

E21C

MINING OR QUARRYING

Definition statement

This place covers:

Methods or apparatus specific to mining or quarrying.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Repairing, reconditioning, taking-up, grinding, or milling of road or like surface	E01C
Drill bits, bore reamers, core taking devices, drilling pipes or rods, handling, racking or connecting arrangements for drilling pipes or rods, counterboring or enlarging drilled holes, flame drilling, or other drilling apparatus, even though they may be disclosed only for mining or quarrying	E21B
Shafts; Tunnels; Galleries; Large underground chambers	E21D
Safety devices, transport, rescue, ventilation or drainage in or of mines or tunnels	E21F

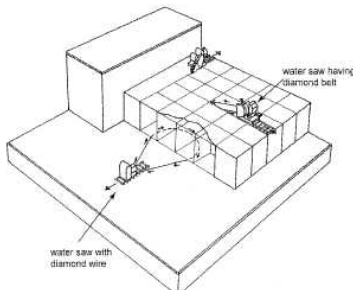
E21C 25/00

Cutting machines, i.e. for making slits approximately parallel or perpendicular to the seam (dislodging machines with slitting means [E21C 27/02](#), [E21C 27/10](#), [E21C 27/18](#))

Definition statement

This place covers:

Machines having cutting means for making a slit or a plurality of slits in the seam, so that the material in the seam can be removed in a subsequent step. Illustrative example:



References

Limiting references

This place does not cover:

Dislodging machines with slitting means	E21C 27/02 , E21C 27/10 , E21C 27/18
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Informative references

Attention is drawn to the following places, which may be of interest for search:

Guiding the machine	E21C 35/08
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E21C 25/14

with equipment for cleaning the slit (associated with cutter chain machines [E21C 25/50](#))

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Machines slitting solely by one or more cutter chains moving unidirectionally along jibs with equipment for cleaning the slit	E21C 25/50
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Special rules of classification

Looping references between [E21C 25/14](#) and [E21C 25/50](#) have been identified. Until this inconsistency is resolved in IPC, the current classification practice in CPC is as follows: both references are considered informative.

E21C 25/50

with equipment for cleaning the slit (associated with rotary-rod or rotary-drum machines [E21C 25/14](#))

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Machines slitting solely by one or more cutting rods or cutting drums which rotate, move through the seam, and may or may not reciprocate with equipment for cleaning the slit	E21C 25/14
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Special rules of classification

Looping references between [E21C 25/50](#) and [E21C 25/14](#) have been identified. Until this inconsistency is resolved in IPC, the current classification practice in CPC is as follows: both references are considered informative.

E21C 25/64

Slitting machines guided solely by hand and either carried by hand or mounted on supports (hand-held power-operated tools [E21C 37/22](#))

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Hand tools or hand-held power-operated tools specially adapted for dislodging minerals	E21C 37/22
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Special rules of classification

Looping references between [E21C 25/64](#) and [E21C 37/22](#) have been identified. Until this inconsistency is resolved in IPC, the current classification practice in CPC is as follows: both references are considered non-limiting.

E21C 27/00

Machines which completely free the mineral from the seam

Definition statement

This place covers:

Machines that can break the mineral by any means that dislodge it completely from the seam.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Guiding the machine	E21C 35/08
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Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

Planer	A fixed-blade device for continuous longwall mining of narrow seams of friable coal; the machine is operated along the coal face, planing a narrow cut from the solid coal as it travels.
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E21C 27/02

solely by slitting (rods, drums, for same [E21C 25/10](#); saws, discs, wheels [E21C 25/18](#); chains, chain guides, for same [E21C 25/28](#))

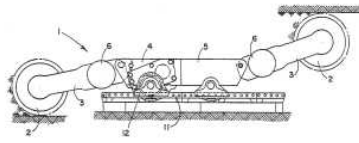
Definition statement

This place covers:

Machines which completely free the mineral from the seam solely by slitting; Shearer loaders. While [E21C 25/00](#) is only for slitting, with the material remaining in place and needing to be removed by other means, in [E21C 27/02](#) the material is slit and removed in one go. The machines of this groups

Definition statement

have e.g. drums with spiral-shaped cutters for slitting and extracting the cut material. Illustrative example:

**E21C 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 [E21C 37/00](#))

References**Informative references**

Attention is drawn to the following places, which may be of interest for search:

Breaking-down by means inserted in boreholes	E21C 37/00
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Special rules of classification

Looping references between [E21C 27/14](#) and [E21C 37/00](#) have been identified. Until this inconsistency is resolved in IPC, the current classification practice in CPC is as follows: the reference to [E21C 37/00](#) is considered informative.

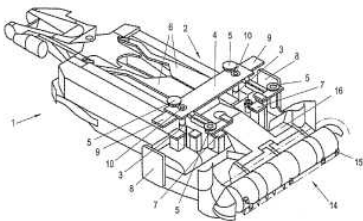
E21C 27/24

by milling means acting on the full working face {, i.e. the rotary axis of the tool carrier being substantially parallel to the working face (similar machines for tunneling [E21D 9/1026](#))}

Definition statement

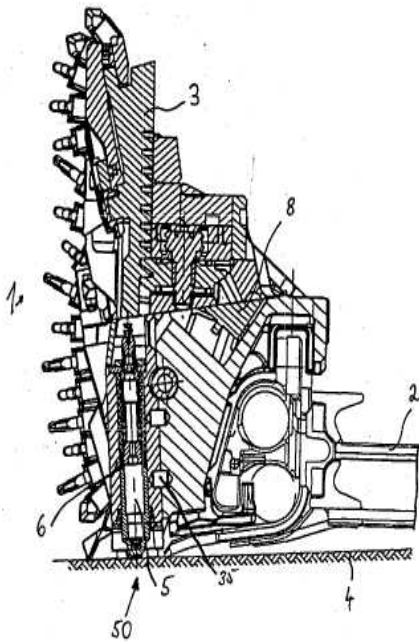
This place covers:

Mineral freed by milling means acting on the full working face not involving slitting; Continuous miners. Illustrative example:



E21C 27/34**Machine propelled along the working face by cable or chain****Definition statement***This place covers:*

Machine propelled along the working face by cable or chain; Coal ploughs. Illustrative example:

**E21C 27/44****Planing knives (mining picks [E21C 35/18](#))****References****Informative references***Attention is drawn to the following places, which may be of interest for search:*

Mining picks	E21C 35/18
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Special rules of classification

Looping references between [E21C 27/44](#) and [E21C 35/18](#) have been identified. Until this inconsistency is resolved in IPC, the current classification practice in CPC is as follows: both references are considered non-limiting.

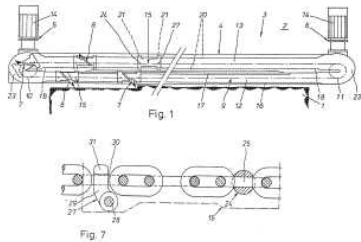
E21C 29/00

Propulsion of machines for slitting or completely freeing the mineral from the seam

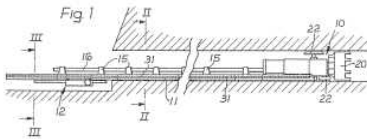
Definition statement

This place covers:

Propulsion of machines for slitting or completely freeing the mineral from the seam; Propulsion of machines along the seam. Illustrative example:



Propulsion of machines into the seam, as in highwall mining. Illustrative example:



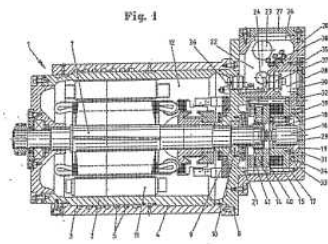
E21C 31/00

Driving means incorporated in machines for slitting or completely freeing the mineral from the seam

Definition statement

This place covers:

Drive units for energising any of the parts forming the machine. Illustrative example:



E21C 33/00

Trucks or other devices for transporting machines for slitting or completely freeing the mineral from the seam

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Equipment transport systems adapted to underground conditions	E21F 13/006
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E21C 35/00

Details of, or accessories for, machines for slitting or completely freeing the mineral from the seam, not provided for in groups [E21C 25/00](#) - [E21C 33/00](#), [E21C 37/00](#) or [E21C 39/00](#)

Definition statement

This place covers:

Specific details of mining machines not disclosed in [E21C 25/00](#) - [E21C 33/00](#).

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Picks for tearing up asphalt	E01C 23/12
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Special rules of classification

Means for placing or orienting the machine are classified in [E21C 35/08](#) and subgroups. Inventions relative to obtaining information about the position or the status of the machine and processing that information to control the machine are classified in [E21C 35/24](#). If the positioning is done in combination with operation of a shield for step-by-step movement, then this aspect is classified in [E21D 23/00](#).

E21C 35/18

Mining picks; Holders therefor (planing knives [E21C 27/44](#))

References

References out of a residual place

Examples of places in relation to which this place is residual:

Planing knives	E21C 27/44
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Informative references

Attention is drawn to the following places, which may be of interest for search:

Tools, e.g. having exchangeable cutter bits, for milling stone or stone-like materials not otherwise provided for	B28D 1/186
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Special rules of classification

Looping references between [E21C 35/18](#) and [E21C 27/44](#) have been identified. Until this inconsistency is resolved in IPC, the current classification practice in CPC is as follows: both references are considered non-limiting.

E21C 35/187

with arrangement of fluid-spraying nozzles (supply of fluid to the nozzles [E21C 35/22](#))

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

supply of fluid to the nozzles	E21C 35/22
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Special rules of classification

Looping references between [E21C 35/22](#) and [E21C 35/187](#) have been identified. Until this inconsistency is resolved in IPC, the current classification practice in CPC is as follows: Reference [E21C 35/22](#) is non-limiting in the subgroup [E21C 35/187](#).

E21C 35/22

Equipment for preventing the formation of, or for removal of, dust (picks with arrangement of fluid-spraying nozzles [E21C 35/187](#); {removing dust while drilling [E21B 21/011](#)})

References

Limiting references

This place does not cover:

Picks with arrangement of fluid-spraying nozzles	E21C 35/187
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Special rules of classification

Looping references between [E21C 35/22](#) and [E21C 35/187](#) have been identified. Until this inconsistency is resolved in IPC, the current classification practice in CPC is as follows: the reference to [E21C 35/187](#) is considered limiting.

E21C 35/24

Remote control specially adapted for machines for slitting or completely freeing the mineral (control in general [G05](#))

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Control in general	G05
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Special rules of classification

Reference [G05](#) is non-limiting in subgroup [E21C 35/24](#). CPC will be corrected once this inconsistency is resolved in IPC.

E21C 37/00

Other methods or devices for dislodging with or without loading (breaking-down by means inserted in slits [E21C 27/14](#))

Definition statement

This place covers:

Techniques for dislodging minerals for mining applications.

References

Limiting references

This place does not cover:

Breaking-down by means inserted in slits	E21C 27/14
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Informative references

Attention is drawn to the following places, which may be of interest for search:

Excavating tunnels by blasting methods	E21D 9/006
Rock blasting	F42D 3/04

Special rules of classification

Looping references between [E21C 37/00](#) and [E21C 27/14](#) have been identified. Until this inconsistency is resolved in IPC, the current classification practice in CPC is as follows: the reference to [E21C 27/14](#) is considered limiting.

E21C 37/22

Hand tools or hand-held power-operated tools specially adapted for dislodging minerals (slitting machines guided solely by hand [E21C 25/64](#))

References

References out of a residual place

Examples of places in relation to which this place is residual:

Slitting machines guided solely by hand and either carried by hand or mounted on supports	E21C 25/64
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Special rules of classification

Looping references between [E21C 37/22](#) and [E21C 25/64](#) have been identified. Until this inconsistency is resolved in IPC, the current classification practice in CPC is as follows: both references are considered non-limiting.

E21C 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

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Indicating devices for use during driving of tunnels	E21D 9/003
Rock pressure control devices	E21F 17/185

E21C 41/00

Methods of underground or surface mining ([E21C 45/00](#) takes precedence);
Layouts therefor (for peat [E21C 49/00](#))

Definition statement

This place covers:

Methods disclosing sequences of steps or combinations of operations of mining.

References

Limiting references

This place does not cover:

Machines for underground mining	E21C 25/00 - E21C 39/00
Methods of hydraulic mining, hydraulic monitors	E21C 45/00
Machines for surface mining	E21C 47/00
Mining methods for obtaining peat	E21C 49/00
Methods of underwater mining	E21C 50/00
Obtaining minerals through a borehole drilled from the surface	E21B 43/28 - E21B 43/29

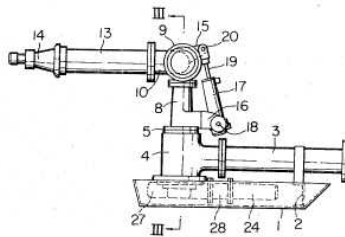
E21C 45/00

Methods of hydraulic mining; Hydraulic monitors ([E21C 25/60](#) takes precedence)

Definition statement

This place covers:

Methods of hydraulic mining; Hydraulic monitors; Excavating alluvial or other mineral deposits by means of high-pressure water jets. Illustrative example:



References

Limiting references

This place does not cover:

Slitting by jets of water	E21C 25/60
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Synonyms and Keywords

In patent documents, the following words/expressions are often used as synonyms:

- "hydraulic mining", "hydraulic excavation"; "hydraulic extraction", "hydroextraction" and "hydrolicking"

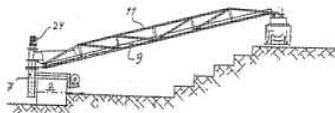
E21C 47/00

Machines for obtaining or the removal of materials in open-pit mines (obtaining peat [E21C 49/00](#))

Definition statement

This place covers:

Machines for obtaining or the removal of materials in open-pit mines. Illustrative example:



References

Limiting references

This place does not cover:

Methods of surface mining	E21C 41/26
Mining methods for obtaining peat	E21C 49/00

Surface transport of mined material	B65G
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E21C 49/00

Obtaining peat; Machines therefor (treating peat [C10F](#))

Definition statement

This place covers:

Methods and machinery for draining and preparing the peat deposit before exploitation, as well as for the extraction of peat.

References

Limiting references

This place does not cover:

Treating peat	C10F
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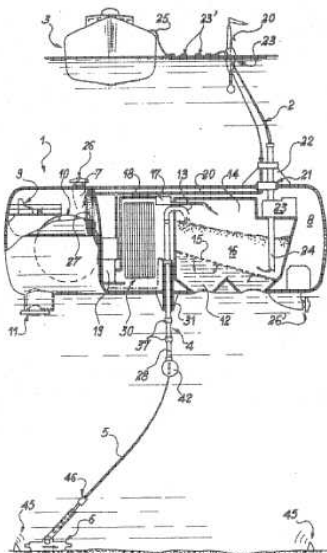
E21C 50/00

Obtaining minerals from underwater, not otherwise provided for (suction dredgers or component parts thereof [E02F 3/88](#); equipment for conveying or separating excavated material [E02F 7/00](#); dippers [G01N 1/12](#))

Definition statement

This place covers:

Methods and machinery for obtaining minerals from sea bodies, such as ocean floors, or lake or river beds.



References

Limiting references

This place does not cover:

Suction dredgers or component parts thereof	E02F 3/88
Equipment for conveying or separating excavated material	E02F 7/00
Dippers	G01N 1/12

E21C 51/00

Apparatus for, or methods of, winning materials from extraterrestrial sources (cosmonautics [B64G](#))

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Cosmonautics	B64G
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Special rules of classification

Looping references between [E21C 51/00](#) and [B64G](#) have been identified. Until this inconsistency is resolved in IPC, the current classification practice in CPC is as follows: the reference to [B64G](#) is considered informative.