

## F42 AMMUNITION; BLASTING

### Notes

- (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; [2]
  - “percussion cap” means a primer which is struck to explode; [2]
  - “igniter” effects the first spark-producing or heat-producing step but may not be explosive; [2]
  - “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; [2]
  - “detonator” or “detonator charge” means a charge used to amplify the explosion of the primer; [2]
  - “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; [2]
  - “ammunition” covers propulsive charge and projectile whether or not forming a single body, unless otherwise made clear; [2]
  - “projectile”, “missile” or “projectile or missile” means any body which is projected or propelled; [4]
  - “guided missile” means projectile or missile which is guided during at least part of its trajectory; [4]
  - “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; [4]
  - “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. [5]

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

### Subclass Index

CHARGES CHARACTERISED BY THE FORM.....	1/00	Self-propelled projectiles or missiles, rocket torpedoes, marine torpedoes .....	15/00 to 19/00
BLASTING CARTRIDGES .....	3/00	Depth charges .....	21/00
Initiators .....	3/10	Marine mines .....	22/00
FIREWORKS .....	4/00	Land mines .....	23/00
CARTRIDGE AMMUNITION .....	5/00	Fall bombs .....	25/00
PROJECTILES FOR BLOWGUNS, BOWS, SPRING OR AIR GUNS .....	6/00	Hand grenades .....	27/00
SHOTGUN AMMUNITION .....	7/00	Noiseless, smokeless or flashless projectiles .....	29/00
TRAINING AMMUNITION .....	8/00	Bullets, rifle grenades, ordnance projectiles, harpoons .....	30/00
STEERING, STABILISING OR RETARDING OF AMMUNITION .....	10/00	MANUFACTURING OR DISMANTLING OF AMMUNITION .....	33/00
AMMUNITION CHARACTERISED BY WARHEAD, INTENDED EFFECT OR MATERIAL .....	12/00	TESTING OR CHECKING OF AMMUNITION .....	35/00
GUIDING OR SEALING AMMUNITION IN BARRELS, LUBRICATING OR CLEANING BARRELS BY AMMUNITION .....	14/00	PACKAGING OR STORAGE OF AMMUNITION OR EXPLOSIVE CHARGES, SAFETY FEATURES THEREOF .....	39/00
TYPES OF AMMUNITION		SUBJECT MATTER NOT PROVIDED FOR IN OTHER GROUPS OF THIS SUBCLASS .....	99/00
Warhead types .....	12/00		

#### 1/00 Explosive charges characterised by form or shape but not dependent on shape of container

- 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)
- 1/024 . . provided with embedded bodies of inert material [5]
- 1/028 . . characterised by the form of the liner [5]
- 1/032 . . characterised by the material of the liner [5]
- 1/036 . . Manufacturing processes therefor [5]
- 1/04 . Detonator charges not forming part of the fuze

#### 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)

- 3/02 . adapted to be united into assemblies
- 3/04 . for producing gas under pressure
- 3/06 . . with re-utilisable case
- 3/08 . with cavities in the charge, e.g. hollow-charge blasting cartridges
- 3/087 . Flexible or deformable blasting cartridges, e.g. bags or hoses (loaded cartridge bags F42B 5/38) [5]
- 3/093 . . in mat or tape form [5]

## F42B

- 3/10 . Initiators therefor (percussion fuzes F42C 7/00; percussion caps F42C 19/10; electric primers F42C 19/12)

### Note

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

- 3/103 . . Mounting initiator heads in initiators; Sealing-plugs [5]
- 3/107 . . . Sealing-plugs characterised by the material used [5]
- 3/11 . . characterised by the material used, e.g. for initiator case or electric leads (F42B 3/107 takes precedence) [5]
- 3/113 . . activated by optical means, e.g. laser, flashlight [5]
- 3/117 . . activated by friction [5]
- 3/12 . . Bridge initiators
- 3/13 . . . with semiconductive bridge [5]
- 3/14 . . Spark initiators
- 3/16 . . Delay initiators
- 3/18 . . Safety initiators resistant to premature firing by static electricity or stray currents
- 3/182 . . . having shunting means [5]
- 3/185 . . . having semiconductive sealing plugs [5]
- 3/188 . . . having radio-frequency filters [5]
- 3/192 . . designed for neutralisation on contact with water [5]
- 3/195 . . Manufacture [5]
- 3/198 . . . of electric initiator heads [5]
- 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]
- 3/24 . Cartridge closures or seals (top closures for shotgun ammunition cartridges F42B 7/12) [5]
- 3/26 . Arrangements for mounting initiators; Accessories therefor, e.g. tools [5]
- 3/28 . Cartridge cases characterised by the material used, e.g. coatings (for initiator cases F42B 3/11) [5]
- 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]
- 4/02 . in cartridge form, i.e. shell, propellant, and primer [2]
- 4/04 . Firecrackers [2]
- 4/06 . Aerial display rockets (rockets in general F42B 15/00) [2]
- 4/08 . . characterised by having vanes, wings, parachutes, or balloons [2]
- 4/10 . . characterised by having means to separate article or charge from casing without destroying casing [2]
- 4/12 . . . Parachute or flare separation [2]
- 4/14 . . characterised by having plural successively-ignited charges [2]
- 4/16 . Hand-thrown impact-exploded noise makers (cap pistols F41C 3/06) [4]
- 4/18 . Simulations, e.g. pine cone, house that is destroyed, warship, volcano [2]
- 4/20 . characterised by having holder or support other than casing, e.g. whirler or spike support [2]
- 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]

- 4/24 . characterised by having plural successively-ignited charges (in aerial display rockets F42B 4/14) [2]
- 4/26 . Flares; Torches [2]
- 4/28 . . Parachute flares (F42B 4/12 takes precedence) [2]
- 4/30 . Manufacture [2]
- 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)
- 5/02 . Cartridges, i.e. cases with propellant charge and missile
- 5/03 . . containing more than one missile [4]
- 5/045 . . of telescopic type (F42B 5/184 takes precedence) [5]
- 5/05 . . for recoilless guns (recoilless guns using a counter-projectile to balance recoil F41A 1/10) [4]
- 5/067 . . Mounting or locking missiles in cartridge cases (F42B 5/18 takes precedence) [5]
- 5/073 . . . using an auxiliary locking element [5]
- 5/08 . . modified for electric ignition
- 5/10 . . with self-propelled bullet
- 5/14 . . for marking cattle
- 5/145 . . for dispensing gases, vapours, powders, particles or chemically-reactive substances (from projectiles F42B 12/46, F42B 12/70) [5]
- 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]
- 5/155 . . . . Smoke-pot projectors, e.g. arranged on vehicles [5]
- 5/16 . . characterised by composition or physical dimensions or form of propellant charge or powder (chemical composition C06B)
- 5/18 . . Caseless ammunition; Cartridges having combustible cases [5]
- 5/184 . . . telescopic [5]
- 5/188 . . . Manufacturing processes therefor [5]
- 5/192 . . . Cartridge cases characterised by the material used [5]
- 5/196 . . . . Coatings [5]
- 5/24 . . for cleaning; for cooling; for lubricating [5]
- 5/26 . Cartridge cases (F42B 5/18 takes precedence)
- 5/28 . . of metal
- 5/285 . . . formed by assembling several elements [4]
- 5/29 . . . . wound from sheets or strips [4]
- 5/295 . . . coated [4]
- 5/297 . . . . with plastics [5]
- 5/30 . . of plastics
- 5/307 . . . formed by assembling several elements [4]
- 5/313 . . . . all elements made of plastics [4]
- 5/32 . . for rim fire
- 5/34 . . with provision for varying the length
- 5/36 . . modified for housing an integral firing-cap
- 5/38 . Separately-loaded propellant charges, e.g. cartridge bags [4]
- 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]
- 6/02 . Arrows; Crossbow bolts; Harpoons for hand-held spring or air guns [5]

- 6/04 . . . Archery arrows (F42B 6/08, F41B 5/06 take precedence) [5]
- 6/06 . . . Tail ends, e.g. nocks, fletching [5]
- 6/08 . . . Arrow heads; Harpoon heads [5]
- 6/10 . . . Air gun pellets [5]
- 7/00 Shotgun ammunition**
- 7/02 . . . Cartridges, i.e. cases with propellant charge and missile
- 7/04 . . . of pellet type
- 7/06 . . . with cartridge case of plastics
- 7/08 . . . Wads therefor
- 7/10 . . . Ball or slug shotgun cartridges
- 7/12 . . . Cartridge top closures, i.e. for the missile side (closures for blasting cartridges F42B 3/24) [5]
- 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]
- 8/02 . . . Cartridges [5]
- 8/04 . . . Blank cartridges, i.e. primed cartridges without projectile but containing an explosive or combustible powder charge [5]
- 8/06 . . . . for cap-firing pistols [5]
- 8/08 . . . Dummy cartridges, i.e. inert cartridges containing neither primer nor explosive or combustible powder charge [5]
- 8/10 . . . with sub-calibre adaptor [5]
- 8/12 . . . Projectiles or missiles (F42B 19/36 takes precedence) [5]
- 8/14 . . . disintegrating in flight or upon impact [5]
- 8/16 . . . . containing an inert filler in powder or granular form [5]
- Note**
- Group F42B 8/14 takes precedence over groups F42B 8/18 to F42B 8/26. [5]
- 8/18 . . . Rifle grenades [5]
- 8/20 . . . Mortar grenades [5]
- 8/22 . . . Fall bombs [5]
- 8/24 . . . Rockets [5]
- 8/26 . . . Hand grenades [5]
- 8/28 . . . Land or marine mines; Depth charges [5]
- 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]
- 10/02 . . . Stabilising arrangements [5]
- 10/04 . . . using fixed fins (F42B 10/22 takes precedence) [5]
- 10/06 . . . . Tail fins [5]
- 10/08 . . . . . Flechette-type projectiles [5]
- 10/10 . . . . . the fins being formed in the barrel by deformation of the projectile body [5]
- 10/12 . . . using fins longitudinally-slidable with respect to the projectile or missile [5]
- 10/14 . . . using fins spread or deployed after launch, e.g. after leaving the barrel [5]
- 10/16 . . . . Wrap-around fins [5]
- 10/18 . . . . using a longitudinally slidable support member [5]
- 10/20 . . . . deployed by combustion gas pressure, or by pneumatic or hydraulic forces [5]
- 10/22 . . . Projectiles of cannelured type [5]
- 10/24 . . . . with inclined grooves [5]
- 10/26 . . . using spin (F42B 10/04, F42B 10/12, F42B 10/14, F42B 10/24, F42B 14/02 take precedence) [5]
- 10/28 . . . . induced by gas action [5]
- 10/30 . . . . . using rocket motor nozzles [5]
- 10/32 . . . Range-reducing or range-increasing arrangements; Fall-retarding means [5]
- 10/34 . . . Tubular projectiles [5]
- 10/36 . . . . Ring-foil projectiles [5]
- 10/38 . . . Range-increasing arrangements (F42B 10/34 takes precedence) [5]
- 10/40 . . . . with combustion of a slow-burning charge, e.g. fumers, base-bleed projectiles [5]
- 10/42 . . . . Streamlined projectiles [5]
- 10/44 . . . . . Boat-tails specially adapted for drag reduction [5]
- 10/46 . . . . . Streamlined nose cones; Windshields; Radomes [5]
- 10/48 . . . Range-reducing, destabilising or braking arrangements; Fall-retarding means (F42B 10/34 takes precedence) [5]
- 10/50 . . . . Brake flaps [5]
- 10/52 . . . . Nose cones [5]
- 10/54 . . . . Spin braking means [5]
- 10/56 . . . . of parachute type [5]
- 10/58 . . . . of rotochute type [5]
- 10/60 . . . Steering arrangements (F42B 19/01 takes precedence) [5]
- 10/62 . . . . Steering by movement of flight surfaces [5]
- 10/64 . . . . . of fins [5]
- 10/66 . . . Steering by varying intensity or direction of thrust (thrust vector control of rocket engine plants F02K 9/80) [5]
- 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]
- 12/02 . . . characterised by the warhead or the intended effect [5]
- 12/04 . . . of armour-piercing type [5]
- 12/06 . . . . with hard or heavy core; Kinetic energy penetrators (F42B 12/16, F42B 12/74 take precedence) [5]
- 12/08 . . . . with armour-piercing caps; with armoured cupola [5]
- 12/10 . . . . with shaped or hollow charge (shaped or hollow charges *per se* F42B 1/02) [5]
- 12/12 . . . . . rotatably mounted with respect to missile housing [5]
- 12/14 . . . . . the symmetry axis of the hollow charge forming an angle with the longitudinal axis of the projectile [5]
- 12/16 . . . . . in combination with an additional projectile or charge, acting successively on the target [5]
- 12/18 . . . . . Hollow charges in tandem arrangement [5]
- 12/20 . . . of high-explosive type (F42B 12/44 takes precedence) [5]
- 12/22 . . . . with fragmentation-hull construction [5]
- 12/24 . . . . . with grooves, recesses or other wall weakenings [5]

- 12/26 . . . . the projectile wall being formed by a spirally-wound element [5]
- 12/28 . . . . the projectile wall being built from annular elements [5]
- 12/30 . . . . Continuous-rod warheads [5]
- 12/32 . . . . the hull or case comprising a plurality of discrete bodies, e.g. steel balls, embedded therein [5]
- 12/34 . . . expanding before or on impact, i.e. of dum-dum or mushroom type [5]
- 12/36 . . . for dispensing materials; for producing chemical or physical reaction; for signalling [5]
- 12/38 . . . . of tracer type [5]
- 12/40 . . . . of target-marking, i.e. impact-indicating, type (F42B 12/48 takes precedence) [5]
- 12/42 . . . . of illuminating type, e.g. carrying flares [5]
- 12/44 . . . . of incendiary type (F42B 12/46 takes precedence) [5]
- 12/46 . . . . for dispensing gases, vapours, powders or chemically-reactive substances (F42B 12/70 takes precedence) [5]
- 12/48 . . . . smoke-producing [5]
- 12/50 . . . . by dispersion [5]
- 12/52 . . . . . Fuel-air explosive devices [5]
- 12/54 . . . . by implantation, e.g. hypodermic projectiles [5]
- 12/56 . . . . for dispensing discrete solid bodies (F42B 12/70 takes precedence) [5]
- 12/58 . . . . Cluster or cargo ammunition, i.e. projectiles containing one or more submissiles (F42B 12/32 takes precedence) [5]
- 12/60 . . . . . the submissiles being ejected radially [5]
- 12/62 . . . . . the submissiles being ejected parallel to the longitudinal axis of the projectile [5]
- 12/64 . . . . . the submissiles being of shot- or flechette-type [5]
- 12/66 . . . . . Chain-shot, i.e. the submissiles being interconnected by chains or the like [5]
- 12/68 . . . . Line-carrying missiles, e.g. for life-saving (harpoons F42B 30/14) [5]
- 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]
- 12/72 . . . characterised by the material (heat treatment for explosive shells C21D 9/16) [5]
- 12/74 . . . . of the core or solid body [5]
- 12/76 . . . . of the casing [5]
- 12/78 . . . . of jackets for smallarm bullets [5]
- 12/80 . . . . Coatings [5]
- 12/82 . . . . . reduction friction [5]
- 14/00 Projectiles or missiles characterised by arrangements for guiding or sealing them inside barrels, or for lubricating or cleaning barrels [5]**
- 14/02 . . . Driving bands; Rotating bands (F42B 14/04 takes precedence) [5]
- 14/04 . . . Lubrication means in missiles (coatings for reducing friction F42B 12/82) [5]
- 14/06 . . . Sub-calibre projectiles having sabots; Sabots therefor [5]
- 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]
- 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) [4]
- 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]
- 15/04 . . . using wire, e.g. for guiding ground-to-ground rockets
- 15/08 . . . for carrying measuring instruments (adaptations for meteorology G01W 1/08)
- 15/10 . . . Missiles having a trajectory only in the air
- 15/12 . . . Intercontinental ballistic missiles (F42B 15/01 takes precedence) [4]
- 15/20 . . . Missiles having a trajectory beginning below water surface (having additional propulsion means for movement through water F42B 17/00)
- 15/22 . . . Missiles having a trajectory finishing below water surface (having additional propulsion means for movement through water F42B 17/00)
- 15/34 . . . Protection against overheating or radiation, e.g. heat shields; Additional cooling arrangements [5]
- 15/36 . . . Means for interconnecting rocket-motor and body section; Multi-stage connectors; Disconnecting means [5]
- 15/38 . . . Ring-shaped explosive elements for the separation of rocket parts [5]
- 17/00 Rocket torpedoes, i.e. missiles provided with separate propulsion means for movement through air and through water** (F42B 12/00 takes precedence)
- 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)
- 19/01 . . . Steering control
- 19/04 . . . Depth control
- 19/06 . . . Directional control
- 19/08 . . . with means for preventing rolling or pitching
- 19/10 . . . remotely controlled, e.g. by sonic or radio control (control systems using wire F41G 7/32)
- 19/12 . . . Propulsion specially adapted for torpedoes (marine propulsion in general B63H)
- 19/14 . . . by compressed-gas motors
- 19/16 . . . . of cylinder type
- 19/18 . . . . of turbine type
- 19/20 . . . characterised by the composition of propulsive gas; Manufacture or heating thereof in torpedoes
- 19/22 . . . by internal-combustion engines
- 19/24 . . . by electric motors
- 19/26 . . . by jet propulsion
- 19/28 . . . with means for avoiding visible wake
- 19/30 . . . with timing control of propulsion
- 19/36 . . . adapted to be used for exercise purposes, e.g. indicating position or course
- 19/38 . . . with means for causing torpedoes to surface at end of run
- 19/40 . . . . by expelling liquid ballast

- 19/42 . . . by releasing solid ballast
- 19/44 . . . by enlarging displacement
- 19/46 . adapted to be launched from aircraft
- 21/00 Depth charges** (F42B 12/00 takes precedence; for practice or training F42B 8/28; laying aspects B63G)
- 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)
- 22/02 . Contact mines (contact fuzes F42C 7/02)
- 22/04 . Influenced mines, e.g. by magnetic or acoustic effect
- 22/06 . Ground mines
- 22/08 . Drifting mines (with propulsion means F42B 19/00)
- 22/10 . Moored mines
- 22/12 . . at a fixed depth setting
- 22/14 . . at a variable depth setting
- 22/16 . . . using mechanical means, e.g. plummet and float
- 22/18 . . . using hydrostatic means
- 22/20 . . . using magnetic or acoustic depth-control means
- 22/22 . having self-contained sinking means
- 22/24 . Arrangement of mines in fields or barriers (net barriers for harbour defence F41H 11/05)
- 22/42 . with anti-sweeping means, e.g. electrical
- 22/44 . adapted to be launched from aircraft
- 23/00 Land mines** (F42B 12/00 takes precedence; for practice or training F42B 8/28)
- 23/04 . anti-vehicle [5]
- 23/08 . . non-metallic [5]
- 23/10 . anti-personnel [5]
- 23/14 . . non-metallic [5]
- 23/16 . . of missile type, i.e. for detonation after ejection from ground (fuzes for initiating mine ejection F42C 1/09) [5]
- 23/24 . Details
- 25/00 Fall bombs** (F42B 10/00, F42B 12/00 take precedence; for practice or training F42B 8/12) [5]
- 27/00 Hand grenades** (F42B 12/00 takes precedence; for practice or training F42B 8/12)
- 27/08 . with handle
- 29/00 Noiseless, smokeless, or flashless missiles launched by their own explosive propellant**
- 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]
- 30/02 . Bullets [5]
- 30/04 . Rifle grenades [5]
- 30/06 . . Bullet traps or bullet decelerators therefor [5]
- 30/08 . Ordnance projectiles or missiles, e.g. shells [5]
- 30/10 . . Mortar projectiles [5]
- 30/12 . . . with provision for additional propulsive charges, or for varying the length [5]
- 30/14 . Harpoons (for hand-held spring or air guns F42B 6/02) [5]
- 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)
- 33/02 . Filling cartridges, missiles, or fuzes; Inserting propellant or explosive charges
- 33/04 . Fitting or extracting primers in or from fuzes or charges
- 33/06 . Dismantling fuzes, cartridges, projectiles, missiles, rockets, or bombs (F42B 33/04 takes precedence)
- 33/10 . Reconditioning used cartridge cases
- 33/12 . Crimping shotgun cartridges
- 33/14 . Surface treatment of cartridges or cartridge cases
- 35/00 Testing or checking of ammunition**
- 35/02 . Gauging, sorting, trimming or shortening cartridges or missiles
- 39/00 Packaging or storage of ammunition or explosive charges; Safety features thereof; Cartridge belts or bags**
- 39/02 . Cartridge bags; Bandoleers
- 39/08 . Cartridge belts
- 39/10 . . Machines for charging or for extracting cartridges from feed belts
- 39/14 . Explosion or fire protection arrangements on packages or ammunition (F42B 39/20 takes precedence) [5]
- 39/16 . . Fire-extinguishing [5]
- 39/18 . . Heat shields; Thermal insulation [5]
- 39/20 . Packages or ammunition having valves for pressure-equalising; Packages or ammunition having plugs for pressure release, e.g. meltable [5]
- 39/22 . Locking of ammunition in transport containers [5]
- 39/24 . Shock-absorbing arrangements in packages [5]
- 39/26 . Packages or containers for a plurality of ammunition, e.g. cartridges (F42B 39/14 to F42B 39/24, F42B 39/28 take precedence) [5]
- 39/28 . Ammunition racks, e.g. in vehicles [5]
- 39/30 . Containers for detonators or fuzes (F42B 39/14, F42B 39/20 take precedence) [5]
- 99/00 Subject matter not provided for in other groups of this subclass** [8]

**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

##### FUZE-OPERATING PRINCIPLES

Impact .....	1/00
Liquid contact .....	3/00
Fluid pressure.....	5/00
Mechanical force .....	7/00

Non-electric time fuzes .....	9/00
Electric fuzes .....	11/00
Proximity fuzes .....	13/00
Combination fuzes .....	9/00

FUZES CHARACTERISED BY THE TYPE OF AMMUNITION .....	14/00
ARMING OR SAFETY MEANS .....	15/00
FUZE-SETTING.....	17/00

OTHER DETAILS .....	19/00
CHECKING, TESTING .....	21/00
SUBJECT MATTER NOT PROVIDED FOR IN OTHER GROUPS OF THIS SUBCLASS .....	99/00

<b>1/00</b>	<b>Impact fuzes, i.e. fuzes actuated only by ammunition impact</b>	<b>11/00</b>	<b>Electric fuzes</b> (proximity fuzes F42C 13/00; electric igniters F42C 19/12)
1/02	. with firing pin structurally combined with fuze	11/02	. with piezo-crystal
1/04	. . operating by inertia of members on impact	11/04	. with current induction
1/06	. . . for any direction of impact	11/06	. with time delay by electric circuitry
1/08	. . with delayed action after ignition of fuze (time fuzes F42C 9/00)	<b>13/00</b>	<b>Proximity fuzes; Fuzes for remote detonation</b>
1/09	. . the fuze activating a propulsive charge for propelling the ammunition or the warhead into the air, e.g. in rebounding projectiles [5]	13/02	. operated by intensity of light or similar radiation
1/10	. without firing pin	13/04	. operated by radio waves
1/12	. . with delayed action after ignition of fuze (time fuzes F42C 9/00)	13/06	. operated by sound waves
1/14	. operating at a predetermined distance from ground or target by means of a protruding member	13/08	. operated by variations in magnetic field
<b>3/00</b>	<b>Fuzes actuated by exposure to a liquid, e.g. sea-water</b> (F42C 5/00 takes precedence; time fuzes F42C 9/00)	<b>14/00</b>	<b>Fuzes characterised by the ammunition class or type</b> (F42C 1/00, F42C 13/00, F42C 15/00 take precedence) [5]
<b>5/00</b>	<b>Fuzes actuated by exposure to a predetermined ambient fluid pressure</b>	14/02	. for hand grenades [5]
5/02	. barometric pressure	14/04	. for torpedoes, marine mines or depth charges (influenced marine mines F42B 22/04) [5]
<b>7/00</b>	<b>Fuzes actuated by application of a predetermined mechanical force, e.g. tension, torsion, pressure</b> (by ammunition impact F42C 1/00; by exposure to a predetermined ambient fluid pressure F42C 5/00)	14/06	. for fall bombs [5]
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)	14/08	. for land mines [5]
7/04	. . actuated by applying pressure on the ammunition head [5]	<b>15/00</b>	<b>Arming-means in fuzes; Safety means for preventing premature detonation of fuzes or charges</b>
7/06	. . . and comprising pneumatic or hydraulic retarding means [5]	15/16	. wherein the firing pin is displaced out of the action line for safety (F42C 15/40 takes precedence)
7/08	. . of release type, i.e. actuated by releasing pressure from the ammunition head [5]	15/18	. wherein a carrier for an element of the pyrotechnic or explosive train is moved (F42C 15/40 takes precedence) [5]
7/10	. . of antenna type [5]	15/184	. . using a slidable carrier [5]
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]	15/188	. . using a rotatable carrier [5]
<b>9/00</b>	<b>Time fuzes; Combined time- and percussion- or pressure-actuated fuzes; Fuzes for timed self-destruction of ammunition</b>	15/192	. . . rotatable in a plane which is parallel to the longitudinal axis of the projectile [5]
9/02	. the timing being caused by mechanical means	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]
9/04	. . by spring motor	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)
9/06	. . by flow of fluent material, e.g. shot, fluids	15/21	. . using spring action (F42C 15/23 takes precedence) [5]
9/08	. the timing being caused by chemical action, e.g. of acids	15/22	. . using centrifugal force (F42C 15/23 takes precedence)
9/10	. the timing being caused by combustion	15/23	. . by unwinding a flexible ribbon or tape [5]
9/12	. . with ring combustion elements	15/24	. wherein the safety or arming action is effected by inertia means (F42C 15/196, F42C 15/20 take precedence)
9/14	. Double fuzes; Multiple fuzes	15/26	. . using centrifugal force
9/16	. . for self-destruction of ammunition	15/28	. operated by flow of fluent material, e.g. shot, fluids (F42C 15/26 takes precedence)
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]	15/285	. . stored within the fuze housing [5]
		15/29	. . operated by fluidic oscillators; operated by dynamic fluid pressure, e.g. ram-air operated [5]
		15/295	. . operated by a turbine or a propeller; Mounting means therefor [5]
		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 [5]
		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 [5]
- 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 (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 [5]
- 15/44 . Arrangements for disarming, or for rendering harmless, fuzes after arming, e.g. after launch [5]
- 17/00 Fuze-setting apparatus**
- 17/02 . Fuze-setting keys
- 17/04 . for electric fuzes [5]
- 19/00 Details of fuzes** (other parts F42C 15/00)
- 19/02 . Fuze bodies; Fuze housings
- 19/04 . Protective caps
- 19/06 . Electric contact parts specially adapted for use with electric fuzes
- 19/07 . . Nose-contacts for projectiles or missiles [5]
- 19/08 . Primers (initiators for blasting cartridges F42B 3/10); Detonators
- 19/085 . . Primers for caseless ammunition [5]
- 19/09 . . Primers or detonators containing a hollow charge [5]
- 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]
- 19/10 . . Percussion caps
- 19/12 . . electric
- 19/14 . . . operable also in the percussion mode [5]
- 21/00 Checking fuzes; Testing fuzes**
- 99/00 Subject matter not provided for in other groups of this subclass [8]**

**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**
- 1/02 . Arranging blasting cartridges to form an assembly (adaptation of blasting cartridges therefor F42B 3/02)
- 1/04 . Arrangements for ignition
- 1/045 . . Arrangements for electric ignition (dynamo-electric generators H02K) [5]
- 1/05 . . . Electric circuits for blasting [5]
- 1/055 . . . specially adapted for firing multiple charges with a time delay [5]
- 1/06 . . Relative timing of multiple charges (F42D 1/055 takes precedence)
- 1/08 . Tamping methods; Methods for loading boreholes with explosives; Apparatus therefor [5]
- 1/10 . . Feeding explosives in granular or slurry form; Feeding explosives by pneumatic or hydraulic pressure [5]
- 1/12 . . Feeding tamping material by pneumatic or hydraulic pressure [5]
- 1/14 . . Hand-operated tamping or loading [5]
- 1/16 . . . Tamping tools [5]
- 1/18 . . Plugs for boreholes [5]
- 1/20 . . Tamping cartridges, i.e. cartridges containing tamping material (flexible or deformable blasting cartridges F42B 3/087) [5]
- 1/22 . . Means for holding or positioning blasting cartridges or tamping cartridges in boreholes [5]
- 1/24 . . characterised by the tamping material [5]
- 1/26 . . . Tamping with foaming agents [5]
- 1/28 . . . Tamping with gelling agents [5]
- 3/00 Particular applications of blasting techniques**
- 3/02 . for demolition of tall structures, e.g. chimney stacks
- 3/04 . for rock blasting
- 3/06 . for seismic purposes
- 5/00 Safety arrangements**
- 5/02 . Locating undetonated charges
- 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 [5]
- 5/045 . . Detonation-wave absorbing or damping means [5]
- 5/05 . . . Blasting mats [5]
- 5/055 . . Silencing means for blasting operations (F42D 5/045 takes precedence) [5]
- 5/06 . Unloading boreholes
- 7/00 Other blasting**