

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

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[F42B 5/14](#) covered by [F42B 12/40](#), [A01K 11/00](#)
[F42B 19/10](#) " " [F41G 7/24](#)

F42B 1/00**Explosive charges characterised by form or shape but not dependent on shape of container**

- F42B 1/02 . Shaped or hollow charges (blasting cartridges with cavities in the charge [3/08](#); oil winning using shaped-charge perforators [E21B 43/116](#))
- F42B 1/024 . . provided with embedded bodies of inert material
- F42B 1/028 . . characterised by the form of the liner
- F42B 1/032 . . characterised by the material of the liner
- F42B 1/036 . . Manufacturing processes therefor { ([F42B 33/0214](#) to [F42B 33/0292](#) take precedence) }
- F42B 1/04 . Detonator charges not forming part of the fuze

F42B 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](#))

- F42B 3/003 . {Liquid-oxygen cartridges }
- F42B 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](#)) }
- F42B 3/02 . adapted to be united into assemblies
- F42B 3/04 . for producing gas under pressure { (generators of inflation fluid especially adapted for vehicle air bags [B60R 21/26](#)) }
- F42B 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 }
- F42B 3/06 . . with re-utilisable case
- F42B 3/08 . with cavities in the charge, e.g. hollow-charge blasting cartridges
- F42B 3/087 . Flexible or deformable blasting cartridges e.g. bags or hoses {for slurries } (loaded cartridge bags [F42B 5/38](#))
- F42B 3/093 . . in mat or tape form

- 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](#).

- F42B 3/103 . . Mounting initiator heads in initiators; Sealing-plugs
- F42B 3/107 . . . Sealing-plugs characterised by the material used
- F42B 3/11 . . characterised by the material used, e.g. for initiator case or electric leads ([F42B 3/107](#) takes precedence)
- F42B 3/113 . . activated by optical means, e.g. laser, flash-light
- F42B 3/117 . . activated by friction
- F42B 3/12 . . Bridge initiators { ([F42B 3/103](#), [F42B 3/11](#), [F42B 3/195](#) take precedence; electric ignitors in propellant charges [F42C 19/12](#)) }
- F42B 3/121 . . . {Initiators with incorporated integrated circuit }
- F42B 3/122 . . . {Programmable electronic delay initiators }
- F42B 3/124 . . { characterised by the configuration or material of the bridge ([F42B 3/13](#) takes precedence) }
- F42B 3/125 . . { characterised by the configuration of the bridge initiator case ([F42B 3/11](#) takes precedence) }
- F42B 3/127 . . . { the case having burst direction defining elements }
- F42B 3/128 . . { characterised by the composition of the pyrotechnic material }
- F42B 3/13 . . with semiconductive bridge
- F42B 3/14 . . Spark initiators ([F42B 3/195](#) takes precedence)
- F42B 3/16 . . {Pyrotechnic } delay initiators ([F42B 3/195](#) takes precedence; {programmable electronic delay initiators [F42C 11/065](#) })
- F42B 3/18 . . Safety initiators resistant to premature firing by static electricity or stray currents
- F42B 3/182 . . having shunting means { ([F42B 3/185](#) takes precedence; details of shunting devices [H01R 13/7032](#)) }
- F42B 3/185 . . having semi-conductive {means, e.g. } sealing plugs
- F42B 3/188 . . having radio-frequency filters, {e.g. containing ferrite cores or inductances ([F42B 3/185](#) takes precedence) }
- F42B 3/192 . . designed for neutralisation on contact with water
- F42B 3/195 . . Manufacture
- F42B 3/198 . . of electric initiator heads {e.g., testing, machines }
- F42B 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](#))
- F42B 3/24 . Cartridge closures or seals (top closures for shotgun ammunition cartridges [F42B 7/12](#))
- F42B 3/26 . Arrangements for mounting initiators; Accessories therefor, e.g. tools
- F42B 3/28 . Cartridge cases characterised by the material used, e.g. coatings (for initiator cases [F42B 3/11](#))
- F42B 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](#) })

- F42B 4/02 . in cartridge form, i.e. shell, propellant and primer
- F42B 4/04 . Firecrackers
- F42B 4/06 . Aerial display rockets (rockets in general [F42B 15/00](#))
- F42B 4/08 . . characterised by having vanes, wings, parachutes or balloons
- F42B 4/10 . . characterised by having means to separate article or charge from casing without destroying the casing
- F42B 4/12 . . . Parachute or flare separation
- F42B 4/14 . . characterised by having plural successively-ignited charges
- F42B 4/16 . Hand-thrown impact-exploded noise makers; {Other noise-makers generating noise via a pyrotechnic charge } (cap pistols [F41C 3/06](#))
- F42B 4/18 . Simulations, e.g. pine cone, house that is destroyed, warship, volcano
- F42B 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](#)) }
- F42B 4/22 . characterised by having means to separate article or charge from casing without destroying the casing (in aerial display rockets [F42B 4/10](#))
- F42B 4/24 . characterised by having plural successively-ignited charges (in aerial display rockets [F42B 4/14](#))
- F42B 4/26 . Flares; Torches { (mines for practice or training containing flares or illuminating charges [F42B 8/28](#); projectiles of illuminating type [F42B 12/42](#)) }
- F42B 4/28 . . Parachute flares ([F42B 4/12](#) takes precedence)
- F42B 4/30 . Manufacture
- F42B 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](#))
- F42B 5/02 . Cartridges, i.e. cases with charge and missile
- F42B 5/025 . . {characterised by the dimension of the case or the missile }
- F42B 5/03 . . containing more than one missile
- F42B 5/035 . . . {the cartridge or barrel assembly having a plurality of axially stacked projectiles each having a separate propellant charge }
- F42B 5/045 . . of telescopic type ([F42B 5/184](#) takes precedence)
- F42B 5/05 . . for recoilless guns (recoilless guns using a counter-projectile to balance recoil [F41A 1/10](#))
- F42B 5/067 . . Mounting or locking missiles in cartridge cases ([F42B 5/18](#) takes precedence)
- F42B 5/073 . . . using an auxiliary locking element

- F42B 5/08 . . modified for electric ignition
- F42B 5/10 . . with self-propelled bullet
- F42B 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 }
- F42B 5/145 . . for dispensing gases, vapours, powders, particles or chemically-reactive substances (from projectiles [F42B 12/46](#))
- F42B 5/15 . . . for creating a screening or decoy effect, e.g. using radar chaff or infra-red flares [F42B 4/26](#)
- F42B 5/155 Smoke-pot projectors, e.g. arranged on vehicles
- F42B 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 })
- F42B 5/18 . . Caseless ammunition; Cartridges having combustible cases
- F42B 5/181 . . . { consisting of a combustible casing wall and a metal base; Connectors therefor }
- F42B 5/182 . . . { Caseless cartridges characterised by their shape }
- F42B 5/184 . . . telescopic
- F42B 5/188 . . . Manufacturing processes therefor
- F42B 5/192 . . . Cartridge cases characterised by the material { of the casing wall (cartridge bags [F42B 5/38](#)) }
- F42B 5/196 Coatings
- F42B 5/24 . . for cleaning; for cooling; for lubricating; {for wear reducing }
- F42B 5/26 . Cartridge cases ([F42B 5/18](#) takes precedence; {manufacturing of cartridge cases [B21K 21/04](#) })
- F42B 5/28 . . of metal {i.e. the cartridge-case tube is of metal }
- F42B 5/285 . . . formed by assembling several elements
- F42B 5/29 wound from sheets or strips
- F42B 5/295 . . . coated
- F42B 5/297 with plastics
- F42B 5/30 . . of plastics {i.e. the cartridge-case tube is of plastics }
- F42B 5/307 . . . formed by assembling several elements
- F42B 5/313 all elements made of plastics
- F42B 5/32 . . for rim fire
- F42B 5/34 . . with provision for varying the length
- F42B 5/36 . . modified for housing an integral firing-cap
- F42B 5/38 . Separately-loaded propellant charges, e.g. cartridge bags { ([F42B 5/16](#), [F42B 5/192](#) take precedence) }
- F42B 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](#) })**
- F42B 6/003 . {Darts }

- F42B 6/006 . {Projectiles for electromagnetic or plasma guns }
- F42B 6/02 . Arrows; Crossbow bolts; Harpoons for hand-held spring or air guns
- F42B 6/04 . . Archery arrows ([F42B 6/08](#), [F41B 5/06](#), {[F42B 12/362](#) } take precedence)
- F42B 6/06 . . . Tail ends, e.g. nocks, fletching
- F42B 6/08 . . Arrow heads; Harpoon heads
- F42B 6/10 . Air gun pellets; {Ammunition for air guns, e.g. propellant-gas containers }

F42B 7/00 Shotgun ammunition

- F42B 7/02 . Cartridges, i.e. cases with propellant charge and missile
- F42B 7/04 . . of pellet type
- F42B 7/043 . . . {with shot-scattering means }
- F42B 7/046 . . . {Pellets or shot therefor }
- F42B 7/06 . . with cartridge case of plastics {[F42B 5/30](#) takes precedence }
- F42B 7/08 . . Wads, {i.e. projectile or shot carrying devices, } therefor
- F42B 7/10 . . Ball or slug shotgun cartridges
- F42B 7/12 . . Cartridge top closures, i.e. for the missile side ([closures for blasting cartridges F42B 3/24](#))

F42B 8/00 Practice or training ammunition

- F42B 8/02 . Cartridges { ([F41A 33/02](#), [F42B 7/12](#) take precedence) }
- F42B 8/04 . . Blank cartridges, i.e. primed cartridges without projectile but containing an explosive or combustible powder charge
- F42B 8/06 . . . for cap-firing pistols
- F42B 8/08 . . Dummy cartridges, i.e. inert cartridges containing neither primer nor explosive or combustible powder charge
- F42B 8/10 . . with sub-calibre adaptor
- F42B 8/12 . Projectiles or missiles ([F42B 10/48](#), [F42B 12/36](#), [F42B 19/36](#) take precedence)
- F42B 8/14 . . disintegrating in flight or upon impact

NOTE

Group [F42B 8/14](#) takes precedence over groups [F42B 8/18](#) to [F42B 8/26](#)

- F42B 8/16 . . . containing an inert filler in powder or granular form
- F42B 8/18 . . Rifle grenades
- F42B 8/20 . . Mortar grenades
- F42B 8/22 . . Fall bombs
- F42B 8/24 . . Rockets
- F42B 8/26 . . Hand grenades
- F42B 8/28 . Land or marine mines; Depth charges

- F42B 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)
- F42B 10/02 . Stabilising arrangements
 - F42B 10/025 .. {using giratory or oscillating masses for stabilising projectile trajectory }
 - F42B 10/04 .. using fixed fins ([F42B 10/22](#) takes precedence)
 - F42B 10/06 ... Tail fins
 - F42B 10/08 Flechette-type projectiles
 - F42B 10/10 the fins being formed in the barrel by deformation or the projectile body
 - F42B 10/12 .. using fins longitudinally-slidable with respect to the projectile or missile
 - F42B 10/14 .. using fins spread or deployed after launch, e.g. after leaving the barrel
 - F42B 10/143 ... { Lattice or grid fins }
 - F42B 10/146 ... { Fabric fins, i.e. fins comprising at least one spar and a fin cover made of flexible sheet material }
 - F42B 10/16 ... Wrap-around fins
 - F42B 10/18 ... using a longitudinally slidable support member
 - F42B 10/20 ... deployed by combustion gas pressure, or by pneumatic or hydraulic forces
 - F42B 10/22 .. Projectiles of cannellured type
 - F42B 10/24 ... with inclined grooves
 - F42B 10/26 .. using spin ([F42B 10/04](#), [F42B 10/12](#), [F42B 10/14](#), [F42B 10/24](#), [F42B 14/02](#) take precedence)
 - F42B 10/28 ... induced by gas action
 - F42B 10/30 using rocket motor nozzles
 - F42B 10/32 . Range-reducing or range-increasing arrangements; Fall-retarding means
 - F42B 10/34 .. Tubular projectiles
 - F42B 10/36 ... Ring-foil projectiles
 - F42B 10/38 .. Range-increasing arrangements ([F42B 10/34](#), [F42B 14/06](#) {and [F42B 15/105](#) } take precedence)
 - F42B 10/40 ... with combustion of a slow-burning charge, e.g. fumers, base-bleed projectiles
 - F42B 10/42 ... Streamlined projectiles
 - F42B 10/44 Boat-tails specially adapted for drag reduction
 - F42B 10/46 Streamlined nose cones; Windshields; Radomes { ([F42B 12/105](#) takes precedence) }
 - F42B 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)
 - F42B 10/50 ... Brake flaps, {e.g. inflatable }
 - F42B 10/52 ... Nose cones
 - F42B 10/54 ... Spin braking means
 - F42B 10/56 ... of parachute {or paraglider } type
 - F42B 10/58 ... of rotochute type
 - F42B 10/60 . Steering arrangements ([F42B 19/01](#) takes precedence)

- F42B 10/62 . . . Steering by movement of flight surfaces
 - F42B 10/64 . . . of fins
 - F42B 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](#) })
 - F42B 10/661 . . . {using several transversally acting rocket motors, each motor containing an individual propellant charge, e.g. solid charge }
 - F42B 10/663 . . . {using a plurality of transversally acting auxiliary nozzles, which are opened or closed by valves }
 - F42B 10/665 . . . {characterised by using a nozzle provided with at least a deflector mounted within the nozzle }
 - F42B 10/666 . . . {characterised by using a nozzle rotatable about an axis transverse to the axis of the projectile }
 - F42B 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 }
- F42B 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](#))
- F42B 12/02 . . characterised by the warhead or the intended effect
 - F42B 12/04 . . of armour-piercing type
 - F42B 12/06 . . . with hard or heavy core; Kinetic energy penetrators ([F42B 12/16](#), [F42B 12/74](#) take precedence)
 - F42B 12/08 . . . with armour-piercing caps; with armoured cupola
 - F42B 12/10 . . . with shaped or hollow charge (shaped or hollow charges per se [F42B 1/02](#); {mines having hollow charges [F42B 23/04](#) })
 - F42B 12/105 {Protruding target distance or stand-off members therefor, e.g. slidably mounted ([fuze aspects F42C 1/14](#)) }
 - F42B 12/12 rotatably mounted with respect to missile housing
 - F42B 12/14 the symmetry axis of the hollow charge forming an angle with the longitudinal axis of the projectile
 - F42B 12/16 in combination with an additional projectile or charge, acting successively on the target { ([see also F42B 12/625](#)) }
 - F42B 12/18 Hollow charges in tandem arrangement
 - F42B 12/20 . . of high-explosive type ([F42B 12/44](#) takes precedence)
 - F42B 12/201 . . . { characterised by target class }
 - F42B 12/202 { for attacking land area or area targets, e.g. airburst }
 - F42B 12/204 { for attacking structures, e.g. specific buildings or fortifications, ships or vehicles }
 - F42B 12/205 { for attacking aerial targets }
 - F42B 12/207 . . . { characterised by the explosive material or the construction of the high explosive warhead, e.g. insensitive ammunition }
 - F42B 12/208 . . . { characterised by a plurality of charges within a single high explosive warhead }
 - F42B 12/22 . . . with fragmentation-hull construction
 - F42B 12/24 with grooves, recesses or other wall weakenings ([F42B 12/26](#), [F42B 12/28](#) take precedence)

F42B 12/26	....	the projectile wall being formed by a spirally-wound element
F42B 12/28	....	the projectile wall being built from annular elements
F42B 12/30	....	Continuous-rod warheads
F42B 12/32	....	the hull or case comprising a plurality of discrete bodies, e.g. steel balls, embedded therein {or disposed around the explosive charge }
F42B 12/34	..	expanding before or on impact, i.e. of dum dum or mushroom type
F42B 12/36	..	for dispensing materials; for producing chemical or physical reaction; for signalling; {for transmitting information }
F42B 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) }
F42B 12/365	...	{Projectiles transmitting information to a remote location using optical or electronic means (F42B 12/385 takes precedence) }
F42B 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) }
F42B 12/38	...	of tracer type
F42B 12/382	....	{emitting an electromagnetic radiation, e.g. laser beam or infra-red emission }
F42B 12/385	.....	{Arrow or dart carrying a radio transmitter for signalling }
F42B 12/387	....	{Passive tracers, e.g. using a reflector mounted on the projectile }
F42B 12/40	...	of target-marking, i.e. impact-indicating type (F42B 12/48, {F42B 12/50 } take precedence)
F42B 12/42	...	of illuminating type, e.g. carrying flares
F42B 12/44	...	of incendiary type (F42B 12/46 takes precedence)
F42B 12/46	...	for dispensing gases, vapours, powders or chemically-reactive substances (F42B 12/70 takes precedence)
F42B 12/48	....	smoke-producing, {e.g. infrared clouds }
F42B 12/50	....	by dispersion
F42B 12/52	.....	Fuel-air explosive devices
F42B 12/54	....	by implantation, e.g. hypodermic projectiles
F42B 12/56	...	for dispensing discrete solid bodies (F42B 12/70 takes precedence)
F42B 12/58	....	Cluster or cargo ammunition, i.e. projectiles containing one or more submissiles (F42B 12/32 takes precedence)
F42B 12/60	.....	the submissiles being ejected radially
F42B 12/62	.....	the submissiles being ejected parallel to the longitudinal axis of the projectile
F42B 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) }
F42B 12/64	.....	the submissiles being of shot- or flechette-type
F42B 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) }
F42B 12/68	....	Line-carrying missiles, e.g. for life-saving (harpoons F42B 30/14, {mine-clearing snakes F41H 11/14 })
F42B 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](#))

- F42B 12/72 . characterised by the material ([heat treatment for explosive shells C21D 9/16](#))
- F42B 12/74 . . of the core or solid body
- F42B 12/745 . . . {the core being made of plastics; Compounds or blends of plastics and other materials, e.g. fillers }
- F42B 12/76 . . of the casing
- F42B 12/78 . . . of jackets for smallarm bullets; {Jacketed bullets or projectiles }
- F42B 12/80 . . . Coatings
- F42B 12/82 reducing friction

- F42B 14/00** **Projectiles or missiles characterised by arrangements for guiding or sealing them inside barrels, or for lubricating or cleaning barrels**

- F42B 14/02 . Driving bands; Rotating bands ([F42B 14/04](#) takes precedence)
- F42B 14/04 . Lubrication means in missiles ([coatings for reducing friction F42B 12/82](#))
- F42B 14/06 . Sub-calibre projectiles having sabots; Sabots therefor
- F42B 14/061 . . {Sabots for long rod fin stabilised kinetic energy projectiles, i.e. multisegment sabots attached midway on the projectile }
- F42B 14/062 . . . { characterised by contact surfaces between projectile and sabot }
- F42B 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 }
- F42B 14/065 . . { Sabots carrying several projectiles }
- F42B 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 }
- F42B 14/068 . . { Sabots characterised by the material ([F42B 14/067](#) takes precedence) }
- F42B 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](#))

- F42B 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](#))**

- F42B 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](#))
- F42B 15/04 . . using wire, e.g. for guiding ground-to-ground rockets
- F42B 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 }
- F42B 15/10 . Missiles having a trajectory only in the air

- F42B 15/105 . . {Air torpedoes, e.g. projectiles with or without propulsion, provided with supporting air foil surfaces }
- F42B 15/12 . . Intercontinental ballistic missiles ([F42B 15/01](#) takes precedence)
- F42B 15/20 . Missiles having a trajectory beginning below water surface (having additional propulsion means for movement through water [F42B 17/00](#))
- F42B 15/22 . Missiles having a trajectory finishing below water surface (having additional propulsion means for movement through water [F42B 17/00](#))
- F42B 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](#)) }
- F42B 15/36 . Means for interconnecting rocket-motor and body section; Multi-stage connectors; Disconnecting means
- F42B 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](#) }
- F42B 17/00** **Rocket torpedoes, i.e. missiles provided with separate propulsion means for movement through air and through water ([F42B 12/00](#) takes precedence)**
- F42B 19/00** **Marine torpedoes, e.g. launched by surface vessels or submarines; 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](#))**
- F42B 19/005 . {Nose caps for torpedoes; Coupling torpedo-case parts together }
- F42B 19/01 . Steering control
- F42B 19/04 . . Depth control
- F42B 19/06 . . Directional control
- F42B 19/08 . . with means for preventing rolling or pitching
- F42B 19/12 . Propulsion specially adapted for torpedoes (having additional propulsion means for movement through air [F42B 17/00](#); marine propulsion in general [B63H](#))
- F42B 19/125 . . {Torpedoes provided with drag-reducing means (projectiles with drag-reducing means [F42B 10/38](#)) }
- F42B 19/14 . . by compressed-gas motors
- F42B 19/16 . . . of cylinder type
- F42B 19/18 . . . of turbine type
- F42B 19/20 . . . characterised by the composition of propulsive gas; Manufacture or heating thereof in torpedoes
- F42B 19/22 . . by internal-combustion engines
- F42B 19/24 . . by electric motors
- F42B 19/26 . . by jet propulsion
- F42B 19/28 . . with means for avoiding visible wake
- F42B 19/30 . . with timing control of propulsion
- F42B 19/36 . adapted to be used for exercise purposes, e.g. indicating position or course

- F42B 19/38 . . . with means for causing torpedoes to surface at end of run
- F42B 19/40 . . . by expelling liquid ballast
- F42B 19/42 . . . by releasing solid ballast
- F42B 19/44 . . . by enlarging displacement
- F42B 19/46 . . . adapted to be launched from aircraft
- F42B 21/00** **Depth charges** ([F42B 12/00](#) takes precedence; for practice or training [F42B 8/28](#); laying aspects [B63G](#))
- F42B 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](#))
- F42B 22/02 . . . Contact mines {e.g. [antenne-type mines](#) } (contact fuzes [F42C 7/02](#))
- F42B 22/04 . . . Influenced mines, e.g. by magnetic or acoustic effect
- F42B 22/06 . . . Ground mines
- F42B 22/08 . . . Drifting mines ([with propulsion means F42B 19/00](#))
- F42B 22/10 . . . Moored mines
- F42B 22/12 . . . at a fixed depth setting
- F42B 22/14 . . . at a variable depth setting
- F42B 22/16 . . . using mechanical means, e.g. plummet and float
- F42B 22/18 . . . using hydrostatic means
- F42B 22/20 . . . using magnetic or acoustic depth-control means
- F42B 22/22 . . . having self-contained sinking means
- F42B 22/24 . . . Arrangement of mines in fields or barriers ([net barriers for harbour defence F41H 11/05](#))
- F42B 22/42 . . . with anti-sweeping means, e.g. electrical
- F42B 22/44 . . . adapted to be launched from aircraft
- F42B 23/00** **Land mines; {Land torpedoes }** ([F42B 12/00](#) takes precedence; for practice or training [F42B 8/28](#))
- F42B 23/005 . . . {[Selfpropelled land mines](#) }
- F42B 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](#)) }
- F42B 23/08 . . . non-metallic
- F42B 23/10 . . . anti-personnel
- F42B 23/14 . . . non-metallic

- F42B 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](#))
- F42B 23/24 . Details
- F42B 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](#) })
- F42B 27/00** **Hand grenades** ([F42B 12/00](#) takes precedence; for practice or training [F42B 8/12](#))
- F42B 27/08 . with handle
- F42B 29/00** **Noiseless, smokeless, or flashless missiles launched by their own explosive propellant**
- F42B 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)
- F42B 30/003 . {Closures or baseplates therefor (closures for blasting cartridges [F42B 3/24](#), for shotgun cartridges [F42B 7/12](#)) }
- F42B 30/006 . {Mounting of sensors, antennas or target trackers on projectiles }
- F42B 30/02 . Bullets
- F42B 30/04 . Rifle grenades
- F42B 30/06 . . Bullet traps or bullet decelerators therefor
- F42B 30/08 . Ordnance projectiles or missiles, e.g. shells
- F42B 30/10 . . Mortar projectiles
- F42B 30/12 . . . with provision for additional propulsive charges, or for varying the length
- F42B 30/14 . Harpoons (for hand-held spring or air guns [F42B 6/02](#))
- F42B 33/00** **Manufacture or ammunition: Dismantling or ammunition; Apparatus therefor** ([F42B 5/188](#) takes precedence; manufacturing processes for hollow charges [F42B 1/036](#); manufacture of blasing cartridge initiators [F42B 3/195](#))
- F42B 33/001 . {Devices or processes for assembling ammunition, cartridges or cartridge elements from parts }
- F42B 33/002 . {Orienting or guiding means for cartridges or cartridge parts during the manufacturing or packaging process; Feeding cartridge elements to automatic machines }
- F42B 33/004 . {Cartridge loaders of the rotatable-turret type }
- F42B 33/005 . {Crimping cartridge cases on projectiles }
- F42B 33/007 . {Making cavities in an explosive or propulsive charge }

- F42B 33/008 . {Cutting explosive or propulsive charges }
- F42B 33/02 . Filling cartridges, missiles, or fuzes; Inserting propellant or explosive charges { [\(F42B 33/004 takes precedence\)](#) }
- F42B 33/0207 .. {Processes for loading or filling propulsive or explosive charges in containers }
- F42B 33/0214 .. {by casting [\(F42B 33/004 takes precedence\)](#) }
- F42B 33/0221 ... {by centrifugal casting }
- F42B 33/0228 ... {Funnel arrangements therefor }
- F42B 33/0235 ... {Heating of casting equipment or explosive charge containers during the loading process }
- F42B 33/0242 ... {by pressure casting }
- F42B 33/025 .. {by compacting [\(F42B 33/004 takes precedence\)](#) }
- F42B 33/0257 ... {by vibration compacting }
- F42B 33/0264 .. {by using screw-type feeders [\(F42B 33/004 takes precedence\)](#) }
- F42B 33/0271 ... {for extruding blasting cartridges }
- F42B 33/0278 .. {Safety arrangements therefor [\(F42B 33/004 takes precedence\)](#) }
- F42B 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](#) }
- F42B 33/0292 ... {by volumetric measurement, i.e. the volume of the material being determined before filling }
- F42B 33/04 . Fitting or extracting primers in or from fuzes or charges { [\(F42B 33/004 takes precedence\)](#) }
- F42B 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](#) })
- F42B 33/062 .. {by high-pressure water jet means }
- F42B 33/065 .. {by laser means }
- F42B 33/067 .. {by combustion (incineration apparatuses or processes for used articles [F23G 7/003](#)) }
- F42B 33/10 . Reconditioning used cartridge cases { [\(F42B 33/004 takes precedence\)](#) }
- F42B 33/12 . Crimping shotgun cartridges { [\(F42B 33/004 takes precedence\)](#) }
- F42B 33/14 . Surface treatment of cartridges or cartridge cases { [\(F42B 33/004 takes precedence\)](#) }
- F42B 35/00** **Testing or checking of ammunition** { [\(apparatus for measuring the energy of projectiles G01L 5/14\)](#) }
- F42B 35/02 . Gauging, sorting, trimming or shortening cartridges or missiles
- F42B 39/00** **Packaging or storage of ammunition or explosive charges; Safety features thereof; Cartridge belts or bags**
- F42B 39/002 . {Cartridge containers provided with cartridge-dispensing means }

- F42B 39/005 . {Protection for driving bands }
- F42B 39/007 . {Packaging or storage of arrows or darts (quivers for arrows [F41B 5/06](#)) }
- F42B 39/02 . Cartridge bags; Bandoleers
- F42B 39/08 . Cartridge belts
- F42B 39/082 . . {for caseless ammunition }
- F42B 39/085 . . {for blank cartridges }
- F42B 39/087 . . {Feed belts manufactured from fabric or plastics material }
- F42B 39/10 . . Machines for charging or for extracting cartridges from feed belts
- F42B 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](#) })
- F42B 39/16 . . Fire-extinguishing
- F42B 39/18 . . Heat shields; Thermal insulation
- F42B 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](#)) }
- F42B 39/22 . Locking of ammunition in transport containers
- F42B 39/24 . Shock-absorbing arrangements in packages, {e.g. for shock waves }
- F42B 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)
- F42B 39/28 . Ammunition racks, e.g. in vehicles
- F42B 39/30 . Containers for detonators or fuzes ([F42B 39/14](#), [F42B 39/20](#) take precedence)
- F42B 99/00 Subject matter not provided for in other groups of this subclass**