

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

### F42 AMMUNITION; BLASTING

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

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

- 1/02 • Shaped or hollow charges (blasting cartridges with cavities in the charge F42B 3/08; oil-winning using shaped-charge perforators E21B 43/116)
- 1/024 • • provided with embedded bodies of inert material [5]
- 1/028 • • characterised by the form of the liner [5]
- 1/032 • • characterised by the material of the liner [5]
- 1/036 • • Manufacturing processes therefor [5]
- 1/04 • Detonator charges not forming part of the fuze
- 3/00 Blasting cartridges, i.e. case and explosive** (fuse cords, e.g. detonating fuse cords, C06C 5/00; chemical aspects of detonators, blasting caps or primers C06C 7/00)
- 3/02 • adapted to be united into assemblies
- 3/04 • for producing gas under pressure
- 3/06 • • with re-utilisable case
- 3/08 • with cavities in the charge, e.g. hollow-charge blasting cartridges

- 3/087 • Flexible or deformable blasting cartridges, e.g. bags or hoses (loaded cartridge bags F42B 5/38) [5]
- 3/093 • • in mat or tape form [5]
- 3/10 • Initiators therefor (percussion fuzes F42C 7/00; percussion caps F42C 19/10; electric primers F42C 19/12)

#### Note(s)

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

- 3/103 • • Mounting initiator heads in initiators; Sealing-plugs [5]
- 3/107 • • • Sealing-plugs characterised by the material used [5]
- 3/11 • • characterised by the material used, e.g. for initiator case or electric leads (F42B 3/107 takes precedence) [5]
- 3/113 • • activated by optical means, e.g. laser, flashlight [5]
- 3/117 • • activated by friction [5]
- 3/12 • • Bridge initiators
- 3/13 • • • with semiconductive bridge [5]

## F42B

- 3/14 • • Spark initiators
- 3/16 • • Delay initiators
- 3/18 • • Safety initiators resistant to premature firing by static electricity or stray currents
- 3/182 • • • having shunting means [5]
- 3/185 • • • having semiconductive sealing plugs [5]
- 3/188 • • • having radio-frequency filters [5]
- 3/192 • • designed for neutralisation on contact with water [5]
- 3/195 • • Manufacture [5]
- 3/198 • • • of electric initiator heads [5]
- 3/22 • Elements for controlling or guiding the detonation wave, e.g. tubes (using inert bodies embedded in shaped or hollow charges F42B 1/024) [5]
- 3/24 • Cartridge closures or seals (top closures for shotgun ammunition cartridges F42B 7/12) [5]
- 3/26 • Arrangements for mounting initiators; Accessories therefor, e.g. tools [5]
- 3/28 • Cartridge cases characterised by the material used, e.g. coatings (for initiator cases F42B 3/11) [5]
- 4/00 Fireworks, i.e. pyrotechnic devices for amusement, display, illumination, or signal purposes** (signalling by explosives G08B; advertising by firework G09F 13/46) [2]
- 4/02 • in cartridge form, i.e. shell, propellant, and primer [2]
- 4/04 • Firecrackers [2]
- 4/06 • Aerial display rockets (rockets in general F42B 15/00) [2]
- 4/08 • • characterised by having vanes, wings, parachutes, or balloons [2]
- 4/10 • • characterised by having means to separate article or charge from casing without destroying casing [2]
- 4/12 • • • Parachute or flare separation [2]
- 4/14 • • characterised by having plural successively-ignited charges [2]
- 4/16 • Hand-thrown impact-exploded noise makers (cap pistols F41C 3/06) [4]
- 4/18 • Simulations, e.g. pine cone, house that is destroyed, warship, volcano [2]
- 4/20 • characterised by having holder or support other than casing, e.g. whirler or spike support [2]
- 4/22 • characterised by having means to separate an article or charge from casing without destroying casing (in aerial display rockets F42B 4/10) [2]
- 4/24 • characterised by having plural successively-ignited charges (in aerial display rockets F42B 4/14) [2]
- 4/26 • Flares; Torches [2]
- 4/28 • • Parachute flares (F42B 4/12 takes precedence) [2]
- 4/30 • Manufacture [2]
- 5/00 Cartridge ammunition, e.g. separately-loaded propellant charges** (shotgun ammunition F42B 7/00; practice or training ammunition F42B 8/00; missiles therefor F42B 12/00, F42B 14/00, F42B 15/00)
- 5/02 • Cartridges, i.e. cases with propellant charge and missile
- 5/03 • • containing more than one missile [4]
- 5/045 • • of telescopic type (F42B 5/184 takes precedence) [5]
- 5/05 • • for recoilless guns (recoilless guns using a counter-projectile to balance recoil F41A 1/10) [4]
- 5/067 • • Mounting or locking missiles in cartridge cases (F42B 5/18 takes precedence) [5]
- 5/073 • • • using an auxiliary locking element [5]
- 5/08 • • modified for electric ignition
- 5/10 • • with self-propelled bullet
- 5/14 • • for marking cattle
- 5/145 • • for dispensing gases, vapours, powders, particles or chemically-reactive substances (from projectiles F42B 12/46, F42B 12/70) [5]
- 5/15 • • • for creating a screening or decoy effect, e.g. using radar chaff or infra-red material (infra-red flares F42B 4/26) [5]
- 5/155 • • • • Smoke-pot projectors, e.g. arranged on vehicles [5]
- 5/16 • • characterised by composition or physical dimensions or form of propellant charge or powder (chemical composition C06B)
- 5/18 • • Caseless ammunition; Cartridges having combustible cases [5]
- 5/184 • • • telescopic [5]
- 5/188 • • • Manufacturing processes therefor [5]
- 5/192 • • • Cartridge cases characterised by the material used [5]
- 5/196 • • • • Coatings [5]
- 5/24 • • for cleaning; for cooling; for lubricating [5]
- 5/26 • Cartridge cases (F42B 5/18 takes precedence)
- 5/28 • • of metal
- 5/285 • • • formed by assembling several elements [4]
- 5/29 • • • • wound from sheets or strips [4]
- 5/295 • • • coated [4]
- 5/297 • • • • with plastics [5]
- 5/30 • • of plastics
- 5/307 • • • formed by assembling several elements [4]
- 5/313 • • • • all elements made of plastics [4]
- 5/32 • • for rim fire
- 5/34 • • with provision for varying the length
- 5/36 • • modified for housing an integral firing-cap
- 5/38 • Separately-loaded propellant charges, e.g. cartridge bags [4]
- 6/00 Projectiles or missiles specially adapted for projection without use of explosive or combustible propellant charge, e.g. for blow guns, bows or crossbows, hand-held spring or air guns** (for delivering hypodermic charges F42B 12/54; throwing-darts A63B 65/02; projectiles or missiles incorporating springs as the projecting means F41B 7/02) [5]
- 6/02 • Arrows; Crossbow bolts; Harpoons for hand-held spring or air guns [5]
- 6/04 • • Archery arrows (F42B 6/08, F41B 5/06 take precedence) [5]
- 6/06 • • • Tail ends, e.g. nocks, fletching [5]
- 6/08 • • Arrow heads; Harpoon heads [5]
- 6/10 • Air gun pellets [5]
- 7/00 Shotgun ammunition**
- 7/02 • Cartridges, i.e. cases with propellant charge and missile
- 7/04 • • of pellet type
- 7/06 • • with cartridge case of plastics
- 7/08 • • Wads therefor
- 7/10 • • Ball or slug shotgun cartridges
- 7/12 • • Cartridge top closures, i.e. for the missile side (closures for blasting cartridges F42B 3/24) [5]
- 8/00 Practice or training ammunition** (range-reducing, destabilising or braking arrangements F42B 10/00; with signalling effect F42B 12/02; F42B 19/00 takes precedence) [4]
- 8/02 • Cartridges [5]

8/04	• • Blank cartridges, i.e. primed cartridges without projectile but containing an explosive or combustible powder charge [5]	10/48	• • Range-reducing, destabilising or braking arrangements; Fall-retarding means (F42B 10/34 takes precedence) [5]
8/06	• • • for cap-firing pistols [5]	10/50	• • • Brake flaps [5]
8/08	• • Dummy cartridges, i.e. inert cartridges containing neither primer nor explosive or combustible powder charge [5]	10/52	• • • Nose cones [5]
8/10	• • with sub-calibre adaptor [5]	10/54	• • • Spin braking means [5]
8/12	• Projectiles or missiles (F42B 19/36 takes precedence) [5]	10/56	• • • of parachute type [5]
8/14	• • disintegrating in flight or upon impact [5]	10/58	• • • of rotochute type [5]
8/16	• • • containing an inert filler in powder or granular form [5]	10/60	• Steering arrangements (F42B 19/01 takes precedence) [5]
<b>Note(s)</b>		10/62	• • Steering by movement of flight surfaces [5]
Group F42B 8/14 takes precedence over groups F42B 8/18-F42B 8/26.		10/64	• • • of fins [5]
8/18	• • Rifle grenades [5]	10/66	• • Steering by varying intensity or direction of thrust (thrust vector control of rocket engine plants F02K 9/80) [5]
8/20	• • Mortar grenades [5]	<b>12/00</b>	<b>Projectiles, missiles or mines characterised by the warhead, the intended effect, or the material</b> (F42B 6/00, F42B 10/00, F42B 14/00 take precedence; for practice or training F42B 8/12, F42B 8/28; self-propulsion or guidance aspects F42B 15/00) [5]
8/22	• • Fall bombs [5]	12/02	• characterised by the warhead or the intended effect [5]
8/24	• • Rockets [5]	12/04	• • of armour-piercing type [5]
8/26	• • Hand grenades [5]	12/06	• • • with hard or heavy core; Kinetic energy penetrators (F42B 12/16, F42B 12/74 take precedence) [5]
8/28	• Land or marine mines; Depth charges [5]	12/08	• • • with armour-piercing caps; with armoured cupola [5]
<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> (F42B 6/00 takes precedence; sub-calibre projectiles having sabots F42B 14/00) [5]	12/10	• • • with shaped or hollow charge (shaped or hollow charges <i>per se</i> F42B 1/02) [5]
10/02	• Stabilising arrangements [5]	12/12	• • • • rotatably mounted with respect to missile housing [5]
10/04	• • using fixed fins (F42B 10/22 takes precedence) [5]	12/14	• • • • the symmetry axis of the hollow charge forming an angle with the longitudinal axis of the projectile [5]
10/06	• • • Tail fins [5]	12/16	• • • • in combination with an additional projectile or charge, acting successively on the target [5]
10/08	• • • • Flechette-type projectiles [5]	12/18	• • • • • Hollow charges in tandem arrangement [5]
10/10	• • • • the fins being formed in the barrel by deformation of the projectile body [5]	12/20	• • of high-explosive type (F42B 12/44 takes precedence) [5]
10/12	• • using fins longitudinally-slidable with respect to the projectile or missile [5]	12/22	• • • with fragmentation-hull construction [5]
10/14	• • using fins spread or deployed after launch, e.g. after leaving the barrel [5]	12/24	• • • • with grooves, recesses or other wall weakenings [5]
10/16	• • • Wrap-around fins [5]	12/26	• • • • the projectile wall being formed by a spirally-wound element [5]
10/18	• • • using a longitudinally slidable support member [5]	12/28	• • • • the projectile wall being built from annular elements [5]
10/20	• • • deployed by combustion gas pressure, or by pneumatic or hydraulic forces [5]	12/30	• • • • Continuous-rod warheads [5]
10/22	• • Projectiles of cannellured type [5]	12/32	• • • • the hull or case comprising a plurality of discrete bodies, e.g. steel balls, embedded therein [5]
10/24	• • • with inclined grooves [5]	12/34	• • expanding before or on impact, i.e. of dum dum or mushroom type [5]
10/26	• • using spin (F42B 10/04, F42B 10/12, F42B 10/14, F42B 10/24, F42B 14/02 take precedence) [5]	12/36	• • for dispensing materials; for producing chemical or physical reaction; for signalling [5]
10/28	• • • induced by gas action [5]	12/38	• • • of tracer type [5]
10/30	• • • • using rocket motor nozzles [5]	12/40	• • • of target-marking, i.e. impact-indicating, type (F42B 12/48 takes precedence) [5]
10/32	• Range-reducing or range-increasing arrangements; Fall-retarding means [5]	12/42	• • • of illuminating type, e.g. carrying flares [5]
10/34	• • Tubular projectiles [5]	12/44	• • • of incendiary type (F42B 12/46 takes precedence) [5]
10/36	• • • Ring-foil projectiles [5]	12/46	• • • for dispensing gases, vapours, powders or chemically-reactive substances (F42B 12/70 takes precedence) [5]
10/38	• • Range-increasing arrangements (F42B 10/34 takes precedence) [5]		
10/40	• • • with combustion of a slow-burning charge, e.g. fumers, base-bleed projectiles [5]		
10/42	• • • Streamlined projectiles [5]		
10/44	• • • • Boat-tails specially adapted for drag reduction [5]		
10/46	• • • • Streamlined nose cones; Windshields; Radomes [5]		

## F42B

- 12/48 • • • • smoke-producing [5]
- 12/50 • • • • by dispersion [5]
- 12/52 • • • • • Fuel-air explosive devices [5]
- 12/54 • • • • by implantation, e.g. hypodermic projectiles [5]
- 12/56 • • • for dispensing discrete solid bodies (F42B 12/70 takes precedence) [5]
- 12/58 • • • • Cluster or cargo ammunition, i.e. projectiles containing one or more submissiles (F42B 12/32 takes precedence) [5]
- 12/60 • • • • • the submissiles being ejected radially [5]
- 12/62 • • • • • the submissiles being ejected parallel to the longitudinal axis of the projectile [5]
- 12/64 • • • • • the submissiles being of shot- or flechette-type [5]
- 12/66 • • • • • Chain-shot, i.e. the submissiles being interconnected by chains or the like [5]
- 12/68 • • • • Line-carrying missiles, e.g. for life-saving (harpoons F42B 30/14) [5]
- 12/70 • • • • for dispensing radar chaff or infra-red material (radar-reflector targets, active targets transmitting infra-red radiation F41J 2/00; radar-reflecting surfaces H01Q 15/14) [5]
- 12/72 • characterised by the material (heat treatment for explosive shells C21D 9/16) [5]
- 12/74 • • of the core or solid body [5]
- 12/76 • • of the casing [5]
- 12/78 • • • of jackets for smallarm bullets [5]
- 12/80 • • • Coatings [5]
- 12/82 • • • • reduction friction [5]
- 14/00 Projectiles or missiles characterised by arrangements for guiding or sealing them inside barrels, or for lubricating or cleaning barrels [5]**
- 14/02 • Driving bands; Rotating bands (F42B 14/04 takes precedence) [5]
- 14/04 • Lubrication means in missiles (coatings for reducing friction F42B 12/82) [5]
- 14/06 • Sub-calibre projectiles having sabots; Sabots therefor [5]
- 14/08 • • Sabots filled with propulsive charges; Removing sabots by combustion of pyrotechnic elements or by propulsive-gas pressure (arrangements on barrels for removing sabots from projectiles F41A 21/46) [5]
- 15/00 Self-propelled projectiles or missiles, e.g. rockets; Guided missiles (F42B 10/00, F42B 12/00, F42B 14/00 take precedence; for practice or training F42B 8/12; rocket torpedoes F42B 17/00; marine torpedoes F42B 19/00; cosmonautic vehicles B64G; jet-propulsion plants F02K) [4]**
- 15/01 • Arrangements thereon for guidance or control (aircraft flight control B64C; guidance systems other than those only installed aboard F41G 7/00, F41G 9/00; locating by use of radio or other waves G01S; flight control in general G05D 1/00; computing aspects G06) [5]
- 15/04 • • using wire, e.g. for guiding ground-to-ground rockets
- 15/08 • for carrying measuring instruments (adaptations for meteorology G01W 1/08)
- 15/10 • Missiles having a trajectory only in the air
- 15/12 • • Intercontinental ballistic missiles (F42B 15/01 takes precedence) [4]
- 15/20 • Missiles having a trajectory beginning below water surface (having additional propulsion means for movement through water F42B 17/00)
- 15/22 • Missiles having a trajectory finishing below water surface (having additional propulsion means for movement through water F42B 17/00)
- 15/34 • Protection against overheating or radiation, e.g. heat shields; Additional cooling arrangements [5]
- 15/36 • Means for interconnecting rocket-motor and body section; Multi-stage connectors; Disconnecting means [5]
- 15/38 • • Ring-shaped explosive elements for the separation of rocket parts [5]
- 17/00 Rocket torpedoes, i.e. missiles provided with separate propulsion means for movement through air and through water (F42B 12/00 takes precedence)**
- 19/00 Marine torpedoes, e.g. launched by surface vessels or submarines (having additional propulsion means for movement through air F42B 17/00); Sea mines having self-propulsion means (F42B 12/00 takes precedence; launching means F41F; locating by use of radio or other waves G01S; automatic control of course G05D 1/00; firing directors or calculators G06G)**
- 19/01 • Steering control
- 19/04 • • Depth control
- 19/06 • • Directional control
- 19/08 • • with means for preventing rolling or pitching
- 19/10 • • remotely controlled, e.g. by sonic or radio control (control systems using wire F41G 7/32)
- 19/12 • Propulsion specially adapted for torpedoes (marine propulsion in general B63H)
- 19/14 • • by compressed-gas motors
- 19/16 • • • of cylinder type
- 19/18 • • • of turbine type
- 19/20 • • • characterised by the composition of propulsive gas; Manufacture or heating thereof in torpedoes
- 19/22 • • by internal-combustion engines
- 19/24 • • by electric motors
- 19/26 • • by jet propulsion
- 19/28 • • with means for avoiding visible wake
- 19/30 • • with timing control of propulsion
- 19/36 • adapted to be used for exercise purposes, e.g. indicating position or course
- 19/38 • • with means for causing torpedoes to surface at end of run
- 19/40 • • • by expelling liquid ballast
- 19/42 • • • by releasing solid ballast
- 19/44 • • • by enlarging displacement
- 19/46 • adapted to be launched from aircraft
- 21/00 Depth charges (F42B 12/00 takes precedence; for practice or training F42B 8/28; laying aspects B63G)**
- 22/00 Marine mines, e.g. launched by surface vessels or submarines (F42B 12/00 takes precedence; for practice or training F42B 8/28; mine laying or sweeping B63G)**
- 22/02 • Contact mines (contact fuzes F42C 7/02)
- 22/04 • Influenced mines, e.g. by magnetic or acoustic effect
- 22/06 • Ground mines
- 22/08 • Drifting mines (with propulsion means F42B 19/00)
- 22/10 • Moored mines
- 22/12 • • at a fixed depth setting
- 22/14 • • at a variable depth setting

22/16	• • • using mechanical means, e.g. plummet and float	33/00	<b>Manufacture of ammunition; Dismantling of ammunition; Apparatus therefor</b> (F42B 5/188 takes precedence; manufacturing processes for hollow charges F42B 1/036; manufacturing of blasting cartridge initiators F42B 3/195)
22/18	• • • using hydrostatic means	33/02	• Filling cartridges, missiles, or fuzes; Inserting propellant or explosive charges
22/20	• • • using magnetic or acoustic depth-control means	33/04	• Fitting or extracting primers in or from fuzes or charges
22/22	• having self-contained sinking means	33/06	• Dismantling fuzes, cartridges, projectiles, missiles, rockets, or bombs (F42B 33/04 takes precedence)
22/24	• Arrangement of mines in fields or barriers (net barriers for harbour defence F41H 11/05)	33/10	• Reconditioning used cartridge cases
22/42	• with anti-sweeping means, e.g. electrical	33/12	• Crimping shotgun cartridges
22/44	• adapted to be launched from aircraft	33/14	• Surface treatment of cartridges or cartridge cases
23/00	<b>Land mines</b> (F42B 12/00 takes precedence; for practice or training F42B 8/28)	35/00	<b>Testing or checking of ammunition</b>
23/04	• anti-vehicle [5]	35/02	• Gauging, sorting, trimming or shortening cartridges or missiles
23/08	• • non-metallic [5]	39/00	<b>Packaging or storage of ammunition or explosive charges; Safety features thereof; Cartridge belts or bags</b>
23/10	• anti-personnel [5]	39/02	• Cartridge bags; Bandoleers
23/14	• • non-metallic [5]	39/08	• Cartridge belts
23/16	• • of missile type, i.e. for detonation after ejection from ground (fuzes for initiating mine ejection F42C 1/09) [5]	39/10	• • Machines for charging or for extracting cartridges from feed belts
23/24	• Details	39/14	• Explosion or fire protection arrangements on packages or ammunition (F42B 39/20 takes precedence) [5]
25/00	<b>Fall bombs</b> (F42B 10/00, F42B 12/00 take precedence; for practice or training F42B 8/12) [5]	39/16	• • Fire-extinguishing [5]
27/00	<b>Hand grenades</b> (F42B 12/00 takes precedence; for practice or training F42B 8/12)	39/18	• • Heat shields; Thermal insulation [5]
27/08	• with handle	39/20	• Packages or ammunition having valves for pressure-equalising; Packages or ammunition having plugs for pressure release, e.g. meltable [5]
29/00	<b>Noiseless, smokeless, or flashless missiles launched by their own explosive propellant</b>	39/22	• Locking of ammunition in transport containers [5]
30/00	<b>Projectiles or missiles, not otherwise provided for, characterised by the ammunition class or type, e.g. by the launching apparatus or weapon used</b> (F42B 10/00, F42B 12/00, F42B 14/00 take precedence) [5]	39/24	• Shock-absorbing arrangements in packages [5]
30/02	• Bullets [5]	39/26	• Packages or containers for a plurality of ammunition, e.g. cartridges (F42B 39/14-F42B 39/24, F42B 39/28 take precedence) [5]
30/04	• Rifle grenades [5]	39/28	• Ammunition racks, e.g. in vehicles [5]
30/06	• • Bullet traps or bullet decelerators therefor [5]	39/30	• Containers for detonators or fuzes (F42B 39/14, F42B 39/20 take precedence) [5]
30/08	• Ordnance projectiles or missiles, e.g. shells [5]	99/00	<b>Subject matter not provided for in other groups of this subclass [2006.01]</b>
30/10	• • Mortar projectiles [5]		
30/12	• • • with provision for additional propulsive charges, or for varying the length [5]		
30/14	• Harpoons (for hand-held spring or air guns F42B 6/02) [5]		