

# CPC COOPERATIVE PATENT CLASSIFICATION

## E FIXED CONSTRUCTIONS

### EARTH DRILLING; MINING

#### E21 EARTH 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

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|-------------|--|--------------|--|
| <b>1/00</b> | <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="#">E21C 7/00</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> )                                   | <b>7/00</b>  | <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> )}  | <b>9/00</b>  | <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   | <b>11/00</b> | <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)  | <b>13/00</b> | <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> )   |
| <b>3/00</b> | <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

- |             |  |        |   |
|-------------|--|--------|---|
| <b>5/00</b> | <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](#))}