

CPC COOPERATIVE PATENT CLASSIFICATION

F MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING (NOTE omitted)

WEAPONS; BLASTING

F42 AMMUNITION; BLASTING (NOTES omitted)

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

WARNINGS

- The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:
[F42B 5/14](#) covered by [F42B 12/40](#), [A01K 11/00](#)
- 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.

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|-------------|--|-------|---|
| 1/00 | Explosive charges characterised by form or shape but not dependent on shape of container | 3/10 | • Initiators therefor (percussion fuzes F42C 7/00 ; percussion caps F42C 19/10 ; electric primers F42C 19/12) |
| 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) | | NOTE |
| 1/024 | • . provided with embedded bodies of inert material | | Group F42B 3/18 takes precedence over groups F42B 3/103 - F42B 3/16 . |
| 1/028 | • . characterised by the form of the liner | | |
| 1/032 | • . characterised by the material of the liner | 3/103 | • . Mounting initiator heads in initiators; Sealing-plugs |
| 1/036 | • . Manufacturing processes therefor { (F42B 33/0214 - F42B 33/0292 take precedence) } | 3/107 | • . . Sealing-plugs characterised by the material used |
| 1/04 | • Detonator charges not forming part of the fuze | 3/11 | • . characterised by the material used, e.g. for initiator case or electric leads (F42B 3/107 takes precedence) |
| 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) | 3/113 | • . activated by optical means, e.g. laser, flashlight |
| 3/003 | • {Liquid-oxygen cartridges} | 3/117 | • . activated by friction |
| 3/006 | • {Explosive bolts; Explosive actuators (explosive valves F16K 13/06 ; explosive cutting B23D 15/145 ; explosive switches H01H 39/00 ; pyrotechnical actuators F15B 15/19)} | 3/12 | • . Bridge initiators {(F42B 3/103 , F42B 3/11 , F42B 3/195 take precedence; electric ignitors in propellant charges F42C 19/12)} |
| 3/02 | • adapted to be united into assemblies | 3/121 | • . . . {Initiators with incorporated integrated circuit} |
| 3/04 | • for producing gas under pressure {(generators of inflation fluid especially adapted for vehicle air bags B60R 21/26)} | 3/122 | • {Programmable electronic delay initiators} |
| 3/045 | • . {Hybrid systems with previously pressurised gas using blasting to increase the pressure, e.g. causing the gas to be released from its sealed container} | 3/124 | • . . . {characterised by the configuration or material of the bridge (F42B 3/13 takes precedence)} |
| 3/06 | • . with re-utilisable case | 3/125 | • . . . {characterised by the configuration of the bridge initiator case (F42B 3/11 takes precedence)} |
| 3/08 | • with cavities in the charge, e.g. hollow-charge blasting cartridges | 3/127 | • {the case having burst direction defining elements} |
| 3/087 | • Flexible or deformable blasting cartridges, e.g. bags or hoses {for slurries}(loaded cartridge bags F42B 5/38) | 3/128 | • . . . {characterised by the composition of the pyrotechnic material} |
| 3/093 | • . in mat or tape form | 3/13 | • . . with semiconductive bridge |
| | | 3/14 | • . Spark initiators {(F42B 3/195 takes precedence)} |
| | | 3/16 | • . {Pyrotechnic} delay initiators (F42B 3/195 takes precedence; {programmable electronic delay initiators F42C 11/065 }) |
| | | 3/18 | • . Safety initiators resistant to premature firing by static electricity or stray currents |
| | | 3/182 | • . . . having shunting means {(F42B 3/185 takes precedence; details of shunting devices H01R 13/7032)} |

- 3/185 . . . having semi-conductive {means, e.g.} sealing plugs
- 3/188 . . . having radio-frequency filters {, e.g. containing ferrite cores or inductances (F42B 3/185 takes precedence)}
- 3/192 . . designed for neutralisation on contact with water
- 3/195 . . Manufacture
- 3/198 . . . of electric initiator heads {e.g., testing, machines}
- 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)
- 3/24 . Cartridge closures or seals (top closures for shotgun ammunition cartridges F42B 7/12)
- 3/26 . Arrangements for mounting initiators; Accessories therefor, e.g. tools
- 3/28 . Cartridge cases characterised by the material used, e.g. coatings (for initiator cases F42B 3/11)
- 4/00 Fireworks, i.e. pyrotechnic devices for amusement, display, illumination or signal purposes (signalling by explosives G08B; advertising by fireworks G09F 13/46; {signalling by pyrotechnics in railway systems B61L 5/20})**
 - 4/02 . in cartridge form, i.e. shell, propellant and primer
 - 4/04 . Firecrackers
 - 4/06 . Aerial display rockets (rockets in general F42B 15/00)
 - 4/08 . . characterised by having vanes, wings, parachutes or balloons
 - 4/10 . . characterised by having means to separate article or charge from casing without destroying the casing
 - 4/12 . . . Parachute or flare separation
 - 4/14 . . characterised by having plural successively-ignited charges
 - 4/16 . Hand-thrown impact-exploded noise makers; {Other noise-makers generating noise via a pyrotechnic charge} (cap pistols F41C 3/06)
 - 4/18 . Simulations, e.g. pine cone, house that is destroyed, warship, volcano
 - 4/20 . characterised by having holder or support other than casing, e.g. whirler or spike support {(supports for flares or torches F42B 4/26)}
 - 4/22 . characterised by having means to separate article or charge from casing without destroying the casing (in aerial display rockets F42B 4/10)
 - 4/24 . characterised by having plural successively-ignited charges (in aerial display rockets F42B 4/14)
 - 4/26 . Flares; Torches {(mines for practice or training containing flares or illuminating charges F42B 8/28; projectiles of illuminating type F42B 12/42)}
 - 4/28 . . Parachute flares (F42B 4/12 takes precedence)
 - 4/30 . Manufacture
- 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 charge and missile
 - 5/025 . . {characterised by the dimension of the case or the missile}
 - 5/03 . . containing more than one missile
 - 5/035 . . . {the cartridge or barrel assembly having a plurality of axially stacked projectiles each having a separate propellant charge}
 - 5/045 . . of telescopic type (F42B 5/184 takes precedence)
 - 5/05 . . for recoilless guns (recoilless guns using a counter-projectile to balance recoil F41A 1/10)
 - 5/067 . . Mounting or locking missiles in cartridge cases (F42B 5/18 takes precedence)
 - 5/073 . . . using an auxiliary locking element
 - 5/08 . . modified for electric ignition
 - 5/10 . . with self-propelled bullet
 - 5/105 . . . {propelled by two propulsive charges, the rearwardly situated one being separated from the rest of the projectile during flight or in the barrel; Projectiles with self-ejecting cartridge cases}
 - 5/145 . . for dispensing gases, vapours, powders, particles or chemically-reactive substances (from projectiles F42B 12/46)
 - 5/15 . . . for creating a screening or decoy effect, e.g. using radar chaff or infrared material (infrared flares F42B 4/26)
 - 5/155 Smoke-pot projectors, e.g. arranged on vehicles
 - 5/16 . . characterised by composition or physical dimensions or form of propellant charge, {with or without projectile,} or powder (chemical composition C06B; {F42B 5/24 takes precedence})
 - 5/18 . . Caseless ammunition; Cartridges having combustible cases
 - 5/181 . . . {consisting of a combustible casing wall and a metal base; Connectors therefor}
 - 5/182 . . . {Caseless cartridges characterised by their shape}
 - 5/184 . . . telescopic
 - 5/188 . . . Manufacturing processes therefor
 - 5/192 . . . Cartridge cases characterised by the material {of the casing wall (cartridge bags F42B 5/38)}
 - 5/196 Coatings
 - 5/24 . . for cleaning; for cooling; for lubricating {; for wear reducing}
 - 5/26 . Cartridge cases (F42B 5/18 takes precedence {; manufacturing of cartridge cases B21K 21/04})
 - 5/28 . . of metal {, i.e. the cartridge-case tube is of metal}
 - 5/285 . . . formed by assembling several elements
 - 5/29 wound from sheets or strips
 - 5/295 . . . coated
 - 5/297 with plastics
 - 5/30 . . of plastics {, i.e. the cartridge-case tube is of plastics}
 - 5/307 . . . formed by assembling several elements
 - 5/313 all elements made of plastics
 - 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 {(F42B 5/16, F42B 5/192 take precedence)}

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| 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 ; projectiles or missiles incorporating springs as the projecting means F41B 7/02 ; { Arrows or darts for dispensing materials, for producing chemical or physical reaction, or for signalling F42B 12/362 }) | 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) |
| 6/003 | . {Darts} | 10/02 | . Stabilising arrangements |
| 6/006 | . {Projectiles for electromagnetic or plasma guns} | 10/025 | . . {using giratory or oscillating masses for stabilising projectile trajectory} |
| 6/02 | . Arrows; Crossbow bolts; Harpoons for hand-held spring or air guns | 10/04 | . . using fixed fins (F42B 10/22 takes precedence) |
| 6/04 | . . Archery arrows (F42B 6/08 , F41B 5/06 , F42B 12/362 take precedence) | 10/06 | . . . Tail fins |
| 6/06 | . . . Tail ends, e.g. nocks, fletching | 10/08 | Flechette-type projectiles |
| 6/08 | . . Arrow heads; Harpoon heads | 10/10 | the fins being formed in the barrel by deformation or the projectile body |
| 6/10 | . Air gun pellets {; Ammunition for air guns, e.g. propellant-gas containers} | 10/12 | . . using fins longitudinally-slidable with respect to the projectile or missile |
| 7/00 | Shotgun ammunition | 10/14 | . . using fins spread or deployed after launch, e.g. after leaving the barrel |
| 7/02 | . Cartridges, i.e. cases with propellant charge and missile | 10/143 | . . . {Lattice or grid fins} |
| 7/04 | . . of pellet type | 10/146 | . . . {Fabric fins, i.e. fins comprising at least one spar and a fin cover made of flexible sheet material} |
| 7/043 | . . . {with shot-scattering means} | 10/16 | Wrap-around fins |
| 7/046 | . . . {Pellets or shot therefor} | 10/18 | . . . using a longitudinally slidable support member |
| 7/06 | . . with cartridge case of plastics (F42B 5/30 takes precedence) | 10/20 | . . . deployed by combustion gas pressure, or by pneumatic or hydraulic forces |
| 7/08 | . . Wads, {i.e. projectile or shot carrying devices,} therefor | 10/22 | . . Projectiles of cannellured type |
| 7/10 | . . Ball or slug shotgun cartridges | 10/24 | . . . with inclined grooves |
| 7/12 | . . Cartridge top closures, i.e. for the missile side (closures for blasting cartridges F42B 3/24) | 10/26 | . . using spin (F42B 10/04 , F42B 10/12 , F42B 10/14 , F42B 10/24 , F42B 14/02 take precedence) |
| 8/00 | Practice or training ammunition | 10/28 | induced by gas action |
| 8/02 | . Cartridges {(F41A 33/02 , F42B 7/12 take precedence)} | 10/30 | using rocket motor nozzles |
| 8/04 | . . Blank cartridges, i.e. primed cartridges without projectile but containing an explosive or combustible powder charge | 10/32 | . Range-reducing or range-increasing arrangements; Fall-retarding means |
| 8/06 | . . . for cap-firing pistols | 10/34 | . . Tubular projectiles |
| 8/08 | . . Dummy cartridges, i.e. inert cartridges containing neither primer nor explosive or combustible powder charge | 10/36 | . . . Ring-foil projectiles |
| 8/10 | . . with sub-calibre adaptor | 10/38 | . . Range-increasing arrangements (F42B 10/34 , F42B 14/06 {and F42B 15/105 } take precedence) |
| 8/12 | . Projectiles or missiles (F42B 10/48 , F42B 12/36 , F42B 19/36 take precedence) | 10/40 | . . . with combustion of a slow-burning charge, e.g. fumers, base-bleed projectiles |
| 8/14 | . . disintegrating in flight or upon impact | 10/42 | . . . Streamlined projectiles |
| | NOTE | 10/44 | Boat-tails specially adapted for drag reduction |
| | Group F42B 8/14 takes precedence over groups F42B 8/18 - F42B 8/26 | 10/46 | Streamlined nose cones; Windshields; Radomes {(F42B 12/105 takes precedence)} |
| 8/16 | . . . containing an inert filler in powder or granular form | 10/48 | . . Range-reducing, destabilising or braking arrangements, {e.g. impact-braking arrangements}; Fall-retarding means, {e.g. balloons, rockets for braking or fall-retarding} (F42B 10/34 takes precedence) |
| 8/18 | . . Rifle grenades | 10/50 | . . . Brake flaps {, e.g. inflatable} |
| 8/20 | . . Mortar grenades | 10/52 | . . . Nose cones |
| 8/22 | . . Fall bombs | 10/54 | . . . Spin braking means |
| 8/24 | . . Rockets | 10/56 | . . . of parachute {or paraglider} type |
| 8/26 | . . Hand grenades | 10/58 | . . . of rotochute type |
| 8/28 | . Land or marine mines; Depth charges | 10/60 | . Steering arrangements (F42B 19/01 takes precedence) |
| | | 10/62 | . . Steering by movement of flight surfaces |
| | | 10/64 | . . . of fins |

- 10/66 . . Steering by varying intensity or direction of thrust (thrust vector control of rocket engine plants [F02K 9/80](#) {; guiding or controlling apparatus using jets adapted for cosmonautic vehicles [B64G 1/26](#)})
- 10/661 . . . {using several transversally acting rocket motors, each motor containing an individual propellant charge, e.g. solid charge}
- 10/663 . . . {using a plurality of transversally acting auxiliary nozzles, which are opened or closed by valves}
- 10/665 . . . {characterised by using a nozzle provided with at least a deflector mounted within the nozzle}
- 10/666 . . . {characterised by using a nozzle rotatable about an axis transverse to the axis of the projectile}
- 10/668 . . . {Injection of a fluid, e.g. a propellant, into the gas shear in a nozzle or in the boundary layer at the outer surface of a missile, e.g. to create a shock wave in a supersonic flow}
- 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](#))**
- 12/02 . characterised by the warhead or the intended effect
- 12/04 . . of armour-piercing type
- 12/06 . . . with hard or heavy core; Kinetic energy penetrators ([F42B 12/16](#), [F42B 12/74](#) take precedence)
- 12/08 . . . with armour-piercing caps; with armoured cupola
- 12/10 . . . with shaped or hollow charge (shaped or hollow charges per se [F42B 1/02](#) {; mines having hollow charges [F42B 23/04](#)})
- 12/105 {Protruding target distance or stand-off members therefor, e.g. slidably mounted (fuze aspects [F42C 1/14](#))}
- 12/12 rotatably mounted with respect to missile housing
- 12/14 the symmetry axis of the hollow charge forming an angle with the longitudinal axis of the projectile
- 12/16 in combination with an additional projectile or charge, acting successively on the target {[\(see also F42B 12/625\)](#)}
- 12/18 Hollow charges in tandem arrangement
- 12/20 . . of high-explosive type ([F42B 12/44](#) takes precedence)
- 12/201 . . . {characterised by target class}
- 12/202 {for attacking land area or area targets, e.g. airburst}
- 12/204 {for attacking structures, e.g. specific buildings or fortifications, ships or vehicles}
- 12/205 {for attacking aerial targets}
- 12/207 . . . {characterised by the explosive material or the construction of the high explosive warhead, e.g. insensitive ammunition}
- 12/208 . . . {characterised by a plurality of charges within a single high explosive warhead}
- 12/22 . . . with fragmentation-hull construction
- 12/24 with grooves, recesses or other wall weakenings {([F42B 12/26](#), [F42B 12/28](#) take precedence)}
- 12/26 the projectile wall being formed by a spirally-wound element
- 12/28 the projectile wall being built from annular elements
- 12/30 Continuous-rod warheads
- 12/32 the hull or case comprising a plurality of discrete bodies, e.g. steel balls, embedded therein {or disposed around the explosive charge}
- 12/34 . . expanding before or on impact, i.e. of dum-dum or mushroom type
- 12/36 . . for dispensing materials; for producing chemical or physical reaction; for signalling {; for transmitting information}
- 12/362 . . . {Arrows or darts ([F42B 12/38](#) takes precedence, having means for implantation, e.g. hypodermic projectiles [F42B 12/54](#); arrows or darts in general [F42B 6/00](#))}
- 12/365 . . . {Projectiles transmitting information to a remote location using optical or electronic means ([F42B 12/385](#) takes precedence)}
- 12/367 . . . {Projectiles fragmenting upon impact without the use of explosives, the fragments creating a wounding or lethal effect (practice or training projectiles disintegrating upon impact [F42B 8/14](#); projectiles of high-explosive type with fragmentation-hull construction [F42B 12/22](#))}
- 12/38 . . . of tracer type
- 12/382 {emitting an electromagnetic radiation, e.g. laser beam or infrared emission}
- 12/385 {Arrow or dart carrying a radio transmitter for signalling}
- 12/387 {Passive tracers, e.g. using a reflector mounted on the projectile}
- 12/40 . . . of target-marking, i.e. impact-indicating type ([F42B 12/48](#), [F42B 12/50](#) take precedence)
- 12/42 . . . of illuminating type, e.g. carrying flares
- 12/44 . . . of incendiary type ([F42B 12/46](#) takes precedence)
- 12/46 . . . for dispensing gases, vapours, powders or chemically-reactive substances ([F42B 12/70](#) takes precedence)
- 12/48 smoke-producing {, e.g. infrared clouds}
- 12/50 by dispersion
- 12/52 Fuel-air explosive devices
- 12/54 by implantation, e.g. hypodermic projectiles
- 12/56 . . . for dispensing discrete solid bodies ([F42B 12/70](#) takes precedence)
- 12/58 Cluster or cargo ammunition, i.e. projectiles containing one or more submissiles ([F42B 12/32](#) takes precedence)
- 12/60 the submissiles being ejected radially
- 12/62 the submissiles being ejected parallel to the longitudinal axis of the projectile
- 12/625 {a single submissile arranged in a carrier missile for being launched or accelerated coaxially; Coaxial tandem arrangement of missiles which are active in the target one after the other ([with shaped or hollow charges F42B 12/16](#))}
- 12/64 the submissiles being of shot- or flechette-type

- 12/66 Chain-shot, i.e. the submissiles being interconnected by chains or the like {ballistically deployed systems for restraining persons or animals [F41H 13/0006](#)}
- 12/68 Line-carrying missiles, e.g. for life-saving (harpoons [F42B 30/14](#) {, mine-clearing snakes [F41H 11/14](#)})
- 12/70 for dispensing radar chaff or infrared material (radar-reflector targets, active targets transmitting infrared radiation [F41J 2/00](#); radar-reflecting surfaces [H01Q 15/14](#))
- 12/72 . characterised by the material (heat treatment for explosive shells [C21D 9/16](#))
- 12/74 . . of the core or solid body
- 12/745 . . . {the core being made of plastics; Compounds or blends of plastics and other materials, e.g. fillers}
- 12/76 . . of the casing
- 12/78 . . . of jackets for smallarm bullets {; Jacketed bullets or projectiles}
- 12/80 . . . Coatings
- 12/82 reducing friction
- 14/00 Projectiles or missiles characterised by arrangements for guiding or sealing them inside barrels, or for lubricating or cleaning barrels**
- 14/02 . Driving bands; Rotating bands ([F42B 14/04](#) takes precedence)
- 14/04 . Lubrication means in missiles (coatings for reducing friction [F42B 12/82](#))
- 14/06 . Sub-calibre projectiles having sabots; Sabots therefor
- 14/061 . . {Sabots for long rod fin stabilised kinetic energy projectiles, i.e. multisegment sabots attached midway on the projectile}
- 14/062 . . . {characterised by contact surfaces between projectile and sabot}
- 14/064 . . {Sabots enclosing the rear end of a kinetic energy projectile, i.e. having a closed disk shaped obturator base and petals extending forward from said base}
- 14/065 . . {Sabots carrying several projectiles}
- 14/067 . . {Sealing aspects in sabots, e.g. sealing between individual segments of the sabots or sealing between the outer surface of the sabot and the inner surface of the barrel}
- 14/068 . . {Sabots characterised by the material ([F42B 14/067](#) takes precedence)}
- 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](#))
- 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](#))**
- 15/01 . Arrangements thereon for guidance or control ({steering arrangements [F42B 10/60](#)}; aircraft flight control [B64C](#); guidance systems other than those installed aboard [F41G 7/00](#), [F41G 9/00](#); locating by use of radio or other waves [G01S](#); flight control in general [G05D 1/00](#); computer aspects [G06](#))
- 15/04 . . using wire, e.g. for guiding ground-to-ground rockets
- 15/08 . for carrying measuring instruments; {Arrangements for mounting sensitive cargo within a projectile}(adaptations for meteorology [G01W 1/08](#)); {Arrangements for acoustic sensitive cargo within a projectile}
- 15/10 . Missiles having a trajectory only in the air
- 15/105 . . {Air torpedoes, e.g. projectiles with or without propulsion, provided with supporting air foil surfaces}
- 15/12 . . Intercontinental ballistic missiles ([F42B 15/01](#) takes precedence)
- 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 {(thermal protection fitted in or to cosmonautic vehicles [B64G 1/58](#))}
- 15/36 . Means for interconnecting rocket-motor and body section; Multi-stage connectors; Disconnecting means
- 15/38 . . Ring-shaped explosive elements for the separation of rocket parts {(systems for coupling or separating cosmonautic vehicles or parts thereof [B64G 1/64](#))}
- 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](#))**
- 19/005 . {Nose caps for torpedoes; Coupling torpedo-case parts together}
- 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 (having additional propulsion means for movement through air [F42B 17/00](#); marine propulsion in general [B63H](#))
- 19/125 . . {Torpedoes provided with drag-reducing means (projectiles with drag-reducing means [F42B 10/38](#))}
- 19/14 . . by compressed-gas motors
- 19/16 . . . of cylinder type

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|--------|---|---------|---|
| 19/18 | . . . of turbine type | 29/00 | Noiseless, smokeless, or flashless missiles launched by their own explosive propellant |
| 19/20 | . . . characterised by the composition of propulsive gas; Manufacture or heating thereof in torpedoes | 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) |
| 19/22 | . . by internal-combustion engines | 30/003 | . {Closures or baseplates therefor (closures for blasting cartridges F42B 3/24 , for shotgun cartridges F42B 7/12)} |
| 19/24 | . . by electric motors | 30/006 | . {Mounting of sensors, antennas or target trackers on projectiles} |
| 19/26 | . . by jet propulsion | 30/02 | . Bullets |
| 19/28 | . . with means for avoiding visible wake | 30/04 | . Rifle grenades |
| 19/30 | . . with timing control of propulsion | 30/06 | . . Bullet traps or bullet decelerators therefor |
| 19/36 | . adapted to be used for exercise purposes, e.g. indicating position or course | 30/08 | . Ordnance projectiles or missiles, e.g. shells |
| 19/38 | . . with means for causing torpedoes to surface at end of run | 30/10 | . . Mortar projectiles |
| 19/40 | . . . by expelling liquid ballast | 30/12 | . . . with provision for additional propulsive charges, or for varying the length |
| 19/42 | . . . by releasing solid ballast | 30/14 | . Harpoons (for hand-held spring or air guns F42B 6/02) |
| 19/44 | . . . by enlarging displacement | 33/00 | Manufacture of ammunition; Dismantling of ammunition; Apparatus therefor (F42B 5/188 takes precedence; manufacturing processes for hollow charges F42B 1/036 ; manufacture of blasting cartridge initiators F42B 3/195) |
| 19/46 | . adapted to be launched from aircraft | 33/001 | . {Devices or processes for assembling ammunition, cartridges or cartridge elements from parts} |
| 21/00 | Depth charges (F42B 12/00 takes precedence; for practice or training F42B 8/28 ; laying aspects B63G) | 33/002 | . {Orienting or guiding means for cartridges or cartridge parts during the manufacturing or packaging process; Feeding cartridge elements to automatic machines} |
| 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) | 33/004 | . {Cartridge loaders of the rotatable-turret type} |
| 22/02 | . Contact mines {, e.g. antenne-type mines }(contact fuzes F42C 7/02) | 33/005 | . {Crimping cartridge cases on projectiles} |
| 22/04 | . Influenced mines, e.g. by magnetic or acoustic effect | 33/007 | . {Making cavities in an explosive or propulsive charge} |
| 22/06 | . Ground mines | 33/008 | . {Cutting explosive or propulsive charges} |
| 22/08 | . Drifting mines (with propulsion means F42B 19/00) | 33/02 | . Filling cartridges, missiles, or fuzes; Inserting propellant or explosive charges {(F42B 33/004 takes precedence)} |
| 22/10 | . Moored mines | 33/0207 | . . {Processes for loading or filling propulsive or explosive charges in containers} |
| 22/12 | . . at a fixed depth setting | 33/0214 | . . {by casting (F42B 33/004 takes precedence)} |
| 22/14 | . . at a variable depth setting | 33/0221 | . . . {by centrifugal casting} |
| 22/16 | . . . using mechanical means, e.g. plummet and float | 33/0228 | . . . {Funnel arrangements therefor} |
| 22/18 | . . . using hydrostatic means | 33/0235 | . . . {Heating of casting equipment or explosive charge containers during the loading process} |
| 22/20 | . . . using magnetic or acoustic depth-control means | 33/0242 | . . . {by pressure casting} |
| 22/22 | . having self-contained sinking means | 33/025 | . . {by compacting (F42B 33/004 takes precedence)} |
| 22/24 | . Arrangement of mines in fields or barriers (net barriers for harbour defence F41H 11/05) | 33/0257 | . . . {by vibration compacting} |
| 22/42 | . with anti-sweeping means, e.g. electrical | 33/0264 | . . {by using screw-type feeders (F42B 33/004 takes precedence)} |
| 22/44 | . adapted to be launched from aircraft | 33/0271 | . . . {for extruding blasting cartridges} |
| 23/00 | Land mines {; Land torpedoes }(F42B 12/00 takes precedence; for practice or training F42B 8/28) | 33/0278 | . . {Safety arrangements therefor (F42B 33/004 takes precedence)} |
| 23/005 | . {Selfpropelled land mines} | 33/0285 | . . {Measuring explosive-charge levels in containers or cartridge cases; Methods or devices for controlling the quantity of material fed or filled (F42B 33/004 takes precedence; controlling the quantity of material fed in packaging B65B 3/26)} |
| 23/04 | . anti-vehicle {, e.g. anti-aircraft or anti tank (hollow charges per se F42B 1/02 ; artillery projectiles having hollow charges F42B 12/10)} | 33/0292 | . . . {by volumetric measurement, i.e. the volume of the material being determined before filling} |
| 23/08 | . . non-metallic | | |
| 23/10 | . anti-personnel | | |
| 23/14 | . . non-metallic | | |
| 23/16 | . . of missile type, i.e. {all kinds of mines launched} for detonation after ejection from ground (fuzes for initiating mine ejection F42C 1/09) | | |
| 23/24 | . Details | | |
| 25/00 | Fall bombs (F42B 10/00 , F42B 12/00 take precedence; for practice or training F42B 8/12 {; gliding type bombs F42B 15/105 }) | | |
| 27/00 | Hand grenades (F42B 12/00 takes precedence; for practice or training F42B 8/12) | | |
| 27/08 | . with handle | | |

- 33/04 . Fitting or extracting primers in or from fuzes or charges {(F42B 33/004 takes precedence)}
- 33/06 . Dismantling fuzes, cartridges, projectiles, missiles, rockets or bombs {(F42B 33/004 and) F42B 33/04 take precedence; {elimination of undesirable components of explosives C06B 21/0091}}
- 33/062 . . {by high-pressure water jet means}
- 33/065 . . {by laser means}
- 33/067 . . {by combustion (incineration apparatuses or processes for used articles F23G 7/003)}
- 33/10 . Reconditioning used cartridge cases {(F42B 33/004 takes precedence)}
- 33/12 . Crimping shotgun cartridges {(F42B 33/004 takes precedence)}
- 33/14 . Surface treatment of cartridges or cartridge cases {(F42B 33/004 takes precedence)}
- 35/00 Testing or checking of ammunition** {(apparatus for measuring the energy of projectiles G01L 5/14)}
- 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**
- 39/002 . {Cartridge containers provided with cartridge-dispensing means}
- 39/005 . {Protection for driving bands}
- 39/007 . {Packaging or storage of arrows or darts (quivers for arrows F41B 5/06)}
- 39/02 . Cartridge bags; Bandoleers
- 39/08 . Cartridge belts
- 39/082 . . {for caseless ammunition}
- 39/085 . . {for blank cartridges}
- 39/087 . . {Feed belts manufactured from fabric or plastics material}
- 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 {and F42B 39/24} take precedence; {wall or panel structure of fireproof safes or storage containers E05G 1/024})
- 39/16 . . Fire-extinguishing
- 39/18 . . Heat shields; Thermal insulation
- 39/20 . Packages or ammunition having valves for pressure-equalising; Packages or ammunition having plugs for pressure release, e.g. meltable {; Blow-out panels; Venting arrangements (ventilating arrangements on packages formed from foldable or erectable blanks B65D 5/4295; packages with pressure-relief valves incorporated in a container wall B65D 77/225)}
- 39/22 . Locking of ammunition in transport containers
- 39/24 . Shock-absorbing arrangements in packages {, e.g. for shock waves}
- 39/26 . Packages or containers for a plurality of ammunition, e.g. cartridges (F42B 39/14 - F42B 39/24, F42B 39/28 take precedence)
- 39/28 . Ammunition racks, e.g. in vehicles
- 39/30 . Containers for detonators or fuzes (F42B 39/14, F42B 39/20 take precedence)

99/00

Subject matter not provided for in other groups of this subclass