

# CPC COOPERATIVE PATENT CLASSIFICATION

## E FIXED CONSTRUCTIONS

### EARTH DRILLING; MINING

#### E21 EARTH OR ROCK DRILLING; MINING

#### E21F SAFETY DEVICES, TRANSPORT, FILLING-UP, RESCUE, VENTILATION, OR DRAINING IN OR OF MINES OR TUNNELS

##### WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

##### Ventilation of mines or tunnels

1/00	<b>Ventilation of mines or tunnels; Distribution of ventilating currents</b> (ventilating rooms or spaces in general <a href="#">F24F</a> )	5/06	. . Fluids used for spraying
1/003	. {Ventilation of traffic tunnels (during construction <a href="#">E21F 1/04</a> - <a href="#">E21F 3/00</a> )}	5/08	. Rock dusting of mines; Depositing other protective substances
1/006	. {Ventilation at the working face of galleries or tunnels}	5/10	. . Devices for rock dusting
1/02	. Test models (analogue computers therefor <a href="#">G06G 7/50</a> )	5/12	. . Composition of rock dust
1/04	. Air ducts (suspension devices <a href="#">E21F 17/02</a> )	5/14	. Fluid barriers or rock dusters made to work by, or at the same time as, shots or explosions
1/06	. . Duct connections (tube connections in general <a href="#">F16L</a> )	5/143	. . {Fluid barriers}
1/08	. Ventilation arrangements in connection with air ducts, e.g. arrangements for mounting ventilators ({ <a href="#">E21F 1/003</a> takes precedence}; ventilators in general <a href="#">F04D</a> )	5/146	. . {Rock dusters}
1/085	. . {using compressed gas injectors}	5/16	. Layers of hygroscopic or other salts deposited on floors, walls, or the like, for binding dust; Deposition of such layers (dust-absorbing materials in general <a href="#">C09K 3/22</a> )
1/10	. Air doors ({ <a href="#">E21F 1/003</a> takes precedence; air locks <a href="#">E21F 1/145</a> ; dam doors <a href="#">E21F 17/12</a> }; doors in general <a href="#">E06B</a> )	5/18	. Impregnating walls, or the like, with liquids for binding dust {(injections for improving soil or rock <a href="#">E21D 9/001</a> ; borehole closures, i.e. packers, for use during the injection process <a href="#">E21B 33/12</a> )}
1/12	. . Devices for automatically opening air doors	5/20	. Drawing-off or depositing dust ({dust-removing while drilling <a href="#">E21B 21/011</a> }; while slitting <a href="#">E21C 35/22</a> )
1/14	. Air partitions; Air locks ({ <a href="#">E21F 1/003</a> takes precedence}; dams <a href="#">E21F 17/103</a> ; air locks for foundations <a href="#">E02D</a> )	7/00	<b>Methods or devices for drawing- off gases with or without subsequent use of the gas for any purpose</b>
1/145	. . {Air locks (air doors <a href="#">E21F 1/10</a> ; dam doors <a href="#">E21F 17/12</a> )}	9/00	<b>Devices preventing sparking of machines or apparatus</b> (preventing sparking of electric machines or apparatus <a href="#">H01K</a> , <a href="#">H02K</a> )
1/16	. Shaft covers	11/00	<b>Rescue devices or other safety devices, e.g. safety chambers or escape ways</b> (breathing aids for curative purposes <a href="#">A61H 31/00</a> ; respiratory apparatus <a href="#">A62B 7/00</a> ; breathing apparatus for accidentally buried persons <a href="#">A62B 33/00</a> )
1/18	. Gravity flow ventilation ( <a href="#">E21F 1/02</a> - <a href="#">E21F 1/16</a> take precedence)	13/00	<b>Transport specially adapted to underground conditions</b> (mine cars <a href="#">B61D</a> ; transport in general, loading {unless specially adapted to underground conditions} <a href="#">B65G</a> )
3/00	<b>Cooling or drying of air</b> (air-conditioning rooms or spaces in general <a href="#">F24F</a> )	13/002	. {Crushing devices specifically for conveying in mines}

##### Safety devices (flue-gas indicators [G01N](#)); Rescue devices

5/00	<b>Means or methods for preventing, binding, depositing, or removing dust</b> {(in combination with mining machines <a href="#">E21C 35/22</a> )}; <b>Preventing explosions or fires</b> (dams <a href="#">E21F 17/103</a> ; applying liquids or other fluent materials to surfaces in general <a href="#">B05</a> )	13/004	. {Staff transport system}
5/02	. by wetting or spraying	13/006	. {Equipment transport systems}
5/04	. . Spraying barriers (spray nipples, spraying in general <a href="#">B05B</a> , <a href="#">B05D</a> ; picks with arrangements of fluid-spraying nozzles <a href="#">E21C 35/187</a> )	13/008	. . {for mine roof support units for step-by-step movement}
		13/02	. {Transport of mined mineral} in galleries
		13/025	. . {Shuttle cars}

- 13/04 . . {Transport of mined material} in gravity inclines; in staple or inclined shafts
- 13/042 . . {Vertical hydraulic conveying of coal (conveying by water flow in general [B65G 53/00](#))}
- 13/045 . . {Bunkers specially adapted for mining purposes (chutes in general [B65G 11/00](#))}
- 13/047 . . {comprising helically running channels (chutes of helical form in general [B65G 11/06](#))}
- 13/06 . . {Transport of mined material} at or adjacent to the working face
- 13/061 . . {Chutes and braking conveyors for average and steep slopes, adapted for mining purposes (chutes in general [B65G 11/00](#))}
- 13/063 . . {Loading devices for use in mining}
- 13/065 . . . {Scrapers (digging devices guided by cables [E02F 3/54](#); combined with planing means [E21C 27/42](#))}
- 13/066 . . {Scraper chain conveyors (in general [B65G 19/00](#))}
- 13/068 . . . {Special adaptations for use at the junction of the working face with the gallery, e.g. driving stations coupled to the driving station of the winning machine}
- 13/08 . . Shifting conveyors or other transport devices from one location at the working face to another ([guiding mining machines along conveyors for the cut mineral \[E21C 35/12\]\(#\); in combination with mine roof supports for step-by-step movement \[E21D 23/00\]\(#\)](#))
- 13/083 . . {Conveyor belts removing methods or devices}
- 13/086 . . {Armoured conveyors shifting devices}
- 13/10 . . Anchorings for conveyors
- 15/00** **Methods or devices for placing filling-up materials in underground workings** ([dams \[E21F 17/103\]\(#\) {; chocks made of flexible containers filled with backfilling material \[E21D 15/483\]\(#\)}](#))
- 15/005 . . {characterised by the kind or composition of the backfilling material}
- 15/02 . . Supporting means, e.g. shuttering, for filling-up materials
- 15/04 . . Stowing mats; Goaf wire netting; Partition walls
- 15/06 . . Filling-up mechanically
- 15/08 . . Filling-up hydraulically or pneumatically ([hydraulic or pneumatic transport devices \[B65G\]\(#\); pipes, pipe couplings \[F16L\]\(#\)](#))
- 15/10 . . Hydraulic or pneumatic filling-up machines
- 16/00** **Drainage** ([keeping dry foundation sites or other areas in the ground \[E02D 19/00\]\(#\)](#))
- 16/02 . . of tunnels
- 17/00** **Methods or devices for use in mines or tunnels, not covered elsewhere** ([mine lighting \[F21\]\(#\), \[H05B\]\(#\)](#))
- 17/02 . . Suspension devices for tubes or the like, e.g. for ventilating ducts ([supporting pipes, cables or protective tubing in general \[F16L 3/00\]\(#\) - \[F16L 7/00\]\(#\)](#))
- 17/04 . . Distributing means for power supply in mines
- 17/06 . . . Distributing electric power; Cable networks; Conduits for cables ([circuit arrangements for supplying or distributing electric power in general \[H02J\]\(#\)](#))
- 17/08 . . . Distributing hydraulic power; Pipe networks for hydraulic liquid ([pipe-line systems in general \[F17D\]\(#\)](#))
- 17/10 . . . Distributing pneumatic power; Pipe networks for compressed air ([pipe-line systems in general \[F17D\]\(#\)](#))
- 17/103 . . Dams, e.g. for ventilation
- 17/107 . . inflatable
- 17/12 . . . Dam doors {([air doors \[E21F 1/10\]\(#\); air locks \[E21F 1/145\]\(#\)](#))}
- 17/16 . . Modification of mine passages or chambers for storage purposes, especially for liquids or gases ([storing fluids in natural or artificial cavities or chambers in the earth \[B65G 5/00\]\(#\)](#))
- 17/18 . . Special adaptations of signalling or alarm devices ([for mine lifts \[B66B\]\(#\); gas-sensitive devices \[per se \\[G01N\\]\\(#\\)\]\(#\)](#))
- 17/185 . . . {Rock-pressure control devices with or without alarm devices; Alarm devices in case of roof subsidence ([props with load-measuring devices \[E21D 15/46\]\(#\)](#))}