

5 Gruvbrytning [-68]

5a Djupborrning efter malmer, olja, gas eller vatten; Utvinning av olja eller gas ur djupborrhål [-68]

5a (IPC: E21B) Deep drilling; Obtaining oil, gas, water or soluble materials from deep wells [68-]

5b Gruvbrytning [-68]

5b (IPC: E21C) Machinery for, or methods of, mining or quarrying [68-]

5c Upptagningsarbeten eller tillredningsarbeten i gruvor; Brytningsmetoder; Förbyggnader [-68]

5c (IPC: E21D) Shafts; Sinking shafts; Galleries; Lining galleries [68-]

5d Ventilation i gruvor; Förebyggande åtgärder mot gruvolyckor; Bergtransport; Igensättning e.d. [-68]

5d (IPC: E21F) Ventilation; Safety devices; Transport; Filling-up; Rescue [68-]

5a Djupborrning efter malm, olja, gas eller vatten; Utvinning av olja eller gas ur djupborrhål (borrhålpumpar för uppfordring av olja eller vatten ur färdiga borrhål 59; borring av schakt eller andra gruvarbeten av större tvärsnitt, t.ex. stigschakt, orter, eller genomslag för ventilation 5c; bergborrar för upptagande av sprängborrhål 5b; planteringsborrar 45f-4/09; borrar för nedsättning av pålar 84c-1, 84c-1/04, 84c-7/00, 84c-13/00, 84c-17/14) [-68]

5a-1 Stötborrning i allmänhet med stela borrhålsstänger [-68]

5a-2 Linborrning i allmänhet [-68]

5a-3 Drivmaskineri ovan jord för stötborrning med stänger eller lina [-68]

5a-4 Utformning eller lagring av borrhålsvänglar [-68]

5a-5 Mejselborrning med spolning [-68]

5a-6/10 Frifallsapparater [-68]

5a-6/20 Anordningar ovan jord för vridning av borren [-68]

5a-6/30 Anordningar i borrhålet för vridning av borren [-68]

5a-7 Matningsanordningar [-68]

5a-8 Stångupphängning [-68]

5a-9 Utbalansering av stångvikten; Belastning eller avlastning av stången [-68]

5a-10 Rotationsborrning i allmänhet med massiva borrhålsstänger [-68]

5a-11 Rotationsborrning med spolning, t.ex. diamantborrning [-68]

5a-12/10 Drivmaskineri ovan jord för rotationsborrning [-68]

5a-12/20 Rotationsbord [-68]

5a-12/30 Hissanordningar [-68]

5a-13 Kombinerat drivmaskineri för stötborrning och rotationsborrning [-68]

5a-14/10 Drivmaskineri för stötborrning placerat i borrhålet [-68]

5a-14/20 Drivmaskineri för rotationsborrning placerat i borrhålet [-68]

5a-15 Spolborrning utan borrhålsverktyg [-68]

5a-16 Hejarborrar [-68]

5a-17 Vågrät, sned eller uppåtriktad borring för undersökningsändamål (5c-6; 5d-18) [-68]

5a-18/10 Riktningmätare för borrhål (42c-25/01; 42c-25/50; 42c-25/51) [-68]

5a-18/20	Korrigerig av borrhålsavvikelser	[-68]
5a-18/30	Undersökning av väggar eller rör i borrhål; Mätning av djup eller temperatur	[-68]
5a-18/40	Provtagare	[-68]
5a-19/10	Speciella förfaranden eller drivanordningar för djupborrning	[-68]
5a-19/20	Transportabla borranläggningar för mindre djup	[-68]
	Borrar eller mejslar för djupborrning	[-68]
5a-20	Ihåliga rotationsborrar för borrning utan erhållande av kärnor	[-68]
5a-21	Snäckformade eller skruvformade rotationsborrar (45f-4/09; 84c-1; 84c-1/04; 84c-7/00; 84c-13/00; 84c-17/14)	[-68]
5a-22	Tallriksborrar (45f-4/09; 84c-1; 84c-1/04; 84c-7/00; 84c-13/00; 84c-17/14)	[-68]
5a-23/10	Massiva rotationsborrar	[-68]
5a-23/20	Massiva rotationsborrar med roterande fräsar	[-68]
5a-24/10	Kärnborrar för rotationsborrning	[-68]
5a-24/20	Kärnborrar med roterande fräsar	[-68]
5a-24/30	Dubbla kärnrör	[-68]
5a-25/10	Rotationsborrar för utvidgning av borrhål	[-68]
5a-25/20	Borrar med roterande fräsar för utvidgning av borrhål	[-68]
5a-26	Andra rotationsborrar för djupborrning	[-68]
5a-27	Massiva stötborrar	[-68]
5a-28	Stötborrar för kärnborrning	[-68]
5a-29	Stötborrar för utvidgning av borrhål	[-68]
5a-30	Ventilstötborrar, t.ex. skopor, slamfångare eller slampumpar	[-68]
5a-30/10	Gripborrar	[-68]
5a-30/20	Spolborrar utan egg	[-68]
	Andra redskap eller anordningar för djupborrning	[-68]
5a-31/10	Vattenlekor	[-68]
5a-31/20	Spolvätskor	[-68]
5a-31/30	Andra anordningar för spolning	[-68]
5a-32/10	Borrstänger; Pumpstänger (pumpar 59a – 59e)	[-68]
5a-32/20	Rör	[-68]
5a-32/30	Stångkopplingar; Rörskopplingar	[-68]
5a-32/10	Kopplingar mellan borrstänger och verktyg	[-68]
5a-32/50	Speciella anordningar på stänger eller rör	[-68]
5a-32/60	Linor; Linlås (47d; 47e-35; 73)	[-68]
5a-33/10	Hållare för borrstänger ovanför borrhålet	[-68]
5a-33/20	Anordningar för fastskruvning och isärskrävning av stängdelar	[-68]
5a-33/30	Andra anordningar för hantering eller fasthållning	[-68]
5a-34/10	Transportanordningar för rör eller stänger	[-68]
5a-34/20	Anordningar för lyftning eller sänkning av borrstänger	[-68]
5a-35/10	Rörfångare för beklädnadsrör	[-68]
5a-35/20	Rörskärare; Rörsplitsare; Rörriktare; Linskarare	[-68]
5a-36	Fångare för stänger, linor, verktyg eller brottstycken	[-68]
5a-37	Kärnbrytare; Kärnlyftare	[-68]
5a-38/10	Borrställningar; Borrtorn	[-68]
5a-38/20	Anordningar i borrtorn	[-68]
5a-38/30	Linskvivor för borrtorn	[-68]
5a-39/10	Tätningar eller packningar för borrhål (85d-1)	[-68]
5a-39/20	Cementeringsanordningar	[-68]
5a-39/30	Borrhålsrensare (85d-1)	[-68]
5a-40/10	Rörtillslutningar för borrhål	[-68]
5a-40/20	Anordningar för att hindra eller släcka borrhålsbränder	[-68]

5a-40/30	Separatorer i borrhål (85d-1; 23b-1/01; 23b-1/02; 23b-1/05; 23b-2/01)	[68-]
5a-41	Förfaranden för utvinning av olja, saltvatten, svavel eller fosfor ur djupborrhål (5b-42; gasframställning genom avgasning in situ 26a-9; pumpar 59a – 59e)	[68-]

5a	(IPC: E21B) Deep drilling; Obtaining oil, gas, water or soluble materials from deep wells	[68-]
	<u>Devices or methods for deep-drilling</u>	[68-]
5a-1/00	Percussion drilling	[68-]
5a-1/02	. Surface drives for percussion drilling	[68-]
5a-1/04	. . Devices for reversing the movement of the rod or cable at the surface	[68-]
5a-1/06	. Drives for percussion drilling in the borehole	[68-]
5a-1/08	. . Devices for reversing the movement of the rod or cable in the borehole	[68-]
5a-1/10	. Drilling jars, i.e. lost-motion connections	[68-]
5a-3/00	Rotary drilling	[68-]
5a-3/02	. Surface drives for rotary drilling	[68-]
5a-3/04	. . Rotary tables	[68-]
5a-3/06	. . Adaptation of rotary draw works to drive rotary tables (connecting or disconnecting couplings or joints using cat-heads 5a-19/16)	[68-]
5a-3/08	. Drives used in the borehole	[68-]
5a-3/10	. . Electric drives	[68-]
5a-3/12	. . Hydraulic or pneumatic drives	[68-]
5a-5/00	Drives for combined percussion and rotary drilling, whether for use on surface or in the borehole	[68-]
5a-7/00	Special methods or apparatus for deep-drilling	[68-]
5a-7/02	. Portable drilling rigs, truck or skid mounted, with their own drive	[68-]
5a-7/04	. Directional drilling	[68-]
5a-7/06	. . Deflecting the direction of boreholes	[68-]
5a-7/08	. . . Special apparatus for deflecting the boring, e.g. special drill bits, knuckle joints, (knuckle joints for fishing tools 5a-31/00)	[68-]
5a-7/10	. . Correction of deflected boreholes	[68-]
5a-7/12	. Underwater drilling	[68-]
5a-7/14	. Flame drilling (flame piercing of blast holes 5b-21/00)	[68-]
5a-7/16	. Applying separate balls or pellets by the pressure of the drill, so-called shot-drilling	[68-]
5a-7/18	. Drilling by liquid or gas jets, with or without entrained pellets (5a-7/14 takes precedence)	[68-]
	<u>Drilling-tools</u>	[68-]
5a-9/00	Drill bits, e.g. retractable without withdrawing drill pipe (for deflecting the boring 5a-7/08; valve drill bits 5a-27/00; augers for making post-holes or for making foundations 84c-17/14; augers for mine drilling 5b-1/14; drill bits for making blast holes 5b-13/00)	[68-]
5a-9/02	. Full drill bits	[68-]
5a-9/04	. . Twist drill bits	[68-]
5a-9/06	. . Fish-tail bits	[68-]
5a-9/08	. . Roller full drill bits	[68-]
5a-9/10	. . . with conical cutting tools only	[68-]
5a-9/12	. . . with separate inner and outer cutting tools, either cylindrical or conical	[68-]
5a-9/14	. . with disc-shaped cutting tools only	[68-]
5a-9/16	. Core bits	[68-]
5a-9/18	. . Roller core bits	[68-]
5a-9/20	. . Core bits with inner tube for receiving or retaining the core	[68-]
5a-9/22	. Drill bits for enlarging the borehole locally or throughout the whole length	[68-]
5a-9/24	. . with non-expansible cutting tools revolving in relation to the drilling rods	[68-]
5a-9/26	. . with expansible cutting tools	[68-]
5a-9/28	. . . revolving in relation to the drilling rods	[68-]
5a-9/30	. . . at the circumference of the bit	[68-]

5a-9/32	. . . cutting also the bottom of the borehole	[68-]
5a-9/34	. for drilling holes sideways from, or at an angle to, the main borehole	[68-]
5a-9/35	. Parts or details	[68-]
5a-9/36	. . Special construction of diamond drill bits or wear-resisting inserts	[68-]
5a-11/00	Other drilling tools	[68-]
5a-11/02	. Boring rams	[68-]
5a-11/04	. Boring grabs	[68-]
5a-11/06	. with driven cutting chains or similarly-driven tools	[68-]
5a-13/00	Wear indicators for drilling tools	[68-]
Other details for deep-drilling		[68-]
5a-15/00	Derricks; Masts	[68-]
5a-15/02	. for underwater drilling	[68-]
5a-17/00	Drilling rods or pipes; Flexible drill strings; Kellies; Drill collars; Sucker rods; Casings; Tubings (tubes in general 47f1)	[68-]
5a-17/02	. Couplings; Joints	[68-]
5a-17/04	. . between rod and bit, or between rod and rod	[68-]
5a-17/042	. . . threaded	[68-]
5a-17/043	. . . . with locking means	[68-]
5a-17/046	. . . with ribs, pins, or jaws, and complementary grooves or the like, e.g. bayonet catches	[68-]
5a-17/05	. . . Swivel joints	[68-]
5a-17/06	. . . Releasing-joints, e.g. safety joints	[68-]
5a-17/08	. . Casing joints	[68-]
5a-17/10	. Wear protectors; Centralising devices	[68-]
5a-17/12	. . Devices for placing or drawing out wear protectors	[68-]
5a-17/14	. Casing shoes	[68-]
5a-19/00	Handling rods, casings, tubes or the like in the derrick (surface drives 5a-1/02, 5a-3/02)	[68-]
5a-19/02	. Rod or cable suspensions	[68-]
5a-19/04	. . Hooks	[68-]
5a-19/06	. . Elevators, i.e. rod or tube gripping devices	[68-]
5a-19/07	. . . Slip-type elevators (slips in rotary tables 5a-19/10)	[68-]
5a-19/08	. Devices for feeding the rods or cables (hoisting drums 35c-1/74); Devices for increasing or decreasing the pressure on the drill; Devices for counterbalancing the weight of the rods	[68-]
5a-19/10	. Slips; Spiders	[68-]
5a-19/12	. Rope clamps (rope clamps in general 47d-11/00)	[68-]
5a-19/14	. Racks, ramps, troughs or bins for holding the lengths of rod singly or connected as joints; Handling between storage and borehole	[68-]
5a-19/16	. Connecting or disconnecting pipe couplings or joints	[68-]
5a-21/00	Devices or methods for flushing boreholes (mud screens 1a)	[68-]
5a-21/02	. Swivel joints in hose lines	[68-]
5a-21/04	. Selection of drilling fluids (drilling fluids per se 23c)	[68-]
5a-23/00	Devices for setting, locking, releasing or removing tools, packers etc. in boreholes (setting of casings, screens, or liners 5a-43/10)	[68-]
5a-23/02	. for locking the tools or the like in landing nipples or in recesses between adjacent sections of tubing (5a-23/04, 5a-23/06 take precedence)	[68-]
5a-23/04	. operated by fluid means, e.g. actuated by explosion (5a-23/06 takes precedence)	[68-]
5a-23/06	. for setting packers	[68-]
5a-25/00	Core barrels; Core breakers; Core extractors	[68-]
5a-27/00	Bailers (cement bailers 5a-33/132); Valve drill bits	[68-]

5a-29/00	Cutting of pipes, packers, plugs, or wire lines, located in boreholes, e.g. of damaged pipes, making windows (perforators 5a-43/11); Reconditioning e.g. straightening of well casings while in the ground	[68-]
5a-29/02	. by explosives	[68-]
5a-31/00	Fishing tools for rods, casings, ropes, bits fragments, etc.	[68-]
5a-31/02	. for tubular, cylindrical, or conical objects, rods, pipes, drill-bit shans, casings, packers, linings (5a-31/12 takes precedence)	[68-]
5a-31/04	. for irregularly-shaped objects, e.g. bailers, pump parts, instruments, drill-bit bodies, stones (5a-31/12 takes precedence)	[68-]
5a-31/06	. . gripping magnetically	[68-]
5a-31/08	. . using junk baskets or the like	[68-]
5a-31/10	. for parted wire lines or ropes	[68-]
5a-31/12	. Fishing tools; Fishing grabs	[68-]
5a-33/00	Sealing or packing boreholes	[68-]
5a-33/02	. Surface sealing or packing	[68-]
5a-33/03	. . Well heads	[68-]
5a-33/035	. . . specially adapted for underwater installations	[68-]
5a-33/04	. . . Casing heads	[68-]
5a-33/05	. . . . Cementing-heads, e.g. with provisions for introducing cementing plugs	[68-]
5a-33/06	. . . . Blow-out preventers	[68-]
5a-33/08	. . Wipers; Oil savers	[68-]
5a-33/10	. in the borehole	[68-]
5a-33/12	. . Packers; Plugs (used for cementing 5a-33/134, 5a-33/16)	[68-]
5a-33/122	. . . Multiple-string packers	[68-]
5a-33/124	. . . Units with longitudinally-spaced plugs for isolating the intermediate space	[68-]
5a-33/126	. . . with fluid-pressure-operated elastic cup or skirt (5a-33/122, 5a-33/124 take precedence)	[68-]
5a-33/127	. . . with inflatable sleeve (5a-33/122, 5a-33/124 take precedence)	[68-]
5a-33/128	. . . with a member expanded radially by axial pressure (5a-33/122, 5a-33/124 take precedence)	[68-]
5a-33/129	. . . with mechanical slips for hooking into the casing (5a-33/122, 5a-33/124 take precedence)	[68-]
5a-33/13	. . Methods or devices for cementing, for plugging holes, crevices, or the like	[68-]
5a-33/132	. . . Cement bailers	[68-]
5a-33/134	. . . Bridging plugs	[68-]
5a-33/136	. . . Baskets, e.g. of umbrella type	[68-]
5a-33/138	. . . Plastering the borehole wall; Injecting into the formation	[68-]
5a-33/14	. . . for cementing casings into boreholes	[68-]
5a-33/16	. . . . using plugs for isolating cement charge; Plugs therefor	[68-]
5a-35/00	Devices or methods for preventing or extinguishing fires (fire-fighting in general 61a, 61b)	[68-]
5a-37/00	Cleaning devices for boreholes (5a-21/00 takes precedence)	[68-]
5a-37/02	. Scrapers	[68-]
5a-39/00	Gas or water separators or the like for use in the borehole	[68-]
5a-40/00	Tubing catchers, automatically arresting the fall of oil-well tubing	[68-]
5a-41/00	Other details not mentioned before for deep-drilling	[68-]
<u>Obtaining oil, water, or the like</u>		[68-]
5a-43/00	Devices or methods for obtaining oil, gas, water or soluble materials from deep wells (mining of oil-bearing deposits 5b-41/10; pumps 59a – 59e)	[68-]
5a-43/01	. specially adapted for obtaining from underwater installations	[68-]
5a-43/02	. Subsoil filtering (5a-43/11 takes precedence)	[68-]
5a-43/04	. . Graveling of wells	[68-]

5a-43/08	. . Screens or liners	[68-]
5a-43/10	. . Setting of casings, screens, or liners in wells (setting of tools, packers or the like 5a-23/00)	[68-]
5a-43/11	. Perforators; Permeators	[68-]
5a-43/112	. . Perforators with extendable perforating members, e.g. actuated by fluid means	[68-]
5a-43/114	. . Perforators using direct fluid action, e.g. abrasive jets	[68-]
5a-43/116	. . Gun or shaped charge perforators	[68-]
5a-43/117	. . . Shaped charge perforators (5a-43/118 takes precedence)	[68-]
5a-43/118	. . . characterised by lowering in vertical position and subsequent tilting to operating position	[68-]
5a-43/119	. . Details, e.g. for locating perforating place or direction	[68-]
5a-43/12	. Methods or apparatus for regulating the flow of oil to or in well (5a-43/25 takes precedence)	[68-]
5a-43/14	. Obtaining from a multiple-zone well	[68-]
5a-43/16	. Secondary recovery methods of oil (pumps 59a-e)	[68-]
5a-43/18	. . Repressuring or vacuum methods	[68-]
5a-43/20	. . Displacing by water	[68-]
5a-43/22	. . Use of chemicals or bacteria activity (5a-43/27 takes precedence; chemical features in extracting oils from oil sands or shales 23b; 26a-18/10)	[68-]
5a-43/24	. . Use of heat	[68-]
5a-43/25	. Methods for stimulating production	[68-]
5a-43/26	. . by forming crevices, e.g. by shooting, by blasting	[68-]
5a-43/27	. . . by use of eroding chemicals, e.g. acids	[68-]
5a-43/28	. Dissolving soluble minerals, e.g. salt	[68-]

Surveying or testing [68-]

5a-45/00 Measuring the drilling time or rate of penetration [68-]

5a-47/00 Survey of wells (geophysical logging 42c) [68-]

5a-47/02	. Determining slope or direction (clinometers or direction meters 42c)	[68-]
5a-47/022	. . of the borehole	[68-]
5a-47/024	. . of devices in the borehole (5a-47/022 takes precedence)	[68-]
5a-47/026	. . of penetrated ground layers (formation testing 5a-49/00)	[68-]
5a-47/04	. Measuring depth or liquid level (measuring liquid level in general 42e)	[68-]
5a-47/06	. Measuring temperature or pressure (measuring temperature in general 42i; measuring pressure in general 42k)	[68-]
5a-47/08	. Measuring the diameter (measuring diameter in general 42b)	[68-]
5a-47/10	. Locating fluid leaks, intrusions, or movements	[68-]
5a-47/12	. Means for transmitting measuring-signals from the well to the surface (remote indicating in general 74)	[68-]

5a-49/00 Testing the nature of borehole walls; Formation testing [68-]

5a-49/02	. by mechanically taking samples of the soil (devices for taking samples in general 42l)	[68-]
5a-49/04	. . with projectiles penetrating the wall	[68-]
5a-49/06	. . with side-wall drilling tools or scrapers	[68-]

5b Gruvbrytning (sprängning med sprängämnen eller andra expanderande medel 78e) [68-]

Upptagning av sprängborrhål (borrar eller borrarordningar för stenbearbetning 80d; murborrar 37d-40) [68-]

5b-1	Rotationsborrmaskiner, drivna av tryckluftmotorer, ångmotorer eller vätskemotorer	[68-]
5b-2	Handdrivna rotationsborrmaskiner	[68-]
5b-3/01	Rotationsborrmaskiner drivna av elektriska motorer	[68-]
5b-3/10	Differentialmatning för rotationsborrmaskiner	[68-]
5b-3/20	Förbindelse mellan borr och maskin vid rotationsborrmaskiner	[68-]

5b-4/01	Ångdrivna eller tryckluftdrivna stötbormaskiner, vid vilka borren är kopplad med drivkolven eller stötstången för fram-och-återgående rörelse	[-68]
5b-4/10	drivna av fram-och-återgående luftpelare	[-68]
5b-5	Stötbormaskiner drivna av explosionsmotor	[-68]
5b-6	Stötbormaskiner drivna med tryckvatten	[-68]
5b-7	Stötbormaskiner drivna elektriskt, t.ex. solenoidbormaskiner	[-68]
5b-8/01	Stötbormaskiner drivna med av lyftelement spända fjädrar	[-68]
5b-8/10	med elastisk förbindelse mellan drivorganet och stötstången med hjälp av dubbla buffertfjädrar	[-68]
5b-8/20	Vridanordningar vid stötbormaskiner	[-68]
5b-8/30	Förbindelse mellan stötstång och borr vid stötbormaskiner	[-68]
	Tryckluftdrivna hammarbormaskiner	[-68]
5b-9/01	i allmänhet (regleranordningar för lufttilloppet till kolven 87b-2)	[-68]
5b-9/02	med smörjanordningar	[-68]
5b-9/03	med anordningar för torr utblåsning av bormjålet	[-68]
5b-9/04	med anordningar för våtspolning	[-68]
5b-9/05	med drivning av slagkolven med hjälp av fram-och-återgående luftpelare	[-68]
5b-9/06	med anordningar för att automatiskt stoppa maskinen, när borren lyfts från arbetsläget	[-68]
5b-9/07	med anordningar för att hindra sådan utblåsning av borrhölen som motverkar borrhörens slagkraft	[-68]
5b-10	Hammarbormaskiner drivna av explosionsmotorer	[-68]
5b-11	Hammarbormaskiner drivna med tryckvatten	[-68]
5b-12	Hammarbormaskiner med direkt elektriskt drivna hammare	[-68]
5b-13	Andra hammarbormaskiner	[-68]
5b-14/01	Vridanordningar för hammarbormaskiner med reffelstång och spärranordningar	[-68]
5b-14/10	med särskild vridmotor	[-68]
5b-14/20	Andra vridanordningar vid hammarbormaskiner	[-68]
5b-14/30	Anordningar för fasthållning av borren vid hammarbormaskiner	[-68]
5b-15/01	Frammatningsanordningar vid stötbormaskiner eller hammarbormaskiner med skruv och vev	[-68]
5b-15/10	Automatisk frammatning av hammarbormaskiner genom de fram-och-återgående stötarna hos maskinen	[-68]
5b-15/20	med från maskinen manövrerbar tryckluftcylinder för matningen	[-68]
5b-15/30	Andra frammatningsanordningar för stötbormaskiner eller hammarbormaskiner	[-68]
5b-16	Förhindrande eller oskadliggörande av damm vid bergborrning (5b-9/04; 5b-9/07)	[-68]
5b-17	Hållare eller styranordningar för bormaskiner	[-68]
5b-18	Borrar för rotationsborrning	[-68]
5b-19	Borrar för stötborrning	[-68]
5b-20	Borrar med hårdmetallskär	[-68]
5b-21/01	Andra anordningar för upptagning av sprängborrhål; Hjälp-anordningar eller tillbehör för borrning; Borrning under vatten; Bormjölkskratsar	[-68]
5b-21/10	Borrar för utvidgning av borrhål, t.ex. för åstadkommande av sprängkammare i borrhål	[-68]
5b-21/20	Verktyg för utdragning av fastklämda eller avbrutna borrar ur borrhål	[-68]
	Förskrämmning och skärning i gruvor	[-68]
5b-22	Större förskrämningsmaskiner med stänger som efter hela sin längd är besatta med tänder e.d.; Stötmaskiner med tillhörande förskrämningsstänger eller tänder	[-68]
5b-23/01	Större förskrämningsmaskiner med kedjor och enkelt svängbar arm	[-68]
5b-23/10	Större förskrämningsmaskiner med en kring två mot varandra vinkelräta axlar svängbar förskrämningsarm; Större förskrämningsmaskiner med vridbart huvud; Större förskrämningsmaskiner som är vridbara kring sin längdaxel	[-68]

5b-23/20	Bröstkedjemaskiner	[-68]
5b-23/30	Förskrämningskedjor; Kedjehållare eller tänder till förskrämningskedjor, t.ex. tänder användbara för både stänger och kedjor (38a-6/11)	[-68]
5b-23/40	Hjulförskrämningsmaskiner	[-68]
5b-25/01	Mindre förskrämningsmaskiner med i förskrämningsplanet roterande skivor eller hjul (5b-23/40)	[-68]
5b-25/02	Förskrämningsmaskiner med vinkelrätt mot förskrämningsplanet roterande förskrämningshuvud	[-68]
5b-25/03	Stötförskrämningsmaskiner (5b-22)	[-68]
5b-25/04	Stötförskrämningskronor	[-68]
5b-25/05	Stångförskrämningsmaskiner eller kedjeförskrämningsmaskiner monterade på ställningar eller som handapparater	[-68]
5b-26	Förskrämningsmaskiner med förskrämningslinor eller förskrämningsågar; Liknande maskiner med fram-och-återsvängande armar	[-68]
5b-27/01	Förskrämningsmaskiner med stötande eller slående verktyg; Brythammare; Förskrämningshammare; Tryckluftsdrivna kilhammare för förskrämning	[-68]
5b-27/10	Pikar eller andra verktyg för brythammare	[-68]
5b-31/01	Framdrivning av större förskrämningsmaskiner genom tryck mot ett fast stöd	[-68]
5b-31/10	med hjälp av linhaspel eller kedjehaspel	[-68]
5b-31/20	med hjälp av maskinens manövreringsanordningar	[-68]
5b-31/30	Transportvagnar för förskrämningsmaskiner	[-68]
5b-32	Bäranordningar, hållaranordningar eller transportanordningar för mindre förskrämningsmaskiner	[-68]
5b-33	Andra anordningar eller förfaranden för förskrämning eller skärning i gruvor; Förskrämning genom borrar av hål vid hål	[-68]
	Kilning; Lösbrytning	[-68]
5b-34	Sprängkilar, kilningsapparater, lösbrytningsanordningar med rivklor e.d., med tryckande delar som i ett borrhål pressas mot dettas vägg på mekanisk väg	[-68]
5b-35/01	Kilning med tryckvatten, t.ex. med vätskestötter; Kilning med tryckluft	[-68]
5b-35/10	Kilning med hydrauliska kolvar som pressas mot borrhålsväggen	[-68]
5b-35/20	Eldsättning eller liknande förfaranden eller anordningar för att luckra eller lösgöra berget genom värmeverkan	[-68]
5b-36/01	Brytmaskiner som samtidigt förskrämmar och lösbryter	[-68]
5b-36/10	Kolbrytningsmaskiner som genom flera förskrämningsränder eller snitt delar kolväggen så att de mellan snitten kvarblivande delarna, av sig själva eller med hjälp av tryckverktyg som följer efter i snitten, fortlöpande bringas att falla ned	[-68]
5b-37	Handkilhammare, släggor, gruvjärn eller andra handverktyg för gruvdrift	[-68]
5b-38	Brytmaskiner för utvinning av block genom förskrämning eller skärning	[-68]
5b-39	Brytmaskiner som avarbetar en vägg i dess helhet med fräsande eller stötande verktyg	[-68]
5b-40	Brytmaskiner som likt plogar i långa svep lösgör kolet i strängar	[-68]
	Dagbrytning	[-68]
5b-41/01	Maskiner för dagbrytning av brunkol e.d. (grävmaskiner 84d)	[-68]
5b-41/10	Anordningar för förskrämning av mellanskikt i dagbrott	[-68]
5b-41/20	Dagbrytningsanläggningar, avrymningsförfaranden eller brytningsförfaranden med transportkranar i samarbete med brytningsanordningar (81e-127)	[-68]
5b-41/30	Dagbrytningsanläggningar eller arbetsförfaranden vid dagbrytning med kabelgrävmaskiner, skrapor, kabelkranar eller linbanor i samarbete med brytningsanordningar (5d-10; 19a-23; 19a-25/00; 20a; 35b-1/30 – 35b-1/32)	[-68]
5b-41/40	Andra anordningar eller arbetsförfaranden vid brytning eller avrymning i dagbrott	[-68]
5b-42/01	Gruvteknisk exploatering av oljesandlager (gasframställning genom avgasning in situ 26a-9)	[-68]

- 5b-42/10 Anordningar för gruvteknisk utvinning av speciella slags mineral e.d., t.ex. salt, svavel eller skiffer [68-]
- 5b-43 Hjälpverktyg eller anordningar för gruvdrift som inte omfattas av 5b-1 – 5b-42/10 [68-]

5b (IPC: E21C) Machinery for, or methods of, mining or quarrying [68-]

Drilling machines [68-]

5b-1/00 Rotary-drilling machines (for deep-drilling 5a; for sinking shafts 5c; for tunnelling 19f; for working stone 80d; for working metal 49a; for woodworking 38b) **[68-]**

- 5b-1/02 . with a continuous rotation of the tool with or without variable speed gearing [68-]
- 5b-1/04 . . with slipping or elastic transmission [68-]
- 5b-1/06 . with a to-and-fro rotation of the tool [68-]
- 5b-1/08 . with an intermittent unidirectional rotation of the tool [68-]
- 5b-1/10 . with a built-in feeding device (feeding devices 5b-5/00) [68-]
- 5b-1/12 . with percussive action superimposed on a continuously-rotating tool always in contact with the working face [68-]
- 5b-1/14 . Rotary core-boring machines; Auger drilling machines (blades or crown bits for auger mining machines 5b-13/04) [68-]

5b-3/00 Drilling machines with reciprocating tool that is intermittently turned when out of contact with the working face **[68-]**

- 5b-3/02 . Machines in which the tool is connected to an impulse member [68-]
- 5b-3/04 . Hammer drilling machines in which the tool is hit by an impulse member [68-]
- 5b-3/06 . Means for driving the impulse member [68-]
- 5b-3/08 . . by a rotating mechanism [68-]
- 5b-3/10 . . . formed as centrifugal hammers [68-]
- 5b-3/12 . . . with spring-mounted reciprocating masses [68-]
- 5b-3/14 . . . with elastic joining of the drive to the push-rod by double buffer springs [68-]
- 5b-3/16 . . by electromagnets [68-]
- 5b-3/18 . . directly by a piston of an internal-combustion engine [68-]
- 5b-3/20 . . directly by liquid pressure [68-]
- 5b-3/22 . . . working with pulses [68-]
- 5b-3/24 . . directly by air, steam, or gas pressure [68-]
- 5b-3/26 . . . working with pulses [68-]
- 5b-3/28 . Intermittent turning of tool obtained by rifled-bar or ratchet device [68-]
- 5b-3/30 . . driven by separate motor [68-]
- 5b-3/32 . with arrangements for automatic stopping when the tool is lifted from the working face or suffers excessive bore resistance (pick hammers 5b-37/24) [68-]
- 5b-3/34 . Arrangements for locking the drill to the hammer or to the machine [68-]

Details of drilling apparatus [68-]

5b-5/00 Devices for feeding tool to working face (feeding devices for metal-boring machines 49a) **[68-]**

- 5b-5/02 . Screw-and-nut feed mechanism [68-]
- 5b-5/04 . Cam, rack, or like feed mechanism [68-]
- 5b-5/06 . Flexible drawing means, e.g. cables [68-]
- 5b-5/08 . Means for driving feed mechanism [68-]
- 5b-5/10 . . Separate motor, e.g. compressed-air motor or cylinder (5b-5/11 takes precedence) [68-]
- 5b-5/11 . . combined with supporting means, e.g. feed legs [68-]
- 5b-5/12 . . Weight or spring drive [68-]
- 5b-5/14 . . Automatic feed by jump or recoil of the drilling machine [68-]
- 5b-5/16 . with arrangements for automatically interrupting the feed when the tool suffers excessive bore resistance [68-]

5b-7/00 Dust eliminating or dust removing while drilling (equipment for preventing the formation of dust by slitting or dislodging machines 5b-35/22; exhausting dust from mines 5d-5/20) **[68-]**

- 5b-7/02 . by exhausting dust-loaded air [68-]

5b-7/04	. using exhaust air from the drill motor for blowing-off the dust	[68-]
5b-7/06	. by foam	[68-]
5b-7/08	. by liquids	[68-]
5b-7/10	. . Liquid flushing installations	[68-]
5b-7/12	. Preventing exhaust air from the drill motor from blowing-off towards the working face	[68-]
5b-9/00	Supporting, guiding or centralising devices for boring rods	[68-]
5b-11/00	Supports or guides for drilling machines; Columns to which the machine is clamped (feed legs 5b-5/11; slitting machines mounted on supports 5b-25/64; guiding, slitting, or dislodging machines 5b-35/08)	[68-]
5b-11/02	. Drill wagons (trucks for slitting or dislodging machines 5b-29/24)	[68-]
5b-13/00	Drill cutting blades, crown bits, or roller-cutter bits (for deep-drilling 5a-9/00); Wear-resisting inserts for blades or bits (uniting inserts to blades or bits 49h-31/04, 49l-3/26; materials 18c, 40b)	[68-]
5b-13/01	. Wear-resisting inserts (5b-13/02, 5b-13/06 to 5b-13/12 take precedence; for deep-drilling 5a-9/36)	[68-]
5b-13/02	. for rotary drilling; for core boring (dislodging machines with rotary drills 5b-27/22; augers for making post-holes for foundation purposes 84c)	[68-]
5b-13/04	. . for auger mining machines with a rotatable and advanceable cutter element having a passage-way for cut material	[68-]
5b-13/06	. for rotary percussion drilling	[68-]
5b-13/08	. for percussion drilling	[68-]
5b-13/10	. for drilling holes for anchor devices	[68-]
5b-13/12	. for drilling approximately vertical holes of large diameter	[68-]
5b-15/00	Boring rods; Joining rods to one another; Joining rods to driving means; Joining rods to bits; Rods with flushing channels (for deep-drilling 5a-17/00, 5a-21/00)	[68-]
5b-15/02	. Bit shanks; Chisel shanks	[68-]
5b-17/00	Bore reamers	[68-]
5b-19/00	Equipment or accessories for use otherwise than in normal drilling, e.g. in boring test holes, sub-aqueous drilling, boring holes for rescue purposes, drift boring	[68-]
5b-19/02	. Devices for extracting jammed or broken drill bits from holes; Magnetic fishing devices for drills	[68-]
5b-19/04	. Devices for removing crown bits from boring rods	[68-]
5b-21/00	Flame piercing (dislodging by fire-setting 5b-37/16; for deep-drilling 5a-7/14)	[68-]
5b-23/00	Enlarging drilled holes; Enlarging by chemical action; Counterboring or forming chambers in boreholes to receive explosive charge	[68-]
	<u>Cutting; Slitting; Dislodging</u>	[68-]
5b-25/00	Cutting machines, i.e. for making slits approximately parallel or perpendicular to the seam (dislodging machines with slitting means 5b-27/02, 5b-27/10, 5b-27/18)	[68-]
5b-25/02	. Machines slitting solely by one or more percussive tools moved through the seam	[68-]
5b-25/04	. . Cutting crowns or other tools (crowns for percussion drilling 5b-13/08)	[68-]
5b-25/06	. Machines slitting solely by one or more cutting-rods or cutting-drums which rotate, move through the seam, and may or may not reciprocate	[68-]
5b-25/08	. . Mountings for the rods or drums	[68-]
5b-25/10	. . Rods; Drums; Picks	[68-]
5b-25/12	. . . Picks (general features of picks 5b-35/18)	[68-]
5b-25/14	. . with equipment for cleaning the slit (associated with cutter chain machines 5b-25/50)	[68-]

5b-25/16	. Machines slitting solely by one or more rotating saws, cutting discs, or wheels	[68-]
5b-25/18	. . Saws; Discs; Wheels	[68-]
5b-25/20	. Machines slitting solely by one or more reciprocating sawing implements or reciprocating cutter chains; Shaker conveyers with cutting means	[68-]
5b-25/22	. Machines slitting solely by one or more cutter chains moving unidirectionally along jibs	[68-]
5b-25/24	. . with flat jibs only	[68-]
5b-25/26	. . with curved jibs only	[68-]
5b-25/28	. . Chains or chain guides; Picks for same	[68-]
5b-25/30	. . . Chain guides	[68-]
5b-25/32	. . . . specially adapted for curved jibs	[68-]
5b-25/34	. . . Chains	[68-]
5b-25/36	. . . . Couplings for links	[68-]
5b-25/38	. . . Picks (general features of picks 5b-35/18)	[68-]
5b-25/40	. . . . integral with links of chains	[68-]
5b-25/42	. . . . Attachment of the picks to the links of chains	[68-]
5b-25/44	. . . . . by wedge or taper	[68-]
5b-25/46	. . . . . by resilient means	[68-]
5b-25/48	. . . . . by means of screws or pins	[68-]
5b-25/50	. . with equipment for cleaning the slit (associated with rotary-rod or rotary-drum machines 5b-25/14)	[68-]
5b-25/52	. Machines incorporating two or more of the slitting means according to groups 5b-25/02, 5b-25/06, 5b-25/16, 5b-25/20 and 5b-25/22	[68-]
5b-25/54	. Slitting by unguided cutter-cables or cutter-chains or by unguided tools drawn along the working face by cables, etc. (dislodging by planing means 5b-27/32; propulsion by haulage cables 5b-29/14)	[68-]
5b-25/56	. Slitting by cutter-cables or cutter-chains or by tools drawn along the working face by cables, etc. and guided parallel to the face, e.g. by a conveyer, by a guide parallel to a conveyer (pressing the conveyer equipped with tools toward the working face 5b-35/14)	[68-]
5b-25/58	. Machines slitting by drilling hole-on-hole	[68-]
5b-25/60	. Slitting by jets of water or other liquid	[68-]
5b-25/62	. Machines for making slits approximately perpendicular to the seams either level with, or above or below the level of, the machine	[68-]
5b-25/64	. Slitting machines guided solely by hand and either carried by hand or mounted on supports (supports or guides for drilling machines 5b-11/00; hand-held power-operated tools 5b-37/22)	[68-]
5b-25/66	. Machines for making slits with additional arrangements for drilling	[68-]
5b-25/68	. Machines for making slits combined with equipment for removing, e.g. by loading, material won by other means (slitting machines combined with planing means 5b-27/18; removing chippings 5b-35/20)	[68-]
5b-27/00	Machines which completely free the mineral from the seam	[68-]
5b-27/01	. specially adapted for removing overhanging coal	[68-]
5b-27/02	. solely by slitting (rods, drums, picks for same 5b-25/10; saws, discs, wheels 5b-25/18; chains, chain guides, picks for same 5b-25/28)	[68-]
5b-27/04	. . by a single chain guided on a frame with or without auxiliary slitting means	[68-]
5b-27/06	. . . with a slewing frame	[68-]
5b-27/08	. . with additional means for cutting the mineral into blocks	[68-]
5b-27/10	. by both slitting and breaking-down	[68-]
5b-27/12	. . breaking-down effected by acting on the vertical face of the mineral, e.g. by percussive tools	[68-]
5b-27/14	. . breaking-down effected by force or pressure applied to side of slit, e.g. by wedges (breaking-down by means inserted in boreholes 5b-37/00)	[68-]
5b-27/16	. . . with means for both slitting and breaking-down	[68-]
5b-27/18	. by both slitting and planing	[68-]
5b-27/20	. Mineral freed by means not involving slitting	[68-]
5b-27/22	. . by rotary drills with breaking-down means, e.g. wedge-shaped drills	[68-]
5b-27/24	. . by milling means acting on the full working face	[68-]
5b-27/26	. . by closely adjacent cutter-chains acting on the full working face	[68-]
5b-27/28	. . by percussive drills with breaking-down means, e.g. wedge-shaped tools	[68-]

5b-27/30	. . . by jaws, buckets, or scoops that scoop-out the mineral	[68-]
5b-27/32	. . . by adjustable or non-adjustable planing means with or without loading arrangements (by percussed planing means 5b-27/46)	[68-]
5b-27/34	. . . Machine propelled along the working face by cable or chain	[68-]
5b-27/35	. . . . Ram-ploughs	[68-]
5b-27/36	. . . Machine self-propelled along the working face	[68-]
5b-27/38	. . . Machine stationary while planing in an arc	[68-]
5b-27/40	. . . Machine and its planing tool making alternative step-wise movements along the working face	[68-]
5b-27/42	. . . combined with scraper or collector box	[68-]
5b-27/44	. . . Planing knives	[68-]
5b-27/46	. . by percussed planing means	[68-]
5b-29/00	Propulsion of machines for slitting or completely freeing the mineral from the seam	[68-]
5b-29/02	. by means on the machine exerting a thrust against fixed supports	[68-]
5b-29/04	. by cable or chains	[68-]
5b-29/06	. . anchored at one or both ends to the mine working	[68-]
5b-29/08	. . . Anchoring arrangements (for anchoring of conveyers only 5d-13/00)	[68-]
5b-29/10	. . . Cable or chain co-operating with a winch or the like on the machine	[68-]
5b-29/12	. . . Machines propelled by thrust or pull against a part alternately anchored to, and released from a cable or chain	[68-]
5b-29/14	. . by haulage cable or chain pulling the machine along the working face	[68-]
5b-29/16	. . . Winches or other means for pulling cable or chain (winches per se 35c)	[68-]
5b-29/18	. . . Coupling and uncoupling machine to cable or chain	[68-]
5b-29/20	. . with safety devices operating in the event of breakage of the cable or chain	[68-]
5b-29/22	. by wheels, endless tracks, or the like	[68-]
5b-29/24	. . Trucks carrying the machine while working	[68-]
5b-29/26	. . . with means for adjustably positioning the machine on the truck	[68-]
5b-29/28	. . . . adjusting the height of the whole machine	[68-]
5b-31/00	Driving means incorporated in machines for slitting or completely freeing the mineral from the seam	[68-]
5b-31/02	. for cutting or breaking-down devices	[68-]
5b-31/04	. . imparting both a rotary and reciprocating motion	[68-]
5b-31/06	. . actuated by an endless cable or chain	[68-]
5b-31/08	. for adjusting parts of the machines	[68-]
5b-31/10	. for slewing parts of the machines	[68-]
5b-31/12	. Component part	[68-]
5b-33/00	Trucks or other devices for transporting machines for slitting or completely freeing the mineral from the seam	[68-]
5b-33/02	. with equipment for loading or unloading the machine on to or from the truck	[68-]
5b-35/00	Miscellaneous items relating to machines for slitting or completely freeing the mineral from the seam	[68-]
5b-35/02	. Locking equipment for slewable parts	[68-]
5b-35/04	. Safety devices (operating in the event of breakage of a haulage cable or chain 5b-29/20)	[68-]
5b-35/06	. Equipment for positioning the whole machine in relation to its substructure	[68-]
5b-35/08	. Guiding the machine	[68-]
5b-35/10	. . by feelers contacting the working face	[68-]
5b-35/12	. . along a conveyer for the cut mineral	[68-]
5b-35/14	. . . Equipment for pressing the conveyer towards the working face	[68-]
5b-35/16	. . by making use of the timbering, filling, or other supports	[68-]
5b-35/18	. General features of picks, e.g. use of special materials (picks for slitting machines 5b-25/12, 5b-25/38)	[68-]
5b-35/20	. General features of equipment for removal of chippings, e.g. for loading on conveyer	[68-]
5b-35/22	. Equipment for preventing the formation of, or for removal of, dust (removing dust while drilling 5b-7/00)	[68-]

5b-35/24	. Remote control specially adapted for machines for slitting or completely freeing the mineral (control in general 42r)	[68-]
5b-37/00	Other methods or devices for dislodging with or without loading (breaking-down by means inserted in slits 5b-27/14)	[68-]
5b-37/02	. by wedges	[68-]
5b-37/04	. by devices with parts pressed mechanically against the wall of a borehole	[68-]
5b-37/06	. by making use of hydraulic or pneumatic pressure in a borehole	[68-]
5b-37/08	. . Devices with pistons, plungers, etc. pressed locally against the wall of the borehole	[68-]
5b-37/10	. . Devices with expanding elastic casings	[68-]
5b-37/12	. . by injecting into the borehole a liquid, either initially at high pressure or subsequently subjected to high pressure, e.g. by pulses or by explosive cartridges acting on the liquid (slitting by jets of water 5b-25/60; blasting by explosives 78e)	[68-]
5b-37/14	. . by compressed air; by gas blast; by gasifying liquids	[68-]
5b-37/16	. by fire-setting or by similar methods based on a heat effect (flame piercing 5b-21/00)	[68-]
5b-37/18	. by electricity	[68-]
5b-37/20	. by ultrasonics	[68-]
5b-37/22	. Hand tools or hand-held power-operated tools specially adapted for dislodging minerals (slitting machines guided solely by hand 5b-25/64)	[68-]
5b-37/24	. . Pick hammers (drilling machines with reciprocating tool 5b-3/00; pneumatic hammers in general 87b)	[68-]
5b-37/26	. Chisels or other cutting tools not mentioned before	[68-]
5b-39/00	Devices for testing in situ the hardness or other properties of minerals, e.g. for giving information as to the selection of suitable mining tools	[68-]
<u>Methods of mining or quarrying; Open-pit mining; Layouts therefor</u>		[68-]
5b-41/00	Methods of mining with or without movable mining chambers or shields (working shields 5c-19/00); Lay-outs	[68-]
5b-41/02	. for brown coal	[68-]
5b-41/04	. for hard coal	[68-]
5b-41/06	. for ores	[68-]
5b-41/08	. for rock salt; for potash salts (obtaining by dissolving out of boreholes 5a-43/28)	[68-]
5b-41/10	. for oil-bearing deposits	[68-]
5b-41/12	. for stone, e.g. marble	[68-]
5b-41/14	. for other specified minerals, e.g. gold, mercury, other heavy metals, sulphur or slate; for clay	[68-]
5b-43/00	Methods for preparing for the gasification of coal underground (methods for generating gas 10a, 26a)	[68-]
5b-45/00	Methods of mining placers; Hydraulic monitors or other hydraulic machines for obtaining minerals out of alluvial deposits	[68-]
5b-47/00	Machines for obtaining, or the removal of materials in open-pit mines (obtaining peat 5b-49/00)	[68-]
5b-47/02	. for coal, brown coal or the like (dredgers 84d)	[68-]
5b-47/04	. . Conveyer bridges used in co-operation with the winning apparatus (overburden conveyer bridges 81e)	[68-]
5b-47/06	. . Cableway conveyers used in co-operation with the winning apparatus (underground hauling 5d-13/00)	[68-]
5b-47/08	. . Devices for cutting-out partings, e.g. layers of sand between seams of coal	[68-]
5b-47/10	. for quarrying stone, sand, gravel or clay	[68-]
5b-49/00	Obtaining peat; Machines therefor (treating peat 10a, 10c, 82a)	[68-]
5b-49/02	. by excavating	[68-]
5b-49/04	. by digging in the form of peat sods	[68-]

5c Upptagningsarbeten eller tillredningsarbeten i gruvor, t.ex. utförande av schakt, sänkningar, stigschakt, orter, tvärslag; Brytningsmetoder; Förbyggnader (5d-4) [-68]

5c-1/01	Schaktsänkning i allmänhet; Vattenundanhållning i samband med schaktsänkning	[-68]
5c-1/20	Schaktsänkning med sänkkropp (84c-3; 84c-23/00)	[-68]
5c-1/30	Schaktsänkning enligt försteningsmetoden (84c-6; 84c-3/14)	[-68]
5c-2	Schaktsänkning enligt frysmetoden (84c-1; 84c-3/00)	[-68]
5c-3	Schaktborrar (5a; 5b; 84c-1; 84c-17/14; 45f-4/09)	[-68]
5c-4	Ortdrivning i allmänhet (tunnelframställning genom framdrivning av sköldar 19f-2, 19f-3/02)	[-68]
5c-5	Ortborrar; Ortborrningsmaskiner (tunnelborrningsmaskiner 19f-3, 19f-3/04; maskiner eller borrar för upptagning av sprängborrhål vid ortdrivning 5b-1 – 5b-21/20)	[-68]
5c-6	Upptagning av stigschakt; Borranordningar för upptagning av stigschakt	[-68]
5c-7	Brytningsmetoder (dagbrytning 5b-41)	[-68]
5c-8	Förbyggnader i schakt	[-68]
5c-9/01	Förbyggnader av allmänt slag i orter (19f-1; 19f-3/00)	[-68]
5c-9/10	Ortförbyggnader av järn	[-68]
5c-9/20	Knäförbindningar	[-68]
5c-9/30	Förbindningar mellan kappa och ben	[-68]
5c-10/01	Gruvstämplingar (37e-13/03)	[-68]
5c-10/10	Anordningar för avlägsnande av stämplingar	[-68]
5c-11	Säkerhetsanordningar mot nedfallande berg eller kol vid brytning eller ortdrivning	[-68]

5c (IPC: E21D) Shafts; Sinking shafts; Galleries; Lining galleries [-68-]

Shafts [-68-]

5c-1/00 Sinking shafts [-68-]

5c-1/02	. by hand	[-68-]
5c-1/03	. mechanically (5c-1/08 takes precedence)	[-68-]
5c-1/04	. . with grabs	[-68-]
5c-1/06	. . with shaft-boring cutters (drilling machines 5a, 5b)	[-68-]
5c-1/08	. while moving the lining downwards	[-68-]
5c-1/10	. Preparation of the ground	[-68-]
5c-1/12	. . by freezing	[-68-]
5c-1/14	. . . Freezing apparatus	[-68-]
5c-1/16	. . by petrification (grouting anchoring-bolts 5c-20/02)	[-68-]

5c-3/00 Raising shafts, i.e. working upwards from the bottom [-68-]

5c-5/00 Lining shafts [-68-]

5c-5/01	. using prefabricated lining lowered into a hole filled with liquid or viscous mass	[-68-]
5c-5/012	. use of fluid-tight or anti-friction material on outside of, or between, lining layers	[-68-]
5c-5/016	. Bearer curbs	[-68-]
5c-5/02	. with wood (5c-5/01, 5c-5/012, 5c-5/016 take precedence)	[-68-]
5c-5/04	. with brick, concrete, stone, or similar building materials (5c-5/01, 5c-5/012, 5c-5/016 take precedence)	[-68-]
5c-5/06	. with iron or steel (5c-5/01, 5c-5/012, 5c-5/016 take precedence)	[-68-]
5c-5/08	. . in the form of profiled parts	[-68-]
5c-5/10	. . in the form of tubbing	[-68-]
5c-5/11	. with combinations of different materials, e.g. wood, metal or concrete (5c-5/01, 5c-5/012, 5c-5/016 take precedence)	[-68-]
5c-5/12	. Accessories for making shaft linings, e.g. suspended cradles or shutterings	[-68-]

5c-7/00 Shaft equipment, e.g. timbering within the shaft [-68-]

5c-7/02	. Arrangement of guides for cages in shafts; Connection of guides for cages to shaft walls (guides or shoes fixed on cages 35a)	[-68-]
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Galleries		[68-]
5c-9/00	Driving galleries, e.g. using ripping machines (driving-machines 5b-25/00 to 5b-35/24, especially 5b-27/00; drift boring 5b-19/00)	[68-]
5c-9/02	. Driving inclined galleries	[68-]
5c-9/04	. Driving galleries through loose materials	[68-]
5c-11/00	Lining galleries, e.g. supporting linings	[68-]
5c-11/02	. with wood	[68-]
5c-11/03	. . using timber-setting machines	[68-]
5c-11/04	. with building materials	[68-]
5c-11/05	. . using compressible insertions	[68-]
5c-11/06	. . with bricks	[68-]
5c-11/07	. . . using brick-laying machines	[68-]
5c-11/08	. . preformed concrete or other lagging slabs	[68-]
5c-11/10	. . with concrete cast in situ; Shuttering or other equipment adapted therefor	[68-]
5c-11/12	. . Temporary supports for use during building; Accessories	[68-]
5c-11/14	. with iron or steel, e.g. with auxiliary parts of other materials or supporting rings	[68-]
5c-11/16	. . Linings specially shaped for galleries of irregular cross-section (road-head supports connected to working-face supports 5c-15/00, 5c-17/00, 5c-23/00)	[68-]
5c-11/18	. . Arch members	[68-]
5c-11/20	. . . Special cross-sections, e.g. corrugated	[68-]
5c-11/22	. . . Clamps or other yieldable means for interconnecting adjacent arch members either rigidly, or allowing arch member parts to slide when subjected to excessive pressure	[68-]
5c-11/24	. . . Knuckle joints or links between arch members	[68-]
5c-11/26	. . . Shoes for connecting arch members to longitudinal struts	[68-]
5c-11/28	. . Longitudinal struts	[68-]
5c-11/30	. . Bases for lower arch members (for props 5c-15/54)	[68-]
5c-11/32	. . Laggings	[68-]
5c-11/34	. . Joints between vertical props and horizontal top bars (end caps forming part of the props 5c-15/54)	[68-]
5c-13/00	Driving or making large working spaces, e.g. for pumps, for loading (driving-machines 5b-25/00 to 5b-35/24)	[68-]
5c-13/02	. Methods	[68-]
5c-13/04	. Special equipment; Accessories	[68-]
Working-face supports		[68-]
5c-15/00	Props (in the building art 37e-25/00); Chocks	[68-]
5c-15/02	. Non-telescopic props	[68-]
5c-15/04	. . with wooden prop parts joined by double conical connectors	[68-]
5c-15/06	. . with parts joined by a lock, with or without slight axial adjustability	[68-]
5c-15/08	. . . with toggle joint connection	[68-]
5c-15/10	. . . with dog-clutch or pin-and-hole connection	[68-]
5c-15/12	. . . with locking devices located near head or foot	[68-]
5c-15/14	. Telescopic props (general means for fixing telescopic parts together 47a)	[68-]
5c-15/15	. . Means counteracting entry of dirt; Built-in cleaning devices	[68-]
5c-15/16	. . with parts held together by positive means, with or without relative sliding movement when the prop is subject to excessive pressure	[68-]
5c-15/18	. . . with one part resting on a supporting medium, e.g. rubbish, sand, bitumen or lead, located in the other part, with or without expulsion or displacement of the medium upon excessive pressure	[68-]
5c-15/20	. . . with pawl, pin, cross-piece, etc. engaging with ratchet teeth, notches, holes, etc. spaced apart at intervals	[68-]
5c-15/22	. . . with member, pin, cross-piece, etc. ruptured, sheared through, or permanently deformed upon excessive pressure	[68-]
5c-15/24	. . . with axial screw-and-nut, rack-and-worm or like mechanism	[68-]
5c-15/26	. . . . with screw, worm, etc. not self-locking but normally prevented from rotation by friction members which slip upon excessive pressure	[68-]

5c-15/28	. . with parts held relatively to each other by friction or gripping, e.g. using wedges	[68-]
5c-15/30	. . . by means expanded or contracted by pressure applied through the medium of a fluid or quasi-fluid, e.g. rubber	[68-]
5c-15/32	. . . by a deformable collar	[68-]
5c-15/34	. . . by axially-moving balls, rollers, etc.	[68-]
5c-15/36	. . . by a tiltable collar surrounding one or both parts	[68-]
5c-15/38	. . . with longitudinally-divided upper or lower prop parts, e.g. interfitting laminations	[68-]
5c-15/40	. . . Collar or other support gripped to one or both parts by toggle-action, cam, or other member pivoted or similarly mounted	[68-]
5c-15/42	. . . with special parts to influence the friction	[68-]
5c-15/43	. . . Details of wedges (friction linings or pads 5c-15/42)	[68-]
5c-15/44	. Hydraulic, pneumatic, or hydraulic-pneumatic props	[68-]
5c-15/45	. . . having closed fluid system, e.g. with built-in pumps or accumulators	[68-]
5c-15/46	. . with load-measuring devices; with alarm devices	[68-]
5c-15/48	. Chocks or the like	[68-]
5c-15/50	. Component parts or details of props (5c-15/43, 5c-15/58, 5c-15/60 take precedence)	[68-]
5c-15/502	. . Prop bodies characterised by their shape, e.g. of specified cross-section	[68-]
5c-15/51	. . specially adapted to hydraulic, pneumatic, or hydraulic-pneumatic props, e.g. arrangements of relief valves	[68-]
5c-15/52	. . Extensible units located above or below standard props	[68-]
5c-15/54	. . Details of the ends of props (for permitting step-by-step movement 5c-23/06)	[68-]
5c-15/55	. . . of prop heads	[68-]
5c-15/56	. . Details of locks of telescopic props	[68-]
5c-15/58	. Devices for setting props	[68-]
5c-15/582	. . for mechanical props	[68-]
5c-15/59	. . for hydraulic, pneumatic, or hydraulic-pneumatic props	[68-]
5c-15/60	. Devices for withdrawing props or chocks	[68-]
5c-17/00	Caps for supporting mine roofs	[68-]
5c-17/01	. characterised by the shape of the cap, e.g. of specified cross-section	[68-]
5c-17/02	. Cantilever extension or similar protecting devices	[68-]
5c-17/022	. . Auxiliary devices for temporary support of roof-supporting beams whilst assembling	[68-]
5c-17/03	. . Brackets for roof-supporting bars	[68-]
5c-17/04	. . for use in longwall working	[68-]
5c-17/05	. . . hydraulically extensible	[68-]
5c-17/054	. . . hydraulically pivotable	[68-]
5c-17/06	. . for use in drifting galleries	[68-]
5c-17/08	. . Cap joints for obtaining a coal-face free of pit-props	[68-]
5c-17/082	. . . of sliding type	[68-]
5c-17/086	. . . of articulated type	[68-]
5c-17/10	. Details of mine caps for engaging the tops of pit-props, with or without retaining-plates; Retaining-plates	[68-]
5c-19/00	Working shields; Protective covers for working space	[68-]
5c-19/02	. for use in longwall working	[68-]
5c-19/04	. for use in drifting galleries	[68-]
5c-20/00	Setting anchoring-bolts	[68-]
5c-20/02	. with provisions for grouting	[68-]
5c-21/00	Anchoring-bolts for roof, floor, or shaft-lining protection	[68-]
5c-21/02	. having means for indicating tension (screwed connections specially modified for indicating tensile load 47a1-31/02)	[68-]

5c-23/00	Mine roof supports for step-by-step movement, e.g. in combination with provisions for shifting of conveyers, mining machines, or guides therefor (shifting of mine conveyers per se at the working face 5d-13/08) [68-]
5c-23/02	. Special mine caps or special tops of pit-props for permitting step-by-step movement [68-70]
5c-23/04	. Structural features of the supporting construction, e.g. linking members between adjacent frames or sets of props, means for counteracting lateral sliding on inclined floor (5c-23/14 takes precedence) [70-]
5c-23/06	. . Special mine caps or special tops of pit-props for permitting step-by-step movement [68-]
5c-23/08	. Advancing mechanisms (5c-23/16 takes precedence) [70-]
5c-23/10	. . with advancing-devices separate from the supporting construction [70-]
5c-23/12	. Control, e.g. using remote control (5c-23/16 takes precedence) [70-]
5c-23/14	. . Effecting automatic sequential movement of supports, e.g. one behind the other [70-]
5c-23/16	. Hydraulic or pneumatic features, e.g. circuits, arrangement or adaptation of valves, setting or retracting devices [70-]
5c-23/18	. . of advancing mechanisms [70-]
5c-23/20	. . . for sequential movement, e.g. one behind the other [70-]
5c-23/22	. . . incorporated in mine caps [70-]
5c-23/24	. . . the advancing mechanisms being separate from the supporting construction [70-]
5c-23/26	. . Hydraulic or pneumatic control [70-]

5d **Ventilation i gruvor; Förebyggande åtgärder mot gruvolyckor; Bergtransport; Igensättning e.d. (blåsmaskiner eller ventilatorer 27)** **[-68]**

Ventilation i gruvor **[-68]**

5d-1	Ventilationstrummor; Skiljeväggar; Luftfördämningar [-68]
5d-2/01	Luftdörrar [-68]
5d-2/10	Anordningar för automatiskt öppnande av luftdörrar [-68]
5d-3/01	Luftslussar för gruvventilation (luftslussar vid grundläggningsarbeten för byggnader 84c-3, 5d-23/00) [-68]
5d-3/10	Schakttak [-68]
5d-4	Förfaranden eller anordningar för att kyla eller hålla luften kall i gruvor [-68]
5d-5/01	Andra anordningar eller förfaranden för ventilation i gruvor [-68]
5d-5/10	Bortsugning av damm (5b-16) [-68]

Förebyggande av gasexplosioner, koldammsexplosioner eller gruveldsvådor; Avhjälpan av deras följder (anordningar för påvisande av gruvgas 42l-4/01 – 42l-16) **[-68]**

5d-6/01	Transportabla anordningar för vätskebesprutning [-68]
5d-6/10	Sprutanordningar utlösbara i samband med sprängskott [-68]
5d-6/20	Sprutanordningar utlösbara vid explosion [-68]
5d-6/30	Andra stationära anordningar för vattenbesprutning [-68]
5d-6/40	Andra vätskor eller kemikalier för besprutning [-68]
5d-7/01	Transportabla blåsanordningar för bergmjöl [-68]
5d-7/10	Blåsanordningar för bergmjöl, utlösbara i samband med sprängskott [-68]
5d-7/20	Blåsanordningar för bergmjöl, utlösbara vid explosion [-68]
5d-7/30	Andra stationära blåsanordningar eller spridare för bergmjöl [-68]
5d-7/40	Sammansättning av bergmjöl [-68]
5d-8	Räddningsanordningar, räddningskammare, flyktvägar e.d. (andningsapparater 61a-29; upplivningsanordningar 30k-13/04) [-68]
5d-9/01	Andra anordningar eller förfaranden för förhindrande av explosioner eller eldsvådor i gruvor eller för avhjälpan av deras verkningar [-68]
5d-9/10	Anordningar för bortsugning av koldamm eller gas [-68]
5d-9/20	Branddörrar [-68]

5d-9/30	Anordningar för skydd mot gnistbildning vid maskiner i gruvor	[68-]
	Bergtransport (uppfordring i schakt 35a)	[-68]
5d-10/01	Bergtransport i orter (linbanor eller kedjebanor, drivanordningar 20a; elektriska banor 20k, 20l)	[68-]
5d-10/50	Transport på lutande plan eller i kortare uppfordringsschakt (hissar 35a; vinschar 35c)	[68-]
5d-11	Transport ur arbetsrum (skakrännor eller band för allmän användning 81e; skraphasplar 35c)	[68-]
5d-12	Lastningsmaskiner för underjordisk brytning (allmänt 81e)	[68-]
5d-13	Andra anordningar för transport i eller ur gruvor (transport i dagbrott 5b-41/01 – 5b-41/40, 81e-126, 81e-127)	[68-]
5d-14/01	Igensättning i allmänhet (tippvagnar för allmän användning 20c-13 – 20c-16, 63a; vagnappare 81e-92 – 81e-103)	[68-]
5d-14/10	Igensättningsmaskiner	[68-]
5d-15/01	Igensättningsspolning	[68-]
5d-15/10	Igensättningsblåsning	[68-]
5d-17	Fördelning av drivkraften i gruvor; Rörledningvägar; Ledningsanslutningar (spolrör eller blåsrör för igensättning 5d-15/01, 5d-15/10)	[68-]
5d-18	Andra inte tidigare nämnda anordningar för gruvsdrift, t.ex. dammdörrar, förborrar, gruvbelysning eller förhindrande av svämsand	[68-]

5d (IPC: E21F) Ventilation; Safety devices; Transport; Filling-up; Rescue [68-]

Distribution of ventilating currents in mines [68-]

5d-1/00 Distribution of ventilating currents (ventilating tunnels 17f-7/02) [68-]

- 5d-1/02 . Test models [68-]
- 5d-1/04 . Air ducts (suspension devices 5d-17/02) [68-]
- 5d-1/06 . . Duct connections (tube connections in general 47f1) [68-]
- 5d-1/08 . Special arrangements or constructions of ventilators in connection with air ducts (ventilators in general 27c) [68-]
- 5d-1/10 . Air doors [68-]
- 5d-1/12 . . Devices for automatically opening air doors [68-]
- 5d-1/14 . Air partitions; Air dams; Air-locks (air-locks for foundations 84c) [68-]
- 5d-1/16 . Shaft covers [68-]

5d-3/00 Cooling or drying of air (air-conditioning rooms or spaces in general 36d) [68-]

Safety devices (flue-gas indicators 42l); Rescue devices [68-]

5d-5/00 Means or methods for preventing, binding, depositing, or removing dust; Preventing explosions or mine fires [68-]

- 5d-5/02 . by wetting or spraying [68-]
- 5d-5/04 . . Spraying barriers (spraying in general 85g) [68-]
- 5d-5/06 . . Fluids used for spraying [68-]
- 5d-5/08 . Rock dusting of mines; Depositing other protective substances [68-]
- 5d-5/10 . . Devices for rock dusting [68-]
- 5d-5/12 . . Composition of rock dust [68-]
- 5d-5/14 . Fluid barriers or rock dusters made to work by, or at the same time as, shots or explosions [68-]
- 5d-5/16 . Layers of hygroscopic or other salts deposited on floors, walls, etc. for binding dust; Depositing of such layers [68-]
- 5d-5/18 . Impregnating walls, etc., with liquids for binding dust [68-]
- 5d-5/20 . Drawing-off or depositing dust (dust-removing while drilling 5b-7/00, while slitting 5b-35/22) [68-]

5d-7/00 Methods or devices for drawing-off gases with or without subsequent use of the gas for any purpose [68-]

5d-9/00	Devices preventing sparking of machines or apparatus (preventing sparking of electric machines or apparatus 21d)	[68-]
5d-11/00	Rescue devices or other safety devices, e.g. safety chambers, escape ways (breathing aids for curative purposes 30k-13; respiratory apparatus 61a; revival apparatus 61a)	[68-]
5d-13/00	Transport specially adapted to underground conditions (mine cars 20c; transport in general, loading 81e)	[68-]
5d-13/02	. in galleries	[68-]
5d-13/04	. in gravity inclines; in staple or inclined shafts	[68-]
5d-13/06	. at or adjacent to the working face	[68-]
5d-13/08	. Shifting conveyers or other transport devices from one location at the working face to another (guiding mining machines along conveyers for the cut mineral 5b-35/12; in combination with mine roof supports for step-by-step movement 5c-23/00)	[68-]
5d-15/00	Methods or devices for placing filling-up materials in underground workings	[68-]
5d-15/02	. Supporting means, e.g. shuttering, for filling-up materials	[68-]
5d-15/04	. . Stowing mats; Goaf wire netting; Partition walls	[68-]
5d-15/06	. Filling-up mechanically	[68-]
5d-15/08	. Filling-up hydraulically or pneumatically (hydraulic or pneumatic transport devices 81e; pipes, pipe couplings 47f1)	[68-]
5d-15/10	. . Hydraulic or pneumatic filling-up machines	[68-]
5d-17/00	Methods or devices for use in mines, not covered elsewhere (mine lighting 4a, 21f)	[68-]
5d-17/02	. Suspension devices for tubes or the like, e.g. for ventilating ducts (for piping or cables 47f1-3/00 – 47f1-7/00)	[68-]
5d-17/04	. Distributing means for power supply in mines	[68-]
5d-17/06	. . Distributing electric power; Cable networks; Conduits for cables	[68-]
5d-17/08	. . Distributing hydraulic power; Pipe networks for hydraulic liquid	[68-]
5d-17/10	. . Distributing pneumatic power; Pipe networks for compressed air	[68-]
5d-17/12	. Dam doors	[68-]
5d-17/14	. Mine grainage	[68-]
5d-17/16	. Modification of mine passages or chambers for storage purposes, especially for liquids or gases	[68-]
5d-17/18	. Special adaptations of signalling or alarm devices (mine lifts 35a)	[68-]