

# 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.

<b>1/00</b>	<b>Explosive charges characterised by form or shape but not dependent on shape of container</b>	3/10	• Initiators therefor (percussion fuzes <a href="#">F42C 7/00</a> ; percussion caps <a href="#">F42C 19/10</a> ; electric primers <a href="#">F42C 19/12</a> )
1/02	• Shaped or hollow charges (blasting cartridges with cavities in the charge <a href="#">F42B 3/08</a> ; oil winning using shaped-charge perforators <a href="#">E21B 43/116</a> )		<b>NOTE</b>
1/024	• . provided with embedded bodies of inert material		Group <a href="#">F42B 3/18</a> takes precedence over groups <a href="#">F42B 3/103</a> - <a href="#">F42B 3/16</a> .
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 { ( <a href="#">F42B 33/0214</a> - <a href="#">F42B 33/0292</a> 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 ( <a href="#">F42B 3/107</a> takes precedence)
<b>3/00</b>	<b>Blasting cartridges, i.e. case and explosive (fuse cords, e.g. detonating fuse cords <a href="#">C06C 5/00</a>; chemical aspects of detonators, blasting caps or primers <a href="#">C06C 7/00</a>)</b>	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 <a href="#">F16K 13/06</a> ; explosive cutting <a href="#">B23D 15/145</a> ; explosive switches <a href="#">H01H 39/00</a> ; pyrotechnical actuators <a href="#">F15B 15/19</a> )}	3/12	• . Bridge initiators {( <a href="#">F42B 3/103</a> , <a href="#">F42B 3/11</a> , <a href="#">F42B 3/195</a> take precedence; electric ignitors in propellant charges <a href="#">F42C 19/12</a> )}
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 <a href="#">B60R 21/26</a> )}	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 ( <a href="#">F42B 3/13</a> takes precedence)}
3/06	• . with re-utilisable case	3/125	• . . . {characterised by the configuration of the bridge initiator case ( <a href="#">F42B 3/11</a> 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 <a href="#">F42B 5/38</a> )	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 {( <a href="#">F42B 3/195</a> takes precedence)}
		3/16	• . {Pyrotechnic} delay initiators ( <a href="#">F42B 3/195</a> takes precedence; {programmable electronic delay initiators <a href="#">F42C 11/065</a> })
		3/18	• . Safety initiators resistant to premature firing by static electricity or stray currents
		3/182	• . . having shunting means {( <a href="#">F42B 3/185</a> takes precedence; details of shunting devices <a href="#">H01R 13/7032</a> )}

- 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)}

<b>6/00</b>	<b>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</b> (for delivering hypodermic charges <a href="#">F42B 12/54</a> ; projectiles or missiles incorporating springs as the projecting means <a href="#">F41B 7/02</a> ; { Arrows or darts for dispensing materials, for producing chemical or physical reaction, or for signalling <a href="#">F42B 12/362</a> })	<b>10/00</b>	<b>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</b> ( <a href="#">F42B 6/00</a> 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 ( <a href="#">F42B 10/22</a> takes precedence)
6/04	. . Archery arrows ( <a href="#">F42B 6/08</a> , <a href="#">F41B 5/06</a> , <a href="#">F42B 12/362</a> 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
<b>7/00</b>	<b>Shotgun ammunition</b>	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 ( <a href="#">F42B 5/30</a> 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 <a href="#">F42B 3/24</a> )	10/26	. . using spin ( <a href="#">F42B 10/04</a> , <a href="#">F42B 10/12</a> , <a href="#">F42B 10/14</a> , <a href="#">F42B 10/24</a> , <a href="#">F42B 14/02</a> take precedence)
<b>8/00</b>	<b>Practice or training ammunition</b>	10/28	. . . . induced by gas action
8/02	. Cartridges {( <a href="#">F41A 33/02</a> , <a href="#">F42B 7/12</a> 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 ( <a href="#">F42B 10/34</a> , <a href="#">F42B 14/06</a> {and <a href="#">F42B 15/105</a> } take precedence)
8/12	. Projectiles or missiles ( <a href="#">F42B 10/48</a> , <a href="#">F42B 12/36</a> , <a href="#">F42B 19/36</a> 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
	<b>NOTE</b>	10/44	. . . . Boat-tails specially adapted for drag reduction
	Group <a href="#">F42B 8/14</a> takes precedence over groups <a href="#">F42B 8/18</a> - <a href="#">F42B 8/26</a>	10/46	. . . . Streamlined nose cones; Windshields; Radomes {( <a href="#">F42B 12/105</a> 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} ( <a href="#">F42B 10/34</a> 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 ( <a href="#">F42B 19/01</a> 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

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 ( <a href="#">F42B 10/00</a> , <a href="#">F42B 12/00</a> , <a href="#">F42B 14/00</a> take precedence)
19/22	. . by internal-combustion engines	30/003	. {Closures or baseplates therefor (closures for blasting cartridges <a href="#">F42B 3/24</a> , for shotgun cartridges <a href="#">F42B 7/12</a> )}
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 ( <a href="#">for hand-held spring or air guns F42B 6/02</a> )
19/44	. . . by enlarging displacement	33/00	Manufacture of ammunition; Dismantling of ammunition; Apparatus therefor ( <a href="#">F42B 5/188</a> takes precedence; manufacturing processes for hollow charges <a href="#">F42B 1/036</a> ; manufacture of blasting cartridge initiators <a href="#">F42B 3/195</a> )
19/46	. adapted to be launched from aircraft	33/001	. {Devices or processes for assembling ammunition, cartridges or cartridge elements from parts}
21/00	<b>Depth charges</b> ( <a href="#">F42B 12/00</a> takes precedence; for practice or training <a href="#">F42B 8/28</a> ; laying aspects <a href="#">B63G</a> )	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	<b>Marine mines, e.g. launched by surface vessels or submarines</b> ( <a href="#">F42B 12/00</a> takes precedence; for practice or training <a href="#">F42B 8/28</a> ; mine laying or sweeping <a href="#">B63G</a> )	33/004	. {Cartridge loaders of the rotatable-turret type}
22/02	. Contact mines {, e.g. <a href="#">antenne-type mines</a> }(contact fuzes <a href="#">F42C 7/02</a> )	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 ( <a href="#">with propulsion means F42B 19/00</a> )	33/02	. Filling cartridges, missiles, or fuzes; Inserting propellant or explosive charges {( <a href="#">F42B 33/004</a> 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 ( <a href="#">F42B 33/004</a> 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 ( <a href="#">F42B 33/004</a> takes precedence)}
22/24	. Arrangement of mines in fields or barriers ( <a href="#">net barriers for harbour defence F41H 11/05</a> )	33/0257	. . . {by vibration compacting}
22/42	. with anti-sweeping means, e.g. electrical	33/0264	. . {by using screw-type feeders ( <a href="#">F42B 33/004</a> takes precedence)}
22/44	. adapted to be launched from aircraft	33/0271	. . . {for extruding blasting cartridges}
23/00	<b>Land mines {; Land torpedoes}</b> ( <a href="#">F42B 12/00</a> takes precedence; for practice or training <a href="#">F42B 8/28</a> )	33/0278	. . {Safety arrangements therefor ( <a href="#">F42B 33/004</a> 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 ( <a href="#">F42B 33/004</a> takes precedence; controlling the quantity of material fed in packaging <a href="#">B65B 3/26</a> )}
23/04	. anti-vehicle {, e.g. anti-aircraft or anti tank (hollow charges <i>per se</i> <a href="#">F42B 1/02</a> ; artillery projectiles having hollow charges <a href="#">F42B 12/10</a> )}	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 <a href="#">F42C 1/09</a> )		
23/24	. Details		
25/00	<b>Fall bombs</b> ( <a href="#">F42B 10/00</a> , <a href="#">F42B 12/00</a> take precedence; for practice or training <a href="#">F42B 8/12</a> (; <a href="#">gliding type bombs F42B 15/105</a> )		
27/00	<b>Hand grenades</b> ( <a href="#">F42B 12/00</a> takes precedence; for practice or training <a href="#">F42B 8/12</a> )		
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