/04 • Detonator charges not forming part of the fuze **[1, 2006.01]**

3/00 Blasting cartridges, i.e. case and explosive (fuse cords, e.g. detonating fuse cords, C06C 5/00; chemical aspects of detonators, blasting caps or primers C06C 7/00) **[1, 2006.01]**

3/02 • adapted to be united into assemblies **[1, 2006.01]**

3/04 • for producing gas under pressure **[1, 2006.01]**

3/06 • • with re-utilisable case **[1, 2006.01]**

3/08 • with cavities in the charge, e.g. hollow-charge blasting cartridges **[1, 2006.01]**

3/087 • Flexible or deformable blasting cartridges, e.g. bags or hoses (loaded cartridge bags F42B 5/38) **[5, 2006.01]**

3/093 • • in mat or tape form **[5, 2006.01]**

3/10 • Initiators therefor (percussion fuzes F42C 7/00; percussion caps F42C 19/10; electric primers F42C 19/12) **[1, 2006.01]**

Note(s)

Group F42B 3/18 takes precedence over groups F42B 3/103-F42B 3/16.

3/103 • • Mounting initiator heads in initiators; Sealing-plugs **[5, 2006.01]**

3/107 • • • Sealing-plugs characterised by the material used **[5, 2006.01]**

3/11 • • characterised by the material used, e.g. for initiator case or electric leads (F42B 3/107 takes precedence) **[5, 2006.01]**

3/113 • • activated by optical means, e.g. laser, flashlight **[5, 2006.01]**

3/117 • • activated by friction **[5, 2006.01]**

3/12 • • Bridge initiators **[1, 2006.01]**

3/13 • • • with semiconductive bridge **[5, 2006.01]**

3/14 • • Spark initiators **[1, 2006.01]**

3/16 • • Delay initiators **[1, 2006.01]**

3/18 • • Safety initiators resistant to premature firing by static electricity or stray currents **[1, 2006.01]**

3/182 • • • having shunting means **[5, 2006.01]**

3/185 • • • having semiconductive sealing plugs **[5, 2006.01]**

3/188 • • • having radio-frequency filters **[5, 2006.01]**

3/192 • • designed for neutralisation on contact with water **[5, 2006.01]**

3/195 • • Manufacture **[5, 2006.01]**

3/198 • • • of electric initiator heads **[5, 2006.01]**

3/22 • Elements for controlling or guiding the detonation wave, e.g. tubes (using inert bodies embedded in shaped or hollow charges F42B 1/024) **[5, 2006.01]**

3/24 • Cartridge closures or seals (top closures for shotgun ammunition cartridges F42B 7/12) **[5, 2006.01]**

3/26 • Arrangements for mounting initiators; Accessories therefor, e.g. tools **[5, 2006.01]**

3/28 • Cartridge cases characterised by the material used, e.g. coatings (for initiator cases F42B 3/11) **[5, 2006.01]**

4/00 Fireworks, i.e. pyrotechnic devices for amusement, display, illumination, or signal purposes (signalling by explosives G08B; advertising by firework G09F 13/46) **[2, 2006.01]**

4/02 • in cartridge form, i.e. shell, propellant, and primer **[2, 2006.01]**

4/04 • Firecrackers **[2, 2006.01]**

4/06 • Aerial display rockets (rockets in general F42B 15/00) **[2, 2006.01]**

4/08 • • characterised by having vanes, wings, parachutes, or balloons **[2, 2006.01]**

4/10 • • characterised by having means to separate article or charge from casing without destroying casing **[2, 2006.01]**

4/12 • • • Parachute or flare separation **[2, 2006.01]**

4/14 • • characterised by having plural successively-ignited charges **[2, 2006.01]**

4/16 • Hand-thrown impact-exploded noise makers (cap pistols F41C 3/06) **[4, 2006.01]**

4/18 • Simulations, e.g. pine cone, house that is destroyed, warship, volcano **[2, 2006.01]**

4/20 • characterised by having holder or support other than casing, e.g. whirler or spike support **[2, 2006.01]**

4/22 • characterised by having means to separate an article or charge from casing without destroying casing (in aerial display rockets F42B 4/10) **[2, 2006.01]**

4/24 • characterised by having plural successively-ignited charges (in aerial display rockets F42B 4/14) **[2, 2006.01]**

4/26 • Flares; Torches **[2, 2006.01]**

4/28 • • Parachute flares (F42B 4/12 takes precedence) **[2, 2006.01]**

4/30 • Manufacture **[2, 2006.01]**

5/00 Cartridge ammunition, e.g. separately-loaded propellant charges (shotgun ammunition F42B 7/00; practice or training ammunition F42B 8/00; missiles therefor F42B 12/00, F42B 14/00, F42B 15/00) **[1, 2006.01]**

5/02 • Cartridges, i.e. cases with propellant charge and missile **[1, 2006.01]**

5/03 • • containing more than one missile **[4, 2006.01]**

5/045 • • of telescopic type (F42B 5/184 takes precedence) **[5, 2006.01]**

5/05 • • for recoilless guns (recoilless guns using a counter-projectile to balance recoil F41A 1/10) **[4, 2006.01]**

5/067 • • Mounting or locking missiles in cartridge cases (F42B 5/18 takes precedence) **[5, 2006.01]**

5/073 • • • using an auxiliary locking element **[5, 2006.01]**

5/08 • • modified for electric ignition **[1, 2006.01]**

5/10 • • with self-propelled bullet **[1, 2006.01]**

5/14 • • for marking cattle **[1, 2006.01]**

5/145 • • for dispensing gases, vapours, powders, particles or chemically-reactive substances (from projectiles F42B 12/46, F42B 12/70) **[5, 2006.01]**

5/15 • • • for creating a screening or decoy effect, e.g. using radar chaff or infra-red material (infra-red flares F42B 4/26) **[5, 2006.01]**

5/155 • • • • Smoke-pot projectors, e.g. arranged on vehicles **[5, 2006.01]**

5/16 • • characterised by composition or physical dimensions or form of propellant charge or powder (chemical composition C06B) **[1, 2006.01]**
5/18 • • Caseless ammunition; Cartridges having combustible cases **[1, 5, 2006.01]**
5/184 • • • telescopic **[5, 2006.01]**
5/188 • • • Manufacturing processes therefor **[5, 2006.01]**
5/192 • • • Cartridge cases characterised by the material used **[5, 2006.01]**
5/196 • • • • Coatings **[5, 2006.01]**
5/24 • • for cleaning; for cooling; for lubricating **[1, 5, 2006.01]**
5/26 • Cartridge cases (F42B 5/18 takes precedence) **[1, 2006.01]**
5/28 • • of metal **[1, 2006.01]**
5/285 • • • formed by assembling several elements **[4, 2006.01]**
5/29 • • • • wound from sheets or strips **[4, 2006.01]**
5/295 • • • coated **[4, 2006.01]**
5/297 • • • • with plastics **[5, 2006.01]**
5/30 • • of plastics **[1, 2006.01]**
5/307 • • • formed by assembling several elements **[4, 2006.01]**
5/313 • • • • all elements made of plastics **[4, 2006.01]**
5/32 • • for rim fire **[1, 2006.01]**
5/34 • • with provision for varying the length **[1, 2006.01]**
5/36 • • modified for housing an integral firing-cap **[1, 2006.01]**
5/38 • Separately-loaded propellant charges, e.g. cartridge bags **[4, 2006.01]**

6/00 Projectiles or missiles specially adapted for projection without use of explosive or combustible propellant charge, e.g. for blow guns, bows or crossbows, hand-held spring or air guns (for delivering hypodermic charges F42B 12/54; throwing-darts A63B 65/02; projectiles or missiles incorporating springs as the projecting means F41B 7/02) **[5, 2006.01]**
6/02 • Arrows; Crossbow bolts; Harpoons for hand-held spring or air guns **[5, 2006.01]**
6/04 • • Archery arrows (F42B 6/08, F41B 5/06 take precedence) **[5, 2006.01]**
6/06 • • • Tail ends, e.g. nocks, fletching **[5, 2006.01]**
6/08 • • Arrow heads; Harpoon heads **[5, 2006.01]**
6/10 • Air gun pellets **[5, 2006.01]**

7/00 Shotgun ammunition [1, 2006.01]
7/02 • Cartridges, i.e. cases with propellant charge and missile **[1, 2006.01]**
7/04 • • of pellet type **[1, 2006.01]**
7/06 • • with cartridge case of plastics **[1, 2006.01]**
7/08 • • Wads therefor **[1, 2006.01]**
7/10 • • Ball or slug shotgun cartridges **[1, 2006.01]**
7/12 • • Cartridge top closures, i.e. for the missile side (closures for blasting cartridges F42B 3/24) **[5, 2006.01]**

8/00 Practice or training ammunition (range-reducing, destabilising or braking arrangements F42B 10/00; with signalling effect F42B 12/02; F42B 19/00 takes precedence) **[4, 2006.01]**
8/02 • Cartridges **[5, 2006.01]**
8/04 • • Blank cartridges, i.e. primed cartridges without projectile but containing an explosive or combustible powder charge **[5, 2006.01]**
8/06 • • • for cap-firing pistols **[5, 2006.01]**
8/08 • • Dummy cartridges, i.e. inert cartridges containing neither primer nor explosive or combustible powder charge **[5, 2006.01]**
8/10 • • with sub-calibre adaptor **[5, 2006.01]**
8/12 • Projectiles or missiles (F42B 19/36 takes precedence) **[5, 2006.01]**
8/14 • • disintegrating in flight or upon impact **[5, 2006.01]**
8/16 • • • containing an inert filler in powder or granular form **[5, 2006.01]**

Note(s) [5]

Group F42B 8/14 takes precedence over groups F42B 8/18-F42B 8/26.

8/18 • • Rifle grenades **[5, 2006.01]**
8/20 • • Mortar grenades **[5, 2006.01]**
8/22 • • Fall bombs **[5, 2006.01]**
8/24 • • Rockets **[5, 2006.01]**
8/26 • • Hand grenades **[5, 2006.01]**
8/28 • Land or marine mines; Depth charges **[5, 2006.01]**

10/00 Means for influencing, e.g. improving, the aerodynamic properties of projectiles or missiles; Arrangements on projectiles or missiles for stabilising, steering, range-reducing, range-increasing or fall-retarding (F42B 6/00 takes precedence; sub-calibre projectiles having sabots F42B 14/00) **[5, 2006.01]**
10/02 • Stabilising arrangements **[5, 2006.01]**
10/04 • • using fixed fins (F42B 10/22 takes precedence) **[5, 2006.01]**
10/06 • • • Tail fins **[5, 2006.01]**
10/08 • • • • Flechette-type projectiles **[5, 2006.01]**
10/10 • • • • the fins being formed in the barrel by deformation of the projectile body **[5, 2006.01]**
10/12 • • using fins longitudinally-slidable with respect to the projectile or missile **[5, 2006.01]**
10/14 • • using fins spread or deployed after launch, e.g. after leaving the barrel **[5, 2006.01]**
10/16 • • • Wrap-around fins **[5, 2006.01]**
10/18 • • • using a longitudinally slidable support member **[5, 2006.01]**
10/20 • • • deployed by combustion gas pressure, or by pneumatic or hydraulic forces **[5, 2006.01]**
10/22 • • Projectiles of cannelured type **[5, 2006.01]**
10/24 • • • with inclined grooves **[5, 2006.01]**
10/26 • • using spin (F42B 10/04, F42B 10/12, F42B 10/14, F42B 10/24, F42B 14/02 take precedence) **[5, 2006.01]**
10/28 • • • induced by gas action **[5, 2006.01]**
10/30 • • • • using rocket motor nozzles **[5, 2006.01]**
10/32 • Range-reducing or range-increasing arrangements; Fall-retarding means **[5, 2006.01]**
10/34 • • Tubular projectiles **[5, 2006.01]**
10/36 • • • Ring-foil projectiles **[5, 2006.01]**
10/38 • • Range-increasing arrangements (F42B 10/34 takes precedence) **[5, 2006.01]**
10/40 • • • with combustion of a slow-burning charge, e.g. fumers, base-bleed projectiles **[5, 2006.01]**
10/42 • • • Streamlined projectiles **[5, 2006.01]**
10/44 • • • • Boat-tails specially adapted for drag reduction **[5, 2006.01]**
10/46 • • • • Streamlined nose cones; Windshields; Radomes **[5, 2006.01]**

10/48 • • Range-reducing, destabilising or braking arrangements; Fall-retarding means (F42B 10/34 takes precedence) **[5, 2006.01]**
10/50 • • • Brake flaps **[5, 2006.01]**
10/52 • • • Nose cones **[5, 2006.01]**
10/54 • • • Spin braking means **[5, 2006.01]**
10/56 • • • of parachute type **[5, 2006.01]**
10/58 • • • of rotochute type **[5, 2006.01]**
10/60 • Steering arrangements (F42B 19/01 takes precedence) **[5, 2006.01]**
10/62 • • Steering by movement of flight surfaces **[5, 2006.01]**
10/64 • • • of fins **[5, 2006.01]**
10/66 • • Steering by varying intensity or direction of thrust (thrust vector control of rocket engine plants F02K 9/80) **[5, 2006.01]**

12/00 Projectiles, missiles or mines characterised by the warhead, the intended effect, or the material (F42B 6/00, F42B 10/00, F42B 14/00 take precedence; for practice or training F42B 8/12, F42B 8/28; self-propulsion or guidance aspects F42B 15/00) **[5, 2006.01]**

12/02 • characterised by the warhead or the intended effect **[5, 2006.01]**
12/04 • • of armour-piercing type **[5, 2006.01]**
12/06 • • • with hard or heavy core; Kinetic energy penetrators (F42B 12/16, F42B 12/74 take precedence) **[5, 2006.01]**
12/08 • • • with armour-piercing caps; with armoured cupola **[5, 2006.01]**
12/10 • • • with shaped or hollow charge (shaped or hollow charges per se F42B 1/02) **[5, 2006.01]**
12/12 • • • • rotatably mounted with respect to missile housing **[5, 2006.01]**
12/14 • • • • the symmetry axis of the hollow charge forming an angle with the longitudinal axis of the projectile **[5, 2006.01]**
12/16 • • • • in combination with an additional projectile or charge, acting successively on the target **[5, 2006.01]**
12/18 • • • • • Hollow charges in tandem arrangement **[5, 2006.01]**
12/20 • • of high-explosive type (F42B 12/44 takes precedence) **[5, 2006.01]**
12/22 • • • with fragmentation-hull construction **[5, 2006.01]**
12/24 • • • • with grooves, recesses or other wall weakenings **[5, 2006.01]**
12/26 • • • • the projectile wall being formed by a spirally-wound element **[5, 2006.01]**
12/28 • • • • the projectile wall being built from annular elements **[5, 2006.01]**
12/30 • • • • Continuous-rod warheads **[5, 2006.01]**
12/32 • • • • the hull or case comprising a plurality of discrete bodies, e.g. steel balls, embedded therein **[5, 2006.01]**
12/34 • • expanding before or on impact, i.e. of dumdum or mushroom type **[5, 2006.01]**
12/36 • • for dispensing materials; for producing chemical or physical reaction; for signalling **[5, 2006.01]**
12/38 • • • of tracer type **[5, 2006.01]**
12/40 • • • of target-marking, i.e. impact-indicating, type (F42B 12/48 takes precedence) **[5, 2006.01]**
12/42 • • • of illuminating type, e.g. carrying flares **[5, 2006.01]**
12/44 • • • of incendiary type (F42B 12/46 takes precedence) **[5, 2006.01]**
12/46 • • • for dispensing gases, vapours, powders or chemically-reactive substances (F42B 12/70 takes precedence) **[5, 2006.01]**
12/48 • • • • smoke-producing **[5, 2006.01]**
12/50 • • • • by dispersion **[5, 2006.01]**
12/52 • • • • • Fuel-air explosive devices **[5, 2006.01]**
12/54 • • • • by implantation, e.g. hypodermic projectiles **[5, 2006.01]**
12/56 • • • for dispensing discrete solid bodies (F42B 12/70 takes precedence) **[5, 2006.01]**
12/58 • • • • Cluster or cargo ammunition, i.e. projectiles containing one or more submissiles (F42B 12/32 takes precedence) **[5, 2006.01]**
12/60 • • • • • the submissiles being ejected radially **[5, 2006.01]**
12/62 • • • • • the submissiles being ejected parallel to the longitudinal axis of the projectile **[5, 2006.01]**
12/64 • • • • • • the submissiles being of shot- or flechette-type **[5, 2006.01]**
12/66 • • • • • Chain-shot, i.e. the submissiles being interconnected by chains or the like **[5, 2006.01]**
12/68 • • • • Line-carrying missiles, e.g. for life-saving (harpoons F42B 30/14) **[5, 2006.01]**
12/70 • • • • for dispensing radar chaff or infra-red material (radar-reflector targets, active targets transmitting infra-red radiation F41J 2/00; radar-reflecting surfaces H01Q 15/14) **[5, 2006.01]**
12/72 • characterised by the material (heat treatment for explosive shells C21D 9/16) **[5, 2006.01]**
12/74 • • of the core or solid body **[5, 2006.01]**
12/76 • • of the casing **[5, 2006.01]**
12/78 • • • of jackets for smallarm bullets **[5, 2006.01]**
12/80 • • • Coatings **[5, 2006.01]**
12/82 • • • • reduction friction **[5, 2006.01]**

14/00 Projectiles or missiles characterised by arrangements for guiding or sealing them inside barrels, or for lubricating or cleaning barrels [5, 2006.01]

14/02 • Driving bands; Rotating bands (F42B 14/04 takes precedence) **[5, 2006.01]**
14/04 • Lubrication means in missiles (coatings for reducing friction F42B 12/82) **[5, 2006.01]**
14/06 • Sub-calibre projectiles having sabots; Sabots therefor **[5, 2006.01]**
14/08 • • Sabots filled with propulsive charges; Removing sabots by combustion of pyrotechnic elements or by propulsive-gas pressure (arrangements on barrels for removing sabots from projectiles F41A 21/46) **[5, 2006.01]**

15/00 Self-propelled projectiles or missiles, e.g. rockets; Guided missiles (F42B 10/00, F42B 12/00, F42B 14/00 take precedence; for practice or training F42B 8/12; rocket torpedoes F42B 17/00; marine torpedoes F42B 19/00; cosmonautic vehicles B64G; jet-propulsion plants F02K) **[1, 4, 2006.01]**

15/01 • Arrangements thereon for guidance or control (aircraft flight control B64C; guidance systems other than those only installed aboard F41G 7/00, F41G 9/00; locating by use of radio or other waves G01S; flight control in general G05D 1/00; computing aspects G06) **[5, 2006.01]**

15/04 • • using wire, e.g. for guiding ground-to-ground rockets **[1, 2006.01]**
15/08 • for carrying measuring instruments (adaptations for meteorology G01W 1/08) **[1, 2006.01]**
15/10 • Missiles having a trajectory only in the air **[1, 2006.01]**
15/12 • • Intercontinental ballistic missiles (F42B 15/01 takes precedence) **[1, 4, 2006.01]**
15/20 • Missiles having a trajectory beginning below water surface (having additional propulsion means for movement through water F42B 17/00) **[1, 2006.01]**
15/22 • Missiles having a trajectory finishing below water surface (having additional propulsion means for movement through water F42B 17/00) **[1, 2006.01]**
15/34 • Protection against overheating or radiation, e.g. heat shields; Additional cooling arrangements **[5, 2006.01]**
15/36 • Means for interconnecting rocket-motor and body section; Multi-stage connectors; Disconnecting means **[5, 2006.01]**
15/38 • • Ring-shaped explosive elements for the separation of rocket parts **[5, 2006.01]**

17/00 **Rocket torpedoes, i.e. missiles provided with separate propulsion means for movement through air and through water** (F42B 12/00 takes precedence) **[1, 2006.01]**

19/00 **Marine torpedoes, e.g. launched by surface vessels or submarines** (having additional propulsion means for movement through air F42B 17/00)**; Sea mines having self-propulsion means** (F42B 12/00 takes precedence; launching means F41F; locating by use of radio or other waves G01S; automatic control of course G05D 1/00; firing directors or calculators G06G) **[1, 2006.01]**
19/01 • Steering control **[1, 2006.01]**
19/04 • • Depth control **[1, 2006.01]**
19/06 • • Directional control **[1, 2006.01]**
19/08 • • with means for preventing rolling or pitching **[1, 2006.01]**
19/10 • • remotely controlled, e.g. by sonic or radio control (control systems using wire F41G 7/32) **[1, 2006.01]**
19/12 • Propulsion specially adapted for torpedoes (marine propulsion in general B63H) **[1, 2006.01]**
19/14 • • by compressed-gas motors **[1, 2006.01]**
19/16 • • • of cylinder type **[1, 2006.01]**
19/18 • • • of turbine type **[1, 2006.01]**
19/20 • • • characterised by the composition of propulsive gas; Manufacture or heating thereof in torpedoes **[1, 2006.01]**
19/22 • • by internal-combustion engines **[1, 2006.01]**
19/24 • • by electric motors **[1, 2006.01]**
19/26 • • by jet propulsion **[1, 2006.01]**
19/28 • • with means for avoiding visible wake **[1, 2006.01]**
19/30 • • with timing control of propulsion **[1, 2006.01]**
19/36 • adapted to be used for exercise purposes, e.g. indicating position or course **[1, 2006.01]**
19/38 • • with means for causing torpedoes to surface at end of run **[1, 2006.01]**
19/40 • • • by expelling liquid ballast **[1, 2006.01]**
19/42 • • • by releasing solid ballast **[1, 2006.01]**
19/44 • • • by enlarging displacement **[1, 2006.01]**
19/46 • adapted to be launched from aircraft **[1, 2006.01]**

21/00 **Depth charges** (F42B 12/00 takes precedence; for practice or training F42B 8/28; laying aspects B63G) **[1, 2006.01]**

22/00 **Marine mines, e.g. launched by surface vessels or submarines** (F42B 12/00 takes precedence; for practice or training F42B 8/28; mine laying or sweeping B63G) **[1, 2006.01]**
22/02 • Contact mines (contact fuzes F42C 7/02) **[1, 2006.01]**
22/04 • Influenced mines, e.g. by magnetic or acoustic effect **[1, 2006.01]**
22/06 • Ground mines **[1, 2006.01]**
22/08 • Drifting mines (with propulsion means F42B 19/00) **[1, 2006.01]**
22/10 • Moored mines **[1, 2006.01]**
22/12 • • at a fixed depth setting **[1, 2006.01]**
22/14 • • at a variable depth setting **[1, 2006.01]**
22/16 • • • using mechanical means, e.g. plummet and float **[1, 2006.01]**
22/18 • • • using hydrostatic means **[1, 2006.01]**
22/20 • • • using magnetic or acoustic depth-control means **[1, 2006.01]**
22/22 • having self-contained sinking means **[1, 2006.01]**
22/24 • Arrangement of mines in fields or barriers (net barriers for harbour defence F41H 11/05) **[1, 2006.01]**
22/42 • with anti-sweeping means, e.g. electrical **[1, 2006.01]**
22/44 • adapted to be launched from aircraft **[1, 2006.01]**

23/00 **Land mines** (F42B 12/00 takes precedence; for practice or training F42B 8/28) **[1, 2006.01]**
23/04 • anti-vehicle **[1, 5, 2006.01]**
23/08 • • non-metallic **[1, 5, 2006.01]**
23/10 • anti-personnel **[1, 5, 2006.01]**
23/14 • • non-metallic **[1, 5, 2006.01]**
23/16 • • of missile type, i.e. for detonation after ejection from ground (fuzes for initiating mine ejection F42C 1/09) **[1, 5, 2006.01]**
23/24 • Details **[1, 2006.01]**

25/00 **Fall bombs** (F42B 10/00, F42B 12/00 take precedence; for practice or training F42B 8/12) **[1, 5, 2006.01]**

27/00 **Hand grenades** (F42B 12/00 takes precedence; for practice or training F42B 8/12) **[1, 2006.01]**
27/08 • with handle **[1, 2006.01]**

29/00 **Noiseless, smokeless, or flashless missiles launched by their own explosive propellant [1, 2006.01]**

30/00 **Projectiles or missiles, not otherwise provided for, characterised by the ammunition class or type, e.g. by the launching apparatus or weapon used** (F42B 10/00, F42B 12/00, F42B 14/00 take precedence) **[5, 2006.01]**
30/02 • Bullets **[5, 2006.01]**
30/04 • Rifle grenades **[5, 2006.01]**
30/06 • • Bullet traps or bullet decelerators therefor **[5, 2006.01]**
30/08 • Ordnance projectiles or missiles, e.g. shells **[5, 2006.01]**
30/10 • • Mortar projectiles **[5, 2006.01]**
30/12 • • • with provision for additional propulsive charges; with provision for varying the length **[5, 2006.01]**
30/14 • Harpoons (for hand-held spring or air guns F42B 6/02) **[5, 2006.01]**

33/00 **Manufacture of ammunition; Dismantling of ammunition; Apparatus therefor** (F42B 5/188 takes precedence; manufacturing processes for hollow charges F42B 1/036; manufacturing of blasting cartridge initiators F42B 3/195) **[1, 2006.01]**

33/02 • Filling cartridges, missiles, or fuzes; Inserting propellant or explosive charges **[1, 2006.01]**

33/04 • Fitting or extracting primers in or from fuzes or charges **[1, 2006.01]**

33/06 • Dismantling fuzes, cartridges, projectiles, missiles, rockets, or bombs (F42B 33/04 takes precedence) **[1, 2006.01]**

33/10 • Reconditioning used cartridge cases **[1, 2006.01]**

33/12 • Crimping shotgun cartridges **[1, 2006.01]**

33/14 • Surface treatment of cartridges or cartridge cases **[1, 2006.01]**

35/00 **Testing or checking of ammunition [1, 2006.01]**

35/02 • Gauging, sorting, trimming or shortening cartridges or missiles **[1, 2006.01]**

39/00 **Packaging or storage of ammunition or explosive charges; Safety features thereof; Cartridge belts; Cartridge bags [1, 2006.01]**

39/02 • Cartridge bags; Bandoleers **[1, 2006.01]**

39/08 • Cartridge belts **[1, 2006.01]**

39/10 • • Machines for charging or for extracting cartridges from feed belts **[1, 2006.01]**

39/14 • Explosion or fire protection arrangements on packages or ammunition (F42B 39/20 takes precedence) **[5, 2006.01]**

39/16 • • Fire-extinguishing **[5, 2006.01]**

39/18 • • Heat shields; Thermal insulation **[5, 2006.01]**

39/20 • Packages or ammunition having valves for pressure-equalising; Packages or ammunition having plugs for pressure release, e.g. meltable **[5, 2006.01]**

39/22 • Locking of ammunition in transport containers **[5, 2006.01]**

39/24 • Shock-absorbing arrangements in packages **[5, 2006.01]**

39/26 • Packages or containers for a plurality of ammunition, e.g. cartridges (F42B 39/14-F42B 39/24, F42B 39/28 take precedence) **[5, 2006.01]**

39/28 • Ammunition racks, e.g. in vehicles **[5, 2006.01]**

39/30 • Containers for detonators or fuzes (F42B 39/14, F42B 39/20 take precedence) **[5, 2006.01]**

99/00 **Subject matter not provided for in other groups of this subclass [2006.01]**

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) **[5]**

Subclass index

1/00 **Impact fuzes, i.e. fuzes actuated only by ammunition impact [1, 2006.01]**

1/02 • with firing pin structurally combined with fuze **[1, 2006.01]**

1/04 • • operating by inertia of members on impact **[1, 2006.01]**

1/06 • • • for any direction of impact **[1, 2006.01]**

1/08 • • with delayed action after ignition of fuze (time fuzes F42C 9/00) **[1, 2006.01]**

1/09 • • the fuze activating a propulsive charge for propelling the ammunition or the warhead into the air, e.g. in rebounding projectiles **[5, 2006.01]**

1/10 • without firing pin **[1, 2006.01]**

1/12 • • with delayed action after ignition of fuze (time fuzes F42C 9/00) **[1, 2006.01]**

1/14 • operating at a predetermined distance from ground or target by means of a protruding member **[1, 2006.01]**

3/00 **Fuzes actuated by exposure to a liquid, e.g. sea-water** (F42C 5/00 takes precedence; time fuzes F42C 9/00) **[1, 2006.01]**

5/00 **Fuzes actuated by exposure to a predetermined ambient fluid pressure [1, 2006.01]**

5/02 • barometric pressure **[1, 2006.01]**

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) **[1, 2006.01]**

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) **[1, 2006.01]**

7/04 • • actuated by applying pressure on the ammunition head **[5, 2006.01]**
7/06 • • • and comprising pneumatic or hydraulic retarding means **[5, 2006.01]**
7/08 • • of release type, i.e. actuated by releasing pressure from the ammunition head **[5, 2006.01]**
7/10 • • of antenna type **[5, 2006.01]**
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) **[5, 2006.01]**

9/00 **Time fuzes; Combined time- and percussion- or pressure-actuated fuzes; Fuzes for timed self-destruction of ammunition [1, 2006.01]**
9/02 • the timing being caused by mechanical means **[1, 2006.01]**
9/04 • • by spring motor **[1, 2006.01]**
9/06 • • by flow of fluent material, e.g. shot, fluids **[1, 2006.01]**
9/08 • the timing being caused by chemical action, e.g. of acids **[1, 2006.01]**
9/10 • the timing being caused by combustion **[1, 2006.01]**
9/12 • • with ring combustion elements **[1, 2006.01]**
9/14 • Double fuzes; Multiple fuzes **[1, 2006.01]**
9/16 • • for self-destruction of ammunition **[1, 2006.01]**
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 **[5, 2006.01]**

11/00 **Electric fuzes** (proximity fuzes F42C 13/00; electric igniters F42C 19/12) **[1, 2006.01]**
11/02 • with piezo-crystal **[1, 2006.01]**
11/04 • with current induction **[1, 2006.01]**
11/06 • with time delay by electric circuitry **[1, 2006.01]**

13/00 **Proximity fuzes; Fuzes for remote detonation [1, 2006.01]**
13/02 • operated by intensity of light or similar radiation **[1, 2006.01]**
13/04 • operated by radio waves **[1, 2006.01]**
13/06 • operated by sound waves **[1, 2006.01]**
13/08 • operated by variations in magnetic field **[1, 2006.01]**

14/00 **Fuzes characterised by the ammunition class or type** (F42C 1/00, F42C 13/00, F42C 15/00 take precedence) **[5, 2006.01]**
14/02 • for hand grenades **[5, 2006.01]**
14/04 • for torpedoes, marine mines or depth charges (influenced marine mines F42B 22/04) **[5, 2006.01]**
14/06 • for fall bombs **[5, 2006.01]**
14/08 • for land mines **[5, 2006.01]**

15/00 **Arming-means in fuzes; Safety means for preventing premature detonation of fuzes or charges [1, 2006.01]**
15/16 • wherein the firing pin is displaced out of the action line for safety (F42C 15/40 takes precedence) **[1, 2006.01]**
15/18 • wherein a carrier for an element of the pyrotechnic or explosive train is moved (F42C 15/40 takes precedence) **[1, 5, 2006.01]**
15/184 • • using a slidable carrier **[5, 2006.01]**
15/188 • • using a rotatable carrier **[5, 2006.01]**
15/192 • • • rotatable in a plane which is parallel to the longitudinal axis of the projectile **[5, 2006.01]**
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 **[5, 2006.01]**
15/20 • wherein a securing-pin or latch is removed to arm the fuze, e.g. removed from the firing pin (F42C 15/40 takes precedence) **[1, 2006.01]**
15/21 • • using spring action (F42C 15/23 takes precedence) **[5, 2006.01]**
15/22 • • using centrifugal force (F42C 15/23 takes precedence) **[1, 2006.01]**
15/23 • • by unwinding a flexible ribbon or tape **[5, 2006.01]**
15/24 • wherein the safety or arming action is effected by inertia means (F42C 15/196, F42C 15/20 take precedence) **[1, 2006.01]**
15/26 • • using centrifugal force **[1, 2006.01]**
15/28 • operated by flow of fluent material, e.g. shot, fluids (F42C 15/26 takes precedence) **[1, 2006.01]**
15/285 • • stored within the fuze housing **[5, 2006.01]**
15/29 • • operated by fluidic oscillators; operated by dynamic fluid pressure, e.g. ram-air operated **[5, 2006.01]**
15/295 • • operated by a turbine or a propeller; Mounting means therefor **[5, 2006.01]**
15/30 • • of propellant gases, i.e. derived from propulsive charge or rocket motor **[1, 2006.01]**
15/31 • • generated by the combustion of a pyrotechnic or explosive charge within the fuze **[5, 2006.01]**
15/32 • operated by change of fluid pressure (F42C 5/00, F42C 15/29 take precedence) **[1, 2006.01]**
15/33 • • by breaking a vacuum or pressure container **[5, 2006.01]**
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) **[1, 2006.01]**
15/36 • wherein arming is effected by combustion or fusion of an element (F42C 15/31 takes precedence) **[1, 2006.01]**
15/38 • wherein arming is effected by chemical action (F42C 3/00 takes precedence) **[1, 2006.01]**
15/40 • wherein the safety or arming action is effected electrically **[1, 2006.01]**
15/42 • • from a remote location, e.g. for controlled mines or mine fields **[5, 2006.01]**
15/44 • Arrangements for disarming, or for rendering harmless, fuzes after arming, e.g. after launch **[5, 2006.01]**

17/00 **Fuze-setting apparatus [1, 2006.01]**
17/02 • Fuze-setting keys **[1, 2006.01]**
17/04 • for electric fuzes **[5, 2006.01]**

19/00 **Details of fuzes** (arming means, safety means for preventing premature detonation F42C 15/00) **[1, 2006.01]**
19/02 • Fuze bodies; Fuze housings **[1, 2006.01]**
19/04 • Protective caps **[1, 2006.01]**
19/06 • Electric contact parts specially adapted for use with electric fuzes **[1, 2006.01]**
19/07 • • Nose-contacts for projectiles or missiles **[5, 2006.01]**
19/08 • Primers (initiators for blasting cartridges F42B 3/10); Detonators **[1, 2006.01]**
19/085 • • Primers for caseless ammunition **[5, 2006.01]**

19/09 • • Primers or detonators containing a hollow charge **[5, 2006.01]**

19/095 • • Arrangement of a multiplicity of primers or detonators, dispersed around a warhead, one of the primers or detonators being selected for directional detonation effects **[5, 2006.01]**

19/10 • • Percussion caps **[1, 2006.01]**

19/12 • • electric **[1, 2006.01]**

19/14 • • • operable also in the percussion mode **[5, 2006.01]**

21/00 Checking fuzes; Testing fuzes [1, 2006.01]

99/00 Subject matter not provided for in other groups of this subclass [2006.01]

F42D BLASTING (fuses, e.g. fuse cords, C06C 5/00; blasting cartridges F42B 3/00)

1/00 Blasting methods or apparatus, e.g. for loading or tamping [1, 2006.01]

1/02 • Arranging blasting cartridges to form an assembly (adaptation of blasting cartridges therefor F42B 3/02) **[1, 2006.01]**

1/04 • Arrangements for ignition **[1, 2006.01]**

1/045 • • Arrangements for electric ignition (dynamo-electric generators H02K) **[5, 2006.01]**

1/05 • • • Electric circuits for blasting **[5, 2006.01]**

1/055 • • • • specially adapted for firing multiple charges with a time delay **[5, 2006.01]**

1/06 • • Relative timing of multiple charges (F42D 1/055 takes precedence) **[1, 2006.01]**

1/08 • Tamping methods; Methods for loading boreholes with explosives; Apparatus therefor **[1, 5, 2006.01]**

1/10 • • Feeding explosives in granular or slurry form; Feeding explosives by pneumatic or hydraulic pressure **[5, 2006.01]**

1/12 • • Feeding tamping material by pneumatic or hydraulic pressure **[5, 2006.01]**

1/14 • • Hand-operated tamping or loading **[5, 2006.01]**

1/16 • • • Tamping tools **[5, 2006.01]**

1/18 • • Plugs for boreholes **[5, 2006.01]**

1/20 • • Tamping cartridges, i.e. cartridges containing tamping material (flexible or deformable blasting cartridges F42B 3/087) **[5, 2006.01]**

1/22 • • Means for holding or positioning blasting cartridges or tamping cartridges in boreholes **[5, 2006.01]**

1/24 • • characterised by the tamping material **[5, 2006.01]**

1/26 • • • Tamping with foaming agents **[5, 2006.01]**

1/28 • • • Tamping with gelling agents **[5, 2006.01]**

3/00 Particular applications of blasting techniques [1, 2006.01]

3/02 • for demolition of tall structures, e.g. chimney stacks **[1, 2006.01]**

3/04 • for rock blasting **[1, 2006.01]**

3/06 • for seismic purposes **[1, 2006.01]**

5/00 Safety arrangements [1, 2006.01]

5/02 • Locating undetonated charges **[1, 2006.01]**

5/04 • Rendering explosive charges harmless, e.g. destroying ammunition (extracting primers, dismantling ammunition F42B 33/04, F42B 33/06); Rendering detonation of explosive charges harmless **[1, 5, 2006.01]**

5/045 • • Detonation-wave absorbing or damping means **[5, 2006.01]**

5/05 • • • Blasting mats **[5, 2006.01]**

5/055 • • Silencing means for blasting operations (F42D 5/045 takes precedence) **[5, 2006.01]**

5/06 • Unloading boreholes **[1, 2006.01]**

99/00 Subject matter not provided for in other groups of this subclass [2009.01]