E21B

EARTH DRILLING, e.g. DEEP DRILLING (mining, quarrying E21C; making shafts, driving galleries or tunnels E21D); OBTAINING OIL, GAS, WATER, SOLUBLE OR MELTABLE MATERIALS OR A SLURRY OF MINERALS FROM WELLS

Definition statement

This place covers:
Earth drilling, e.g. deep drilling; obtaining oil, gas, water, soluble or meltable materials or a slurry of minerals from wells. This subclass also includes drilling at shallow depths but over extended distances, such as drilling for laying a pipeline under surface obstacles.

References

Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Mining, quarrying</th>
<th>E21C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Making shafts, driving galleries or tunnels</td>
<td>E21D</td>
</tr>
</tbody>
</table>

E21B 1/00

Percussion drilling (drives used in the borehole E21B 4/00)

Definition statement

This place covers:
Machines and methods in which the drilling action is done principally by percussion.

The percussive drive is placed outside of the borehole, and the drilling can be for any depth, including drillholes and mining applications:

Relationships with other classification places

When classifying in groups E21B 1/12 - E21B 1/38, a symbol from one of the following main groups of B25D should also be given:
relationships with other classification places

B25D 9/00 Portable percussive tools with fluid-pressure drives
B25D 11/00 Portable percussive tools with motor drive
B25D 16/00 Portable percussive machines with superimposed rotation
B25D 17/00 Details of, or accessories for, portable power-driven percussive tools

References

Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Reference</th>
<th>CPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drives for drilling, used in the borehole</td>
<td>E21B 4/00</td>
</tr>
</tbody>
</table>

Informative references

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

<table>
<thead>
<tr>
<th>Reference</th>
<th>CPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drives for combined percussion and rotary drilling</td>
<td>E21B 6/00</td>
</tr>
<tr>
<td>Portable drilling rigs</td>
<td>E21B 7/20</td>
</tr>
<tr>
<td>Derricks, masts</td>
<td>E21B 15/00</td>
</tr>
<tr>
<td>Rotary drilling machines in general</td>
<td>B23B</td>
</tr>
</tbody>
</table>

E21B 3/00

Rotary drilling (drives used in the borehole E21B 4/00; rotary drilling machines in general B23B)

Definition statement

This place covers:

Machines and methods in which the drilling action is done principally by rotation:
References

Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Reference</th>
<th>CPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drives for drilling, used in the borehole</td>
<td>E21B 4/00</td>
</tr>
</tbody>
</table>

Informative references

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

<table>
<thead>
<tr>
<th>Reference</th>
<th>CPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drives for combined percussion and rotary drilling</td>
<td>E21B 6/00</td>
</tr>
<tr>
<td>Portable drilling rigs</td>
<td>E21B 7/20</td>
</tr>
<tr>
<td>Derricks, masts</td>
<td>E21B 15/00</td>
</tr>
<tr>
<td>Rotary drilling machines in general</td>
<td>B23B</td>
</tr>
</tbody>
</table>

Special rules of classification

Reference B23B is non-limiting in the main group E21B 3/00. CPC will be corrected once this inconsistency is resolved in IPC.

E21B 3/045

{movably mounted on the drilling structure or platform (derricks adapted to be moved on their substructure E21B 15/003)}

References

Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Reference</th>
<th>CPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Derricks adapted to be moved on their substructure</td>
<td>E21B 15/003</td>
</tr>
</tbody>
</table>

Informative references

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

<table>
<thead>
<tr>
<th>Reference</th>
<th>CPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supports for the drilling machine specially adapted for underwater drilling</td>
<td>E21B 15/02</td>
</tr>
</tbody>
</table>
E21B 4/00
Drives for drilling, used in the borehole

Definition statement
This place covers:
Drives located inside the borehole for powering drilling units:

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

<table>
<thead>
<tr>
<th>Drives for drilling, used in the borehole</th>
<th>Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rotary-piston machines or pumps</td>
<td>F04C 2/00</td>
</tr>
<tr>
<td>Moineau motors</td>
<td>E04C 2/107</td>
</tr>
<tr>
<td>Arrangements for handling mechanical energy structurally associated with the machine, e.g. structural association with mechanical driving motor or auxiliary dynamo-electric machine</td>
<td>H02K 7/00</td>
</tr>
</tbody>
</table>

E21B 4/003
{Bearing, sealing, lubricating details (for roller bits E21B 10/22)}

References
Limiting references
This place does not cover:

<table>
<thead>
<tr>
<th>Bearing, lubrication or sealing details for roller bits</th>
<th>Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bearing, lubrication or sealing details for roller bits</td>
<td>E21B 10/22</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Bearings in general</th>
<th>Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bearings in general</td>
<td>F16C</td>
</tr>
</tbody>
</table>
Informative references

<table>
<thead>
<tr>
<th>Sealing in general</th>
<th>F16J</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lubricating in general</td>
<td>F16N</td>
</tr>
</tbody>
</table>

**E21B 4/006**

{Mechanical motion converting means, e.g. reduction gearings (E21B 4/10 takes precedence)}

**References**

**Limiting references**

*This place does not cover:*

- Continuous unidirectional rotary motion of shaft or drilling pipe effecting consecutive impacts  (E21B 4/10)

**Informative references**

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

- Gearings in general  (F16H)

**E21B 4/06**

Down-hole impacting means, e.g. hammers (percussion drill bits E21B 10/36; boring rams E21B 11/02; releasing-jars E21B 31/107)

**References**

**Limiting references**

*This place does not cover:*

- Percussion drill bits  (E21B 10/36)
- Releasing-jars  (E21B 31/107)

**Informative references**

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

- Boring rams  (E21B 11/02)

**Special rules of classification**

Looping references between E21B 11/02 and E21B 4/06 have been identified. Until this inconsistency is resolved in IPC, the current classification practice in CPC is as follows: Reference E21B 11/02 is non-limiting in the subgroup E21B 4/06. CPC will be corrected once this inconsistency is resolved in IPC.
E21B 6/00

Drives for drilling with combined rotary and percussive action (drives used in the borehole E21B 4/00; portable percussive machines with superimposed rotation B25D 16/00)

Definition statement

This place covers:

Drives outside the borehole for combined percussion and rotary drilling:

References

Limiting references

This place does not cover:

| Drives for drilling, used in the borehole | E21B 4/00 |

Informative references

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

| Drives for combined percussion and rotary drilling | E21B 6/00 |
| Portable drilling rigs | E21B 7/20 |
| Derricks, masts | E21B 15/00 |
| Methods or apparatus for generating mechanical vibrations of infrasonic, sonic or ultrasonic frequency | B06B 1/00 |
| Portable percussive machines with superimposed rotation | B25D 16/00 |
Special rules of classification

Reference B25D 16/00 is non-limiting in the main group E21B 6/00. CPC will be corrected once this inconsistency is resolved in IPC.

E21B 7/00

Special methods or apparatus for drilling

Definition statement

This place covers:

Drilling methods and apparatus characterised by any aspect that differs from those of conventional drilling, which is understood as drilling a vertical borehole with a roller or drag type bit, using a derrick or mast.

References

Informative references

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

| Rotary or percussion drill bits | E21B 10/00 |
| Derricks or masts | E21B 15/00 |
| Drilling rods or pipes | E21B 17/00 |
| Setting of casings when not simultaneous with drilling of the borehole | E21B 43/10 |
| Details of, or accessories for, portable power-driven percussive tools | B25D 17/00 |
| Vehicles adapted to transport or to comprise special loads | B60P 3/00 |
| Underwater drilling for submerged foundations | E02D 27/52 |
| Erecting posts for fences | E04H 17/263 |
| Machines for drilling and setting anchoring bolts | E21D 20/003 |
| Details of hydraulic circuits | F15B |

E21B 7/006

{combined with a bucket-type container}

References

Informative references

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

| Bailers with helical conveying means | E21B 27/04 |
E21B 7/007

{Drilling by use of explosives (underwater drilling using explosives E21B 7/1245)}

References

Limiting references

This place does not cover:

| Underwater drilling using explosives | E21B 7/1245 |

Informative references

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

| Setting-tools actuated by explosives | E21B 23/04, E21B 23/065 |
| Cutting or destroying objects in boreholes by explosives | E21B 29/02 |
| Freeing objects using explosives | E21B 31/1075 |
| Gun or shaped-charge perforators | E21B 43/116 |
| Fracturing by explosives | E21B 43/263, E21B 43/248 |
| Taking samples using explosives | E21B 49/04 |

E21B 7/021

{With a rotary table, i.e. a fixed rotary drive for a relatively advancing tool}

References

Informative references

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

| Rotary tables | E21B 3/04 |

E21B 7/04

Directional drilling {(derricks or masts specially adapted therefor E21B 15/04)}

Definition statement

This place covers:

Directional drilling in the general sense of producing a borehole in a direction other than vertical. The drilling direction can be essentially horizontal, such as for laying a pipe under an obstruction or in an urban environment.

References

Limiting references

This place does not cover:

| Derricks or masts specially adapted therefor | E21B 15/04 |
E21B 7/06
Deflecting the direction of boreholes

References

Informative references

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

<table>
<thead>
<tr>
<th>Directional window cutting</th>
<th>E21B 29/06</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deflecting the direction of fishing tools</td>
<td>E21B 31/14</td>
</tr>
</tbody>
</table>

E21B 7/128
from floating support with independent underwater anchored guide base

References

Informative references

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

| Guide line systems | E21B 41/10 |

E21B 7/14
Drilling by use of heat, e.g. flame drilling

References

Informative references

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

| Drilling by use of explosives | E21B 7/007 |

E21B 7/18
Drilling by liquid or gas jets, with or without entrained pellets (E21B 7/14 takes precedence; hydraulic monitors E21C 45/00)

References

Limiting references

This place does not cover:

| Drilling by use of heat | E21B 7/14 |
| Methods of hydraulic mining; Hydraulic monitors | E21C 45/00 |

Informative references

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

| Obtaining a slurry of minerals from wells | E21B 43/29 |
**E21B 7/20**

Driving or forcing casings or pipes into boreholes, e.g. sinking; Simultaneously drilling and casing boreholes (surface means for applying to-and-fro rotation movements to the casing **E21B 3/025**; placing piles **E02D 7/00**; sinking shafts while moving the lining downwards **E21D 1/08**; making galleries by forcing prefabricated elements through the ground **E21D 9/005**))

**Definition statement**

*This place covers:*

Methods in which the drilling action takes place simultaneously with the installation of a casing or of the pipe to be installed, with the borehole being horizontal or not.

**References**

**Limiting references**

*This place does not cover:*

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface means for applying to-and-fro rotation movements to the casing</td>
<td><strong>E21B 3/025</strong></td>
</tr>
<tr>
<td>Placing piles</td>
<td><strong>E02D 7/00</strong></td>
</tr>
<tr>
<td>Sinking shafts while moving the lining downwards</td>
<td><strong>E21D 1/08</strong></td>
</tr>
<tr>
<td>Making galleries by forcing prefabricated elements through the ground</td>
<td><strong>E21D 9/005</strong></td>
</tr>
</tbody>
</table>

**Informative references**

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

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pushing means outside of the borehole</td>
<td><strong>E21B 19/08</strong></td>
</tr>
</tbody>
</table>

**E21B 7/201**

{with helical conveying means}

**References**

**Informative references**

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

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drilling with helical conveying means</td>
<td><strong>E21B 7/005</strong></td>
</tr>
<tr>
<td>Augers</td>
<td><strong>E21B 10/44</strong></td>
</tr>
<tr>
<td>Drilling rods or pipes with helical structure</td>
<td><strong>E21B 17/22</strong></td>
</tr>
</tbody>
</table>
E21B 7/203
{using down-hole drives}

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

| Down-hole drives per se | E21B 4/00 |

E21B 7/206
{using down-hole drives}

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

| Down-hole drives per se | E21B 4/00 |

E21B 7/208
{using down-hole drives (E21B 7/203 and E21B 7/206 take precedence)}

References
Limiting references
This place does not cover:

| Using down-hole drives in combination with helical conveying means | E21B 7/203 |
| Using down-hole drives without earth removal | E21B 7/206 |

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

| Using down-hole drives per se | E21B 4/00 |
**E21B 7/28**

Enlarging drilled holes, e.g. by counterboring (drill bits for enlarging the borehole **E21B 10/26**)

**Definition statement**

*This place covers:*

Vertical or horizontal drilling, in which means are provided for enlarging a borehole made previously, which borehole may have been made by the same machine carrying out the enlargement, or by a different machine or in a previous operation:

References

**Limiting references**

*This place does not cover:*

| Drill bits for enlarging the borehole | E21B 10/26 |

**E21B 10/00**

Drill bits (specially adapted for deflecting the direction of boring **E21B 7/064**; with means for collecting substances **E21B 27/00**)

**Definition statement**

*This place covers:*

Drill bits for any application in earth drilling, be it deep drilling for oil and gas or rock drilling for mining or for use in an underground space.

References

**Limiting references**

*This place does not cover:*

| Drill bits specially adapted for deflecting the direction of boring | E21B 7/064 |
| Drill bits with means for collecting substances | E21B 27/00 |
Informative references

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

<table>
<thead>
<tr>
<th>Topic</th>
<th>Class Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacture of articles from metal powder</td>
<td>B22F</td>
</tr>
<tr>
<td>Special treatment of metallic powder, e.g. to facilitate working, to improve properties</td>
<td>B22F 1/00</td>
</tr>
<tr>
<td>Cutting tools of which the bits or tips are of special material</td>
<td>B23B 27/14</td>
</tr>
<tr>
<td>Drill bits for stone or stone-like material</td>
<td>B28D 1/00</td>
</tr>
<tr>
<td>Alloys containing diamond</td>
<td>C22C</td>
</tr>
<tr>
<td>Bulkheads, piles specially adapted to foundation engineering</td>
<td>E02D 5/00</td>
</tr>
</tbody>
</table>

Glossary of terms

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

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrangement of teeth or other cutting elements: placement or number of elements on a bit body</td>
<td><img src="image1.jpg" alt="Image of bit with teeth" /></td>
</tr>
<tr>
<td>Wear resisting parts: materials on the body of the bit adapted for withstanding wear caused by the flow of drilling fluid having cuttings entrained therein</td>
<td><img src="image2.jpg" alt="Image of bit" /></td>
</tr>
<tr>
<td>Chisel or button type inserts:</td>
<td><img src="image3.jpg" alt="Image of chisel or button type inserts" /></td>
</tr>
</tbody>
</table>
Preformed cutting elements mounted on a distinct support:

**E21B 10/02**

Core bits (characterised by wear resisting parts **E21B 10/46**; obtaining undisturbed cores **E21B 25/00**)

**References**

*Informative references*

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

| Drill bits characterised by wear resisting parts | E21B 10/46 |
| Apparatus for obtaining undisturbed cores       | E21B 25/00 |

**Special rules of classification**

Reference **E21B 10/46** is non-limiting in the subgroup **E21B 10/02**. CPC will be corrected once this inconsistency is resolved in IPC.

Looping references between **E21B 25/00** and **E21B 10/02** have been identified. Until this inconsistency is resolved in IPC, the current classification practice in CPC is as follows: Reference **E21B 25/00** is non-limiting in the subgroup **E21B 10/46**. CPC will be corrected once this inconsistency is resolved in IPC.

**E21B 10/445**

{percussion type, e.g. for masonry}

**References**

*Informative references*

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

| Percussion drill bits in general | E21B 10/36 |
E21B 10/46
characterised by wear resisting parts, e.g. diamond inserts

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

| Drill bits with self-renewable cutting edge | E21B 10/006 |
|

E21B 10/48
the bit being of core type

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

| Saw cylinders having their cutting rim equipped with abrasive particles for drilling stone or glass | B28D 1/041 |
|

E21B 10/55
with preformed cutting elements (inserts per se E21B 10/56, E21B 10/58)

Definition statement
This place covers:
Rotary drag type bits with blades having preformed cutting elements mounted on a distinct support, e.g. polycrystalline inserts.

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

| Inserts per se | E21B 10/56, E21B 10/58 |
|

Special rules of classification
References E21B 10/56 and E21B 10/58 are non-limiting in the subgroup E21B 10/55. CPC will be corrected once this inconsistency is resolved in IPC.
E21B 10/60
characterised by conduits or nozzles for drilling fluids (for roller bits E21B 10/18; for percussion drill bits E21B 10/38)

References
Limiting references
This place does not cover:

<table>
<thead>
<tr>
<th>Topic</th>
<th>CPC Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roller drill bits characterised by conduits or nozzles for drilling fluids</td>
<td>E21B 10/18</td>
</tr>
<tr>
<td>Percussion drill bits characterised by conduits or nozzles for drilling fluids</td>
<td>E21B 10/38</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Topic</th>
<th>CPC Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mining picks with arrangement of fluid-spraying nozzles</td>
<td>E21C 35/187</td>
</tr>
</tbody>
</table>

E21B 10/62
characterised by parts, e.g. cutting elements, which are detachable or adjustable (E21B 10/64 takes precedence; for roller bits E21B 10/20; for augers E21B 10/44)

References
Limiting references
This place does not cover:

<table>
<thead>
<tr>
<th>Topic</th>
<th>CPC Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roller bits characterised by detachable or adjustable parts</td>
<td>E21B 10/20</td>
</tr>
<tr>
<td>Augers with leading portion or with detachable parts</td>
<td>E21B 10/44</td>
</tr>
<tr>
<td>Drill bits characterised by the whole or part thereof being insertable into or removable from the borehole without withdrawing the drilling pipe</td>
<td>E21B 10/64</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Topic</th>
<th>CPC Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rotary drag type drill bits</td>
<td>E21B 10/42</td>
</tr>
</tbody>
</table>

E21B 10/64
characterised by the whole or part thereof being insertable into or removable from the borehole without withdrawing the drilling pipe (retrievable core receivers E21B 25/02)

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

<table>
<thead>
<tr>
<th>Topic</th>
<th>CPC Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retrievable core receivers</td>
<td>E21B 25/02</td>
</tr>
</tbody>
</table>
Special rules of classification

Looping references between E21B 25/02 and E21B 10/64 have been identified. Until this inconsistency is resolved in IPC, the current classification practice in CPC is as follows: Reference E21B 25/02 is non-limiting in the subgroup E21B 10/64. CPC will be corrected once this inconsistency is resolved in IPC.

E21B 11/00
Other drilling tools

Definition statement

This place covers:
Other drilling tools different from the drill bits of E21B 10/00

E21B 12/00
Accessories for drilling tools

References

Informative references

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

| Connecting and disconnecting drill bit and drilling pipe | E21B 19/18 |
| Sharpening stone drill bits | B24B 3/33 |

E21B 15/00
Supports for the drilling machine, e.g. derricks or masts

Definition statement

This place covers:
Drilling derricks or masts having such dimensions that require considerable complication for assembling and disassembling them, so that they cannot be considered as "movable" or "portable" units:

![Diagram of a drilling derrick or mast](FIG. 1)
### References

#### Informative references

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

<table>
<thead>
<tr>
<th>Drill rigs with movable understructures</th>
<th>E21B 7/02</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floating drilling platforms</td>
<td>B63B 35/44</td>
</tr>
<tr>
<td>Drilling platforms on legs</td>
<td>E02B 17/00</td>
</tr>
</tbody>
</table>

### E21B 15/003

{adapted to be moved on their substructure, e.g. with skidding means; adapted to drill a plurality of wells}

### References

#### Informative references

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

<table>
<thead>
<tr>
<th>Derricks or masts specially adapted for directional drilling, e.g. slant hole rigs</th>
<th>E21B 15/04</th>
</tr>
</thead>
</table>

### E21B 15/02

specially adapted for underwater drilling (E21B 15/04 takes precedence; floating drilling platforms B63B 35/44; drilling platforms on legs E02B 17/00)

#### References

**Limiting references**

This place does not cover:

<table>
<thead>
<tr>
<th>Derricks or masts specially adapted for directional drilling, e.g. slant hole rigs</th>
<th>E21B 15/04</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floating drilling platforms</td>
<td>B63B 35/44</td>
</tr>
<tr>
<td>Drilling platforms on legs</td>
<td>E02B 17/00</td>
</tr>
</tbody>
</table>

#### Informative references

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

<table>
<thead>
<tr>
<th>Derricks or masts adapted to be moved on their substructure, e.g. with skidding means</th>
<th>E21B 15/003</th>
</tr>
</thead>
</table>
**E21B 15/04**
specially adapted for directional drilling, e.g. slant hole rigs

**References**

**Informative references**

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

| Derricks or masts adapted to be moved on their substructure, e.g. with skidding means | E21B 15/003 |

**E21B 17/00**

Drilling rods or pipes; Flexible drill strings; Kellies; Drill collars; Sucker rods; {Cables;} Casings; Tubings (rod couplings in general F16D; tubes or tube couplings in general F16L)

**Definition statement**

*This place covers:*

Pipes for use in wellbores, for drilling but also for subsequent operations, such as casings or risers. Couplings between pipes. Centralisers and other accessories for pipes.

**References**

**Informative references**

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

| Connecting flow lines to offshore structures | E21B 43/0107 |
| Connecting flow lines to an underwater wellhead | E21B 43/013 |
| Expansible tubulars | E21B 43/103 |
| Details of, or accessories for, portable power-driven percussive tools | B25D 17/00 |
| Rod couplings in general | F16D |
| Tubes or couplings in general | F16L |
| Subsea flow lines | F16L 1/00 |
| Pipeline systems | F17D 1/00 |

**Special rules of classification**

References F16D and F16L are non-limiting in the main group E21B 17/00. CPC will be corrected once this inconsistency is resolved in IPC.
E21B 17/021  
{Devices for subsurface connecting or disconnecting by rotation}  

References  

Informative references  

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

| Connecting or disconnecting pipe couplings or joints | E21B 19/16 |
| Fishing tools for frozen rods, casings, ropes, bits or the like | E21B 31/00 |

E21B 17/026  
{Arrangements for fixing cables or wirelines to the outside of downhole devices}  

References  

Informative references  

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

| Protectors and centralisers for cables and control lines | E21B 17/1035 |

E21B 17/042  
Threaded  

References  

Informative references  

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

| Releasing-joints between rod or the like and bit or between rod and rod or the like | E21B 17/06 |

E21B 17/07  
Telescoping joints for varying drill string lengths; Shock absorbers (heave compensators in the derrick E21B 19/09; releasing-jars E21B 31/07)  

References  

Limiting references  

This place does not cover:  

| Heave compensators in the derrick | E21B 19/09 |
| Releasing-jars | E21B 31/107 |
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Shock-absorbers in general | F16F |

E21B 17/1021
{with articulated arms or arcuate springs}

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

| Measuring diameter of boreholes or wells | E21B 47/08 |

E21B 17/18
Pipes provided with plural fluid passages (E21B 17/203 takes precedence;)
circulation of drilling fluid by means of such pipes E21B 21/12

References
Limiting references
This place does not cover:

| Flexible or articulated drilling pipes with plural fluid passages | E21B 17/203 |
| Circulation of drilling fluid by means of such pipes | E21B 21/12 |

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

| Joints or fittings for double-walled or multi-channel pipes or pipe assemblies | F16L 39/00 |

E21B 17/20
Flexible or articulated drilling pipes {, e.g. flexible or articulated rods, pipes or cables}

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

| Risers | E21B 17/01 |
| Swivel joints between rod or the like and bit or between rod and rod or the like | E21B 17/05 |
E21B 17/206
{with conductors, e.g. electrical, optical}

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

| Hoses with electrically conducting means in general | F16L 11/127 |

E21B 17/22
Rods or pipes with helical structure (drill bits with helical conveying portion E21B 10/44)

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

| Drill bits with helical conveying portion | E21B 10/44 |

Special rules of classification
Looping references between E21B 10/44 and E21B 17/22 have been identified. Until this inconsistency is resolved in IPC, the current classification practice in CPC is as follows: Reference E21B 10/44 is non-limiting in the subgroup E21B 17/22. CPC will be corrected once this inconsistency is resolved in IPC.

E21B 19/00
Handling rods, casings, tubes or the like outside the borehole, e.g. in the derrick; Apparatus for feeding the rods or cables (surface drives E21B 1/02, E21B 3/02)

Definition statement
This place covers:
Machines or methods performed in the surface for assembling pipes, hoisting pipes, pushing pipes into a borehole, storing pipes and similar. The application is typically for drilling, i.e. vertical, horizontal, deep drilling, mining or other earth drilling, but can also be for well treatment or other.

References
Limiting references
This place does not cover:

| Surface percussion drives | E21B 1/02 |
| Surface rotary drives     | E21B 3/02 |
**E21B 19/002**

{specially adapted for underwater drilling ([E21B 19/09, E21B 19/143 take precedence])}

**Definition statement**

This place covers:
Handling and supporting of tubulars in relation to underwater drilling operations other than feeding the drill string into the borehole or controlling the weight on bit:

![Diagram of underwater drilling setup](image)

**References**

**Limiting references**

This place does not cover:

- Apparatus specially adapted for drilling underwater for feeding the rods or cables, increasing or decreasing the pressure on the drilling tool or counterbalancing the weight of the rods
  
  **E21B 19/09**

- Racks, ramps, troughs or bins, for holding the lengths of rod singly or connected, specially adapted for drilling
  
  **E21B 19/143**

**Informative references**

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

- Risers with buoyancy elements
  
  **E21B 17/012, E21B 17/015**

**E21B 19/008**

{Winding units, specially adapted for drilling operations}

**References**

**Informative references**

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

- Cathead actuated pipe wrenches or spinners
  
  **E21B 19/162**
E21B 19/02

Rod or cable suspensions (load-engaging elements for hoisting or lowering purposes in general B66C 1/00; crown blocks or pulley blocks B66D; cable guides B66D 1/36)

Definition statement

This place covers:

Apparatus for suspension by rods or cables that have normally no capacity of applying rotation. A spinner or other rotary drive may be suspended from the suspension apparatus.

References

Informative references

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

<table>
<thead>
<tr>
<th>Reference Description</th>
<th>Class Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Load-engaging elements for hoisting or lowering purposes in general</td>
<td>B66C 1/00</td>
</tr>
<tr>
<td>Crown blocks or pulley blocks</td>
<td>B66D</td>
</tr>
<tr>
<td>Cable guides</td>
<td>B66D 1/36</td>
</tr>
</tbody>
</table>

Special rules of classification

References B66C 1/00, B66D and B66D 1/36 are non-limiting in the subgroup E21B 19/02. CPC will be corrected once this inconsistency is resolved in IPC.
E21B 19/08

Apparatus for feeding the rods or cables (E21B 19/22 takes precedence; automatic feed E21B 44/02; hoisting drums B66D); Apparatus for increasing or decreasing the pressure on the drilling tool; Apparatus for counterbalancing the weight of the rods

Definition statement

This place covers:

Apparatus for pushing drilling tools into the borehole. All kinds of earth drilling tools are classified in these groups, such as deep drilling tools, rock drills for mining, horizontal drills or coiled tubing:

References

Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Handling reeled pipe or rod units</th>
<th>E21B 19/22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic control of the tool feed</td>
<td>E21B 44/02</td>
</tr>
</tbody>
</table>

Informative references

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

| Hoisting drums in general | B66D |

Special rules of classification

Reference B66D is non-limiting in the subgroup E21B 19/08. CPC will be corrected once this inconsistency is resolved in IPC.
**E21B 19/09**

specially adapted for drilling underwater formations from a floating support using heave compensators supporting the drill string (drilling-pipe telescoping joints [E21B 17/07](#); heave compensators for supporting a riser [E21B 19/006](#))

**Definition statement**

*This place covers:*

Feeding the drill string for underwater drilling:

![Diagram of drilling equipment](image)

**References**

**Limiting references**

*This place does not cover:*

| Heave compensators for supporting a riser | E21B 19/006 |

**Informative references**

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

| Drilling-pipe telescoping joints | E21B 17/07 |

**Special rules of classification**

Looping references between [E21B 17/07](#) and [E21B 19/09](#) have been identified. Until this inconsistency is resolved in IPC, the current classification practice in CPC is as follows: reference [E21B 17/07](#) is non-limiting in the subgroup [E21B 19/09](#). CPC will be corrected once this inconsistency is resolved in IPC.
E21B 19/10

Slips; Spiders {; Catching devices (rotary tables with master bushing or kelly bushing E21B 3/04)}

References

Limiting references

This place does not cover:

| Rotary tables with master bushing or kelly bushing | E21B 3/04 |

Informative references

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

| Slip-type elevators | E21B 19/07 |
| Casing heads with slips | E21B 33/0422 |

E21B 19/12

Rope clamps {; Rod, casings or tube clamps not secured to elevators} (rope clamps in general F16G 11/00)

References

Informative references

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

| Rope clamps in general | F16G 11/00 |

Special rules of classification

Looping references between E21B 19/12 and F16G 11/00 have been identified. Until this inconsistency is resolved in IPC, the current classification practice in CPC is as follows: Reference F16G 11/00 is non-limiting in the subgroup E21B 19/12. CPC will be corrected once this inconsistency is resolved in IPC.

E21B 19/14

Racks, ramps, troughs or bins, for holding the lengths of rod singly or connected; Handling between storage place and borehole (E21B 19/20, E21B 19/22 take precedence)

Definition statement

This place covers:

Storage of rods and to handling of rods between storage and a position where the rods can be connected or disconnected.
References

Limiting references

This place does not cover:

| Combined feeding from rack and connecting | E21B 19/20 |
| Handling reeled pipe or rod units         | E21B 19/22 |

Informative references

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

| Storing elongated articles in general     | B65G 1/0442 |

E21B 19/16

Connecting or disconnecting pipe couplings or joints (E21B 19/20 takes precedence; pipe wrenches or the like B25B)

Definition statement

This place covers:

Method or apparatus for connecting or disconnecting the rods:

References

Limiting references

This place does not cover:

| Combined feeding from rack and connecting | E21B 19/20 |

Informative references

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

| Pipe wrenches or the like in general      | B25B       |
Special rules of classification

Reference B25B is non-limiting in the subgroup E21B 19/16. CPC will be corrected once this inconsistency is resolved in IPC.

E21B 19/20

Combined feeding from rack and connecting, e.g. automatically

Definition statement

This place covers:

The combination of feeding from rack and connecting:

E21B 21/00

Methods or apparatus for flushing boreholes, e.g. by use of exhaust air from motor (freeing objects stuck in boreholes by flushing E21B 31/03; well drilling compositions C09K 8/02)

Definition statement

This place covers:

Control of circulation and pressure of fluids in a borehole, typically drilling fluids, tools for filling a borehole, treatment of drill cuttings, various types of drilling fluids.

References

Limiting references

This place does not cover:

| Freeing objects stuck in boreholes by flushing | E21B 31/03 |
| Well drilling compositions | C09K 8/02 |

Informative references

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

| Cementing | E21B 33/13 |
Enhanced recovery methods E21B 43/16
Fracturing formations E21B 43/26
Destroying or transforming solid or contaminated waste into something useful or harmless B09B 3/00
Floating drilling platforms, e.g. carrying water-oil separating devices B63B 35/4413

**E21B 21/01**

Arrangements for handling drilling fluids or cuttings outside the borehole, e.g. mud boxes (arrangements for treating drilling fluids E21B 21/06 ; waste disposal systems E21B 41/005))

**References**

*Limiting references*

This place does not cover:

| Arrangements for treating drilling fluids E21B 21/06 |
| Waste disposal systems E21B 41/005 |

*Informative references*

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

| Swivel joints in hose-lines E21B 21/02 |

**E21B 21/02**

Swivel joints in hose-lines

**References**

*Informative references*

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

| Hose connections in general F16L 31/00, F16L 33/00 |

**E21B 21/10**

Valve arrangements in drilling-fluid circulation systems (valves in general F16K)

**References**

*Informative references*

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

| Valves in general F16K |
Special rules of classification
Reference F16K is non-limiting in the subgroup E21B 21/10. CPC will be corrected once this inconsistency is resolved in IPC.

**E21B 21/12**

using drilling pipes with plural fluid passages, e.g. closed circulation systems (pipes with plural fluid passages E21B 17/18)

**References**

*Informative references*

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

| Pipes provided with plural fluid passages | E21B 17/18 |

Special rules of classification

Loopy references between E21B 17/18 and E21B 21/12 have been identified. Until this inconsistency is resolved in IPC, the current classification practice in CPC is as follows: Reference E21B 17/18 is non-limiting in the subgroup E21B 21/12. CPC will be corrected once this inconsistency is resolved in IPC.

**E21B 23/00**

Apparatus for displacing, setting, locking, releasing, or removing tools, packers or the like in the boreholes or wells (setting of casings, screens or liners E21B 43/10)

**Definition statement**

This place covers:

Actuators for installing tools used for any application in a borehole, wherein the way of installation is more relevant than the function of the tool as such.

**References**

*Limiting references*

This place does not cover:

| Setting of casings, screens or liners | E21B 43/10 |

*Informative references*

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

| Borehole thrusters | E21B 4/18, E21B 44/005 |
| Fishing for or freeing objects in boreholes or wells | E21B 31/00 |

Special rules of classification

If a document discloses specific details of actuation or installation according to the meaning of E21B 23/00, and the actuation is done by elements incorporated in the tool, then those details are also classified in E21B 23/00.
The tool in question may in addition be classified in the group that corresponds to its function or construction.

**E21B 23/01**

for anchoring the tools or the like (E21B 23/02 - E21B 23/06 take precedence; anchoring of drives in the borehole E21B 4/18)

### References

**Limiting references**

*This place does not cover:*

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anchoring of drives in the borehole</td>
<td>E21B 4/18</td>
</tr>
<tr>
<td>Apparatus for locking the tools or the like in landing nipples or in recesses between adjacent sections of tubing</td>
<td>E21B 23/02</td>
</tr>
<tr>
<td>Apparatus for setting the tools into, or removing the tools from, laterally offset landing nipples or pockets</td>
<td>E21B 23/03</td>
</tr>
<tr>
<td>Apparatus operated by fluid means</td>
<td>E21B 23/04</td>
</tr>
<tr>
<td>Apparatus for setting packers</td>
<td>E21B 23/06</td>
</tr>
</tbody>
</table>

**Informative references**

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

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packers</td>
<td>E21B 33/12</td>
</tr>
</tbody>
</table>

**E21B 23/08**

Introducing or running tools by fluid pressure, e.g. through-the-flow-line tool systems (special provisions on heads therefor E21B 33/068; cementing plugs E21B 33/16; scrapers operated by fluid pressure E21B 37/04)

### References

**Limiting references**

*This place does not cover:*

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special provisions on heads therefor</td>
<td>E21B 33/068</td>
</tr>
<tr>
<td>Cementing plugs</td>
<td>E21B 33/16</td>
</tr>
<tr>
<td>Scrapers operated by fluid pressure</td>
<td>E21B 37/04</td>
</tr>
</tbody>
</table>

**Informative references**

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

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tool diverters</td>
<td>E21B 23/12</td>
</tr>
</tbody>
</table>
**E21B 23/12**

**Tool diverters**

**Definition statement**

*This place covers:*

Tool diverters, e.g. for through-the-flow line tool systems or for wire-line tools

**References**

**Application-oriented references**

*Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:*

<table>
<thead>
<tr>
<th>Tool diverters for drilling</th>
<th>E21B 7/06</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tool diverters for setting the tools into, or removing the tools from, laterally offset landing nipples or pockets</td>
<td>E21B 23/03</td>
</tr>
</tbody>
</table>

**E21B 23/14**

for displacing a cable or cable-operated tool, e.g. for logging or perforating operations in deviated wells (by fluid pressure E21B 23/08; provision on well heads for introducing or removing cable-operated tools E21B 33/072, E21B 33/076)

**References**

**Limiting references**

*This place does not cover:*

| Introducing or running tools by fluid pressure | E21B 23/08 |
| Provision on well heads for introducing or removing cable-operated tools | E21B 33/072, E21B 33/076 |

**Informative references**

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

| Side entry subs for connecting cables or wirelines to downhole devices | E21B 17/025 |
| Control line protectors for plural rods, pipes or lines | E21B 17/1035 |
**E21B 25/00**

Apparatus for obtaining or removing undisturbed cores, e.g. core barrels, core extractors (core bits [E21B 10/02](#); using explosives or projectiles in boreholes [E21B 49/04](#); side-wall sampling or coring [E21B 49/06](#))

**Definition statement**

*This place covers:*

Tools for receiving, preserving, transporting etc. a core:

![Diagram of core barrel](#)

**References**

**Limiting references**

*This place does not cover:*

| Using explosives or projectiles in boreholes | [E21B 49/04](#) |
| Side-wall sampling or coring | [E21B 49/06](#) |

**Informative references**

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

| Core bits | [E21B 10/02](#) |

**Special rules of classification**

Looping references between [E21B 10/02](#) and [E21B 25/00](#) have been identified. Until this inconsistency is resolved in IPC, the current classification practice in CPC is as follows: reference [E21B 10/02](#) is non-limiting in the main group [E21B 25/00](#). CPC will be corrected once this inconsistency is resolved in IPC.
**E21B 25/02**

the core receiver being insertable into, or removable from, the borehole without withdrawing the drilling pipe (retrievable drill bits **E21B 10/64**)

**References**

*Informative references*

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

<table>
<thead>
<tr>
<th>Retrievable drill bits</th>
<th>E21B 10/64</th>
</tr>
</thead>
</table>

**Special rules of classification**

Looping references between **E21B 10/64** and **E21B 25/02** have been identified. Until this inconsistency is resolved in IPC, the current classification practice in CPC is as follows: reference **E21B 10/64** is non-limiting in the subgroup **E21B 25/02**. CPC will be corrected once this inconsistency is resolved in IPC.

**E21B 27/00**

Containers for collecting or depositing substances in boreholes or wells, e.g. bailers, {baskets or buckets} for collecting mud or sand; Drill bits with means for collecting substances, e.g. valve drill bits

**Definition statement**

This place covers:

![Diagram](image-url)
E21B 28/00

Vibration generating arrangements for boreholes or wells, e.g. for stimulating production (for drilling E21B 7/24; {for fishing for or freeing objects E21B 31/005;} for transmitting measuring-signals E21B 47/14; for geophysical measurements G01V 1/02)

Definition statement

This place covers:
The vibration is normally generated by tools inside the borehole:

References

Limiting references

This place does not cover:

| Vibration for drilling                  | E21B 7/24 |
| Vibration for fishing for or freeing objects | E21B 31/005 |
| Vibration for transmitting measuring-signals | E21B 47/14 |
| Vibration for geophysical measurements   | G01V 1/02 |

Informative references

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

| Vibrating earth formations        | E21B 43/003 |
E21B 29/00

Cutting or destroying pipes, packers, plugs, or wire lines, located in boreholes or wells, e.g. cutting of damaged pipes, of windows (perforators E21B 43/11); Deforming of pipes in boreholes or wells; Reconditioning of well casings while in the ground {by enlarging drilled holes or counterboring E21B 7/28}

Definition statement

This place covers:
Cutting or deforming methods and apparatus for pipes, lines etc. inside the wellbore.

References

Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Description</th>
<th>CPC Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reconditioning of well casings while in the ground by enlarging drilled holes or counterboring</td>
<td>E21B 7/28</td>
</tr>
<tr>
<td>Perforators</td>
<td>E21B 43/11</td>
</tr>
</tbody>
</table>

Informative references

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

<table>
<thead>
<tr>
<th>Description</th>
<th>CPC Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shear-type blow-out preventers</td>
<td>E21B 33/063</td>
</tr>
<tr>
<td>Expanding tubulars</td>
<td>E21B 43/103</td>
</tr>
</tbody>
</table>

E21B 29/06

Cutting windows, e.g. directional window cutters for whipstock operations ({E21B 29/005 and} E21B 29/08 take precedence)

References

Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Description</th>
<th>CPC Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cutting a pipe with a cutter rotating along the circumference of the pipe with a radially-expansible cutter rotating inside the pipe</td>
<td>E21B 29/005</td>
</tr>
<tr>
<td>Cutting or deforming pipes to control fluid flow</td>
<td>E21B 29/08</td>
</tr>
</tbody>
</table>

Informative references

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

<table>
<thead>
<tr>
<th>Description</th>
<th>CPC Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whipstocks</td>
<td>E21B 7/061</td>
</tr>
</tbody>
</table>
**E21B 31/00**

Fishing for or freeing objects in boreholes or wells (provisions on well heads for introducing or removing objects E21B 33/068; locating or determining the position of objects in boreholes or wells E21B 47/09)

**References**

*Limiting references*

This place does not cover:

| Provisions on well heads for introducing or removing objects | E21B 33/068 |
| Locating or determining the position of objects in boreholes or wells | E21B 47/09 |

**E21B 31/002**

{Destroying the objects to be fished, e.g. by explosive means}

**References**

*Informative references*

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

| Cutting by explosive | E21B 29/02 |

**E21B 31/005**

{using vibrating or oscillating means}

**References**

*Informative references*

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

| Vibration generating arrangements for boreholes or wells | E21B 28/00 |

**E21B 31/107**

using impact means for releasing stuck parts, e.g. jars (telescoping joints E21B 17/07)

**References**

*Informative references*

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

| Telescopic joints | E21B 17/07 |

**Special rules of classification**

Looping references between E21B 17/07 and E21B 31/107 have been identified. Until this inconsistency is resolved in IPC, the current classification practice in CPC is as follows: reference...
E21B 33/00

Sealing or packing boreholes or wells

Definition statement

This place covers:
Apparatus and methods for sealing, both at the surface and in the interior of a borehole

References

Informative references

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

| Apparatus or methods for producing mixtures of cement with other substances, e.g. slurries, mortars, porous or fibrous compositions | B28C 5/00 |

Special rules of classification

Pitless wells are also classified in E21B 33/00

E21B 33/02

Surface sealing or packing

Definition statement

This place covers:
Apparatus for sealing a wellbore and placed outside the wellbore, be it at the surface or subsea, such as wellheads, casing or tubing hangers,

Christmas trees or blow-out preventers:
E21B 33/0375
{Corrosion protection means}

References

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

| Corrosion protection means in general | C23F |

E21B 33/0385
{electrical connectors}

References

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

| Underwater electrical connections in general | H01R 13/523 |

E21B 33/0422
{a suspended tubing or casing being gripped by a slip or an internally serrated member}

References

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

| Slips in rotary table | E21B 19/10 |

E21B 33/06
Blow-out preventers {, i.e. apparatus closing around a drill pipe, e.g. annular blow-out preventers (rotating blow-out preventers E21B 33/085)}

References

Limiting references
This place does not cover:

| Rotating blow-out preventers | E21B 33/085 |

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

| Valve arrangements for boreholes or wells | E21B 34/00 |
E21B 33/063
{for shearing drill pipes (cutting of wireline E21B 29/04)}

References

Limiting references

This place does not cover:

| Cutting of wireline | E21B 29/04 |

Informative references

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

| Cutting pipes | E21B 29/08 |

---

E21B 33/12

Packers; Plugs (used for cementing E21B 33/134, E21B 33/16)

Definition statement

This place covers:

Packers, tools lowered with a reduced diameter and expanded by various means to establish an annular seal between an outer tubular or wall and an inner tubular:

References

Limiting references

This place does not cover:

| Bridging plugs for cementing | E21B 33/134 |
| Using plugs for isolating cement charge | E21B 33/16 |
Application-oriented references
Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:

<table>
<thead>
<tr>
<th>Locking packers or plugs in landing nipples</th>
</tr>
</thead>
<tbody>
<tr>
<td>E21B 23/02</td>
</tr>
</tbody>
</table>

E21B 33/13

Methods or devices for cementing, for plugging holes, crevices, or the like (dump bailers E21B 27/02; chemical compositions therefor C09K 8/00)

Definition statement
This place covers:
Tools for plugging the bore or a well, and to methods for cementing parts of a wellbore, for cementing a casing in the wellbore and similar:

![Diagram of wellbore and casing]

References
Limiting references
This place does not cover:

<table>
<thead>
<tr>
<th>Dump bailers</th>
</tr>
</thead>
<tbody>
<tr>
<td>E21B 27/02</td>
</tr>
<tr>
<td>Chemical compositions therefor</td>
</tr>
<tr>
<td>C09K 8/00</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Methods or apparatus for grouting offshore structures</th>
</tr>
</thead>
<tbody>
<tr>
<td>E02B 17/0008</td>
</tr>
</tbody>
</table>
E21B 33/134
Bridging plugs

References

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

<table>
<thead>
<tr>
<th>Packers</th>
<th>E21B 33/12</th>
</tr>
</thead>
</table>

E21B 33/138
Plastering the borehole wall; Injecting into the formation {{packers E21B 33/12}}

References

Limiting references
This place does not cover:

<table>
<thead>
<tr>
<th>Packers</th>
<th>E21B 33/12</th>
</tr>
</thead>
</table>

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

| Consolidation of loose sand or the like round the wells without excessively decreasing the permeability thereof | E21B 43/025 |
| Compositions for plastering the borehole wall                                                                 | C09K 8/56  |

E21B 33/14
for cementing casings into boreholes {{control of cementation quality or level E21B 47/005}}

References

Limiting references
This place does not cover:

| Control of cementation quality or level                                | E21B 47/005 |

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

| Compositions for cementing                                              | C09K 8/42   |
**E21B 34/00**

Valve arrangements for boreholes or wells (in drilling fluid circulation systems **E21B 21/10**; blow-out preventers **E21B 33/06**; oil flow regulating apparatus **E21B 43/12**; valves in general **F16K**)

**Definition statement**

*This place covers:*

Constructive details of valves specifically adapted for use at the surface of a wellbore or in the interior of a wellbore:

---

**References**

**Limiting references**

*This place does not cover:*

<table>
<thead>
<tr>
<th>Topic</th>
<th>CPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valve arrangements in drilling fluid circulation systems</td>
<td><strong>E21B 21/10</strong></td>
</tr>
<tr>
<td>Blow-out preventers</td>
<td><strong>E21B 33/06</strong></td>
</tr>
<tr>
<td>Oil flow regulating apparatus</td>
<td><strong>E21B 43/12</strong></td>
</tr>
<tr>
<td>Gas lift valves</td>
<td><strong>E21B 43/123</strong></td>
</tr>
</tbody>
</table>

**Informative references**

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

<table>
<thead>
<tr>
<th>Topic</th>
<th>CPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tool diverters</td>
<td><strong>E21B 23/12</strong></td>
</tr>
<tr>
<td>Valves in general</td>
<td><strong>F16K</strong></td>
</tr>
</tbody>
</table>

**Special rules of classification**

Reference **F16K** is non-limiting in the main group **E21B 34/00**. CPC will be corrected once this inconsistency is resolved in IPC.
E21B 35/00
Methods or apparatus for preventing or extinguishing fires (cutting or deforming pipes to control fluid flow E21B 29/08; controlling flow of fluid to or in wells E21B 43/12; fire fighting in general A62C, A62D)

References
Limiting references
This place does not cover:

<table>
<thead>
<tr>
<th>Cutting or deforming pipes to control fluid flow</th>
<th>E21B 29/08</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controlling flow of fluid to or in wells</td>
<td>E21B 43/12</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Fire fighting in general</th>
<th>A62C, A62D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevention of fires in mines or tunnels</td>
<td>E21F 5/00</td>
</tr>
</tbody>
</table>

Special rules of classification
References A62C and A62D are non-limiting in the main group E21B 35/00. CPC will be corrected once this inconsistency is resolved in IPC.

E21B 36/00
Heating, cooling, insulating arrangements for boreholes or wells, e.g. for use in permafrost zones (drilling by use of heat E21B 7/14; secondary recovery methods using heat E21B 43/24)

Definition statement
This place covers:

Equipment for generating heat at the surface or in the wellbore, for transmitting heat into a wellbore, or for cooling wellbores.

Heating or cooling in the wellbore of fluids produced or of treatment fluids
References

Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drilling by use of heat</td>
<td>E21B 7/14</td>
</tr>
<tr>
<td>Secondary recovery methods using heat</td>
<td>E21B 43/24</td>
</tr>
</tbody>
</table>

Special rules of classification

If a document describes the extension of the heating action into a reservoir or formation for enhanced recovery, then this operation is classified in E21B 43/24.

E21B 37/00

Methods or apparatus for cleaning boreholes or wells (E21B 21/00 takes precedence; {bailers E21B 27/00;} cleaning pipes in general B08B 9/02)

Definition statement

This place covers:

Methods or apparatus for cleaning boreholes or wells; Cleaning by physical or chemical action:

References

Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flushing of wellbores</td>
<td>E21B 21/00</td>
</tr>
<tr>
<td>Bailers</td>
<td>E21B 27/00</td>
</tr>
</tbody>
</table>

Informative references

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

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhibition of corrosion</td>
<td>E21B 41/02</td>
</tr>
<tr>
<td>Cleaning pipes in general</td>
<td>B08B 9/02</td>
</tr>
</tbody>
</table>

Special rules of classification

Looping references between E21B 37/00 and B08B 9/02 have been identified. Until this inconsistency is resolved in IPC, the current classification practice in CPC is as follows: reference B08B 9/02 is non-
limiting in the main group E21B 37/00. CPC will be corrected once this inconsistency is resolved in IPC.

**E21B 37/04**

operated by fluid pressure, e.g. free-piston scrapers (operating other tools by fluid pressure E21B 23/08)

**References**

*Informative references*

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

<table>
<thead>
<tr>
<th>Operating other tools by fluid pressure</th>
<th>E21B 23/08</th>
</tr>
</thead>
</table>

**Special rules of classification**

Looping references between E21B 23/08 and E21B 37/04 have been identified. Until this inconsistency is resolved in IPC, the current classification practice in CPC is as follows: Reference E21B 23/08 is non-limiting in the subgroup E21B 37/04. CPC will be corrected once this inconsistency is resolved in IPC.

**E21B 37/10**

Well swabs

**References**

*Informative references*

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

<table>
<thead>
<tr>
<th>Pistons in general</th>
<th>F16J 1/00</th>
</tr>
</thead>
</table>

**E21B 40/00**

Tubing catchers, automatically arresting the fall of oil-well tubing {preventing small objects from falling into the borehole E21B 41/0021}

**Definition statement**

This place covers:

Tubing catchers, automatically arresting the fall of oil-well tubing

**References**

*Limiting references*

This place does not cover:

<table>
<thead>
<tr>
<th>Preventing small objects from falling into the borehole</th>
<th>E21B 41/0021</th>
</tr>
</thead>
</table>

*Informative references*

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

<table>
<thead>
<tr>
<th>Slips, spiders</th>
<th>E21B 19/10</th>
</tr>
</thead>
</table>
E21B 41/00
Equipment or details not covered by groups E21B 15/00 - E21B 40/00

Definition statement
This place covers:
• Equipment as specified in the subgroups of E21B 41/00.
• Equipment specifically adapted for use in earth drilling and not covered by other groups of E21B or by the subgroups of E21B 41/00.
• Timers and actuators.

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

| Power stations, adaptations for drilling wells | F03B 13/00 |
| Fuel cells; Manufacture thereof               | H01M 8/00 |

Special rules of classification
The technical field E21B is an application field, wherein many different tools performing various functions find use. Care should be taken not to classify in E21B 41/00 documents describing methods or apparatus marginally related to oil and gas drilling and production for which no suitable class in E21B can be found. Such documents should instead be classified in the groups corresponding to their specific function.

E21B 41/0035
{Apparatus or methods for multilateral well technology, e.g. for the completion of or workover on wells with one or more lateral branches}

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

| Tool diverters                         | E21B 23/12 |
| Cutting casing windows                 | E21B 29/06 |

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

| Whipstocks                             | E21B 7/061 |
| Specific well pattern                  | E21B 43/30 |
E21B 41/005

{Waste disposal systems}

References

Informative references

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

| Collecting oil or the like from a submerged leakage | E21B 43/0122 |

E21B 41/0078

{Nozzles used in boreholes (drilling by liquid or gas jets E21B 7/18; drill bits with nozzles E21B 10/60; perforators using direct fluid action E21B 43/114; obtaining a slurry of minerals using nozzles E21B 43/29)}

References

Limiting references

This place does not cover:

| Drilling by liquid or gas jets | E21B 7/18 |
| Drill bits with nozzle | E21B 10/60 |
| Perforators using direct fluid action | E21B 43/114 |
| Obtaining a slurry of minerals using nozzles | E21B 43/29 |

Informative references

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

| Nozzles in general | B05B |

E21B 41/0085

{Adaptations of electric power generating means for use in boreholes}

References

Informative references

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

| Generation of electric power per se | H02 |
E21B 41/02
in situ inhibition of corrosion in boreholes or wells (dump bailers E21B 27/02; chemical compositions therefor C09K 8/54; inhibiting corrosion in general C23F)

References
Limiting references
This place does not cover:

| Compositions for in situ inhibition of corrosion in boreholes or wells | C09K 8/54 |

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

| Dump bailer | E21B 27/02 |

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

| Inhibiting corrosion in general | C23F |

Special rules of classification
Reference C23F and E21B 27/02 are non-limiting in the main group E21B 41/02. CPC will be corrected once this inconsistency is resolved in IPC.

E21B 43/00
Methods or apparatus for obtaining oil, gas, water, soluble or meltable materials or a slurry of minerals from wells (applicable only to water E03B; obtaining oil-bearing deposits or soluble or meltable materials by mining techniques E21C 41/00; pumps F04)

Definition statement
This place covers:
Methods and equipment for completion of wellbores and control and improvement of production.

References
Limiting references
This place does not cover:

| Production methods applicable only to water | E03B |
| Installations for obtaining or collecting drinking water or tap water from underground | E03B 3/06 |
| Obtaining oil-bearing deposits or soluble or meltable materials by mining techniques | E21C 41/00 |
Informative references

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

<table>
<thead>
<tr>
<th>Survey of wellbore pump systems</th>
<th>E21B 47/008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pumps</td>
<td>F04</td>
</tr>
<tr>
<td>Multiphase pumps</td>
<td>F04D 31/00</td>
</tr>
<tr>
<td>Jet pumps</td>
<td>F04F 5/00</td>
</tr>
</tbody>
</table>

Special rules of classification

Enhanced recovery methods (E21B 43/16), methods for stimulating production (E21B 43/25) and methods of fracturing (E21B 43/26) are sometimes carried out on the basis of specific chemical compositions. In these cases, the use of those compositions is seen as a method carried out by chemists, and therefore classified respectively in C09K 8/58, C09K 8/60 and C09K 8/62.

Reference F04 is non-limiting in the main group E21B 43/00. CPC will be corrected once this inconsistency is resolved in IPC.

E21B 43/003

{Vibrating earth formations}

References

Informative references

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

| Vibration generating arrangements for boreholes or wells | E21B 28/00 |

E21B 43/006

{Production of coal-bed methane (E21B 43/243 takes precedence)}

References

Limiting references

This place does not cover:

Enhanced recovery methods for obtaining hydrocarbons using heat with combustion in situ E21B 43/243

Informative references

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

| Methods or devices for drawing-off gases for safety purposes in mines | E21F 7/00 |

E21B 43/01
specially adapted for obtaining from underwater installations (underwater well heads E21B 33/035)

Definition statement
This place covers:
Methods specially adapted for obtaining from underwater installations;
Subsea production equipment:

References

Limiting references
This place does not cover:

| Underwater well heads | E21B 33/035 |

E21B 43/02
Subsoil filtering (E21B 43/11 takes precedence; chemical compositions for consolidating loose sand or the like around wells C09K 8/56)

Definition statement
This place covers:
• Subsoil filtering;
• Production screens and gravelling.
References

Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Topic</th>
<th>CPC Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perforators; Permeators</td>
<td>E21B 43/11</td>
</tr>
<tr>
<td>Chemical compositions for consolidating loose sand or the like around wells</td>
<td>C09K 8/56</td>
</tr>
</tbody>
</table>

E21B 43/025

{Consolidation of loose sand or the like round the wells without excessively decreasing the permeability thereof}

References

Informative references

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

<table>
<thead>
<tr>
<th>Topic</th>
<th>CPC Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sealing borehole walls</td>
<td>E21B 33/138</td>
</tr>
</tbody>
</table>

E21B 43/08

Screens or liners {{expandable screens or liners E21B 43/108}}

References

Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Topic</th>
<th>CPC Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expandable screens or liners</td>
<td>E21B 43/108</td>
</tr>
</tbody>
</table>
Informative references

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

| Obtaining drinking water using well filters | E03B 3/18 |

E21B 43/10

Setting of casings, screens, liners {or the like} in wells (driving or forcing casings into boreholes, simultaneously drilling and casing boreholes E21B 7/20; setting of tools, packers or the like E21B 23/00; suspending casings in well heads E21B 33/04)

Definition statement

This place covers:

- Setting of casings, screens, liners or the like in wells;
- Running in and installation of tubulars, expandable tubulars:

References

Limiting references

This place does not cover:

| Driving or forcing casings into boreholes, simultaneously drilling and casing boreholes | E21B 7/20 |
| Suspending casings in well heads | E21B 33/04 |

Informative references

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

| Setting of tools, packers or the like | E21B 23/00 |

Special rules of classification

Looping references between E21B 23/00 and E21B 43/10 have been identified. Until this inconsistency is resolved in IPC, the current classification practice in CPC is as follows: reference E21B 23/00 is non-limiting in the subgroup E21B 43/10. CPC will be corrected once this inconsistency is resolved in IPC.
**E21B 43/11**

Perforators; Permeators

**Definition statement**

*This place covers:*

Perforators and guns used to create apertures in casing or formation in order to establish a fluid communication with the reservoir for the production of oil or gas. Included are details about construction, ignition, communication and placement.

---

**E21B 43/116**

Gun or shaped-charge perforators

**References**

*Informative references*

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

| Projectiles with shaped or hollow charge | E42B 12/10 |

---

**E21B 43/1193**

{Dropping perforation guns after gun actuation}

**References**

*Informative references*

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

| Releasing-joints between rod or the like and bit or between rod and rod or the like | E21B 17/06 |
**E21B 43/12**

Methods or apparatus for controlling the flow of the obtained fluid to or in wells (E21B 43/25 takes precedence; valve arrangements E21B 34/00)

**Definition statement**

*This place covers:*

Production pumps, lifting wellbore fluids, production chokes:

---

**References**

_Limiting references_

*This place does not cover:*

| Methods for stimulating production | E21B 43/25 |

**Informative references**

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

| Valve arrangements for boreholes or wells | E21B 34/00 |

**Special rules of classification**

Looping references between E21B 34/00 and E21B 43/12 have been identified. Until this inconsistency is resolved in IPC, the current classification practice in CPC is as follows: reference E21B 34/00 is non-limiting in the subgroup E21B 43/12. CPC will be corrected once this inconsistency is resolved in IPC.
**E21B 43/16**

Enhanced recovery methods for obtaining hydrocarbons (fracturing E21B 43/26; obtaining slurry E21B 43/29; reclamation of contaminated soil in situ B09C {; chemical compositions therefor C09K 8/58})

**Definition statement**

This place covers:

Increasing the fraction of original oil recovered in place in a reservoir, including waterflooding, chemical flooding, gas injection, and thermal methods:

**References**

**Limiting references**

This place does not cover:

<table>
<thead>
<tr>
<th>Fracturing</th>
<th>E21B 43/26</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obtaining slurry</td>
<td>E21B 43/29</td>
</tr>
<tr>
<td>Reclamation of contaminated soil in situ</td>
<td>B09C</td>
</tr>
<tr>
<td>Chemical compositions therefor</td>
<td>C09K 8/58</td>
</tr>
</tbody>
</table>

**E21B 43/24**

using heat, e.g. steam injection (heating, cooling or insulating wells E21B 36/00 {; in combination with organic material C09K 8/592})

**References**

**Limiting references**

This place does not cover:

| Compositions for enhanced recovery methods for obtaining hydrocarbons used in combination with generated heat | C09K 8/592 |

**Informative references**

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

| Heating, cooling or insulating wells | E21B 36/00 |

57
Special rules of classification

Looping references between E21B 43/24 and E21B 36/00 have been identified. Until this inconsistency is resolved in IPC, the current classification practice in CPC is as follows: reference E21B 36/00 is non-limiting in the subgroup E21B 43/24. CPC will be corrected once this inconsistency is resolved in IPC.

E21B 43/2403
{by means of nuclear energy}

References

Informative references

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

| Nuclear reactors | G21 |

E21B 43/25

Methods for stimulating production (dump bailers E21B 27/02; vibration generating arrangements E21B 28/00; {by vibrating earth formations E21B 43/003};) chemical compositions therefor C09K 8/60)

Definition statement

This place covers:

Treatment to restore or enhance the permeability of a well, typically hydraulic fracturing treatments and matrix treatments (acidizing):

References

Limiting references

This place does not cover:

| Dump bailers | E21B 27/02 |
| Vibration generating arrangements | E21B 28/00 |
| Methods for stimulating production by vibrating earth formations | E21B 43/003 |
**E21B 43/2635**

(by means of nuclear energy)

**References**

**Informative references**

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

- Peaceful applications of nuclear explosive devices in general

**E21B 43/28**

Dissolving minerals other than hydrocarbons, e.g. by an alkaline or acid leaching agent (**E21B 43/241** takes precedence)

**Definition statement**

*This place covers:*

Production of minerals other than hydrocarbons by dissolving them in situ with a dissolving agent:

![Diagram](image)

**References**

**Limiting references**

*This place does not cover:*

- Enhanced recovery methods for obtaining hydrocarbons using heat combined with solution mining of non-hydrocarbon minerals

**Informative references**

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

- Using steerable or laterally extendable nozzles
E21B 43/281
{using heat}

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

| Heating, cooling or insulating wells | E21B 36/00 |

E21B 43/295
Gasification of minerals, e.g. for producing mixtures of combustible gases (E21B 43/243 takes precedence)

Definition statement
This place covers:
Obtention of combustible gas from mineral bodies, usually from coal underground.

References
Limiting references
This place does not cover:
Enhanced recovery methods for obtaining hydrocarbons using heat, the combustion being in situ | E21B 43/243 |

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

| Coal underground | A method for exploiting poor-quality mineral and thin seams by burning the mineral in place to produce combustible gas which can be burned to generate power or processed into chemicals and fuels |
E21B 43/34
Arrangements for separating materials produced by the well (separating apparatus per se, see the relevant subclasses)

Definition statement
This place covers:
Separation of materials produced by the well:

E21B 44/00
Automatic control systems specially adapted for drilling operations, i.e. self-operating systems which function to carry out or modify a drilling operation without intervention of a human operator, e.g. computer-controlled drilling systems (for non-automatic drilling control, see the operation controlled; automatic feeding from rack and connecting of drilling pipes E21B 19/20; controlling pressure or flow of drilling fluid E21B 21/08); Systems specially adapted for monitoring a plurality of drilling variables or conditions (means for transmitting measuring-signals from the well to the surface E21B 47/12)

Definition statement
This place covers:
Methods and devices such as sensors for monitoring drilling operations and for controlling the drilling operation in response to the information obtained:
References

Limiting references

This place does not cover:

- Automatic feeding from rack and connecting of drilling pipes
- Controlling pressure or flow of drilling fluid
- Means for transmitting measuring-signals from the well to the surface

Informative references

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

- Control systems in general
- Arrangements for automatic stopping for portable percussive tools
- Survey of boreholes or wells (monitoring pressure or flow of drilling fluid)

E21B 44/10

Arrangements for automatic stopping when the tool is lifted from the working face

References

Informative references

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

- Arrangements for automatic stopping for portable percussive tools

E21B 47/00

Survey of boreholes or wells (monitoring pressure or flow of drilling fluid)

Definition statement

This place covers:

- Sensors or devices for obtaining data relative to the wellbore itself.
- Means for sending information from the well to the surface or from the surface into the well.

Relationships with other classification places

E21B 47/00 includes a wide range of measurements of very different nature. In case the disclosure relates to the specific construction or functioning of a sensor or measuring method, classification in one of the subclasses of G01 as specified in the subgroups should be considered.

Measurements of fluid properties as they flow into the wellbore are classified in E21B 47/10, but devices and methods for obtaining fluid samples are classified in E21B 49/08.

Telecommunication techniques used in an oilfield but other than between wellbore and surface, such as to communicate data from a plurality of producing wells to a centralised location, should not be classified in E21B 47/12, but in the corresponding group relative to its specific application, in this example oil production, if they have an influence in the operation of the production control. If a document mentions only the application to an oilfield or the like, and no specific application in an oilfield operation, but only the details of a communications system are disclosed, that document should be classified in H04L.
References

Limiting references
This place does not cover:

| Monitoring pressure or flow of drilling fluid | E21B 21/08 |

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

| Testing of formations and obtaining samples of fluids or of borehole walls | E21B 49/00 |
| Geophysical logging | G01V |
| Details, e.g. power supply systems for well logging instruments | G01V 11/002 |

Special rules of classification
Documents are classified in E21B 47/00 if they disclose a specific application in a downhole environment.

Commonplace measurements such as temperature or pressure should only be classified in E21B 47/06 if specific measurement techniques are disclosed, or if the temperature or pressure data is relevant for the execution of another operation.

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

| Borehole | An unlined shaft drilled into the ground, typically for the purposes of extracting water, crude oil or natural gas. This is often referred to as the wellbore. |

E21B 47/002
by visual inspection

References

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

| Photographing internal surfaces, e.g. of pipes | G03B 37/005 |
| Closed circuit television systems | H04N 7/18 |
**E21B 47/003**

Determining well or borehole volumes (determining depth **E21B 47/04**; diameter **E21B 47/08**)

**References**

**Limiting references**

This place does not cover:

| Measuring depth of borehole or well                  | E21B 47/04 |
| Measuring diameter of borehole or well               | E21B 47/08 |

**Informative references**

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

| Measuring volumes in general                      | G01F      |

**E21B 47/005**

Monitoring or checking of cementation quality or level

**Definition statement**

This place covers:

Processes or apparatus for tracking or examining the extent or integrity of the plugging or consolidating material.

**References**

**Informative references**

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

| Measuring temperature at borehole or well          | E21B 47/07 |

**E21B 47/01**

Devices for supporting measuring instruments on drill bits, pipes, rods or wirelines; Protecting measuring instruments in boreholes against heat, shock, pressure or the like

**Definition statement**

This place covers:

Devices for mounting a data collection instrument upon a boring tool, boring tool string or cable-carried tool; Devices for shielding down-hole data collection instruments from damage.

**References**

**Informative references**

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

| Flexible or expansible centering means per se      | E21B 17/1014 |
**E21B 47/017**

**Protecting measuring instruments**

**Definition statement**

This place covers:

Processes or apparatus for shielding the data collection device against thermal effect, vibration, pressure, debris or the like.

**References**

**Informative references**

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

| Cooling or insulating arrangements for boreholes or wells | E21B 36/00 |

---

**E21B 47/0175**

\{Cooling arrangements\}

**References**

**Informative references**

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

| Cooling or insulating arrangements for boreholes or wells | E21B 36/00 |

---

**E21B 47/02**

**Determining slope or direction**

**Definition statement**

This place covers:

Processes or apparatus for measuring the inclination or orientation of boreholes or wells.

**References**

**Informative references**

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

| Clinometers or direction meters in general | G01C |

---
**E21B 47/026**

of penetrated ground layers

**Definition statement**

*This place covers:*

Processes or apparatus for measuring the inclination (i.e. dip) or orientation (i.e. strike) of a drilled stratum, e.g. by using a specially adapted compass (e.g. a Brunton compass).

**References**

*Informative references*

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

| Apparatus for obtaining oriented cores | E21B 25/16 |
| Formation testing                   | E21B 49/00 |

**E21B 47/04**

Measuring depth or liquid level

**References**

*Informative references*

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

| Measuring depth in general | G01B 7/26 |
| Measuring liquid level in general and telerecorders for level of liquids | G01F |

**E21B 47/06**

Measuring temperature or pressure

**References**

*Informative references*

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

| Measuring temperature in general; Telerecorders for temperature | G01K |
| Measuring pressure in general; Telerecorders for pressure | G01L |

**E21B 47/08**

Measuring diameters or related dimensions at the borehole

**References**

*Informative references*

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

| Measuring diameter in general | G01B |
**E21B 47/09**
Locating or determining the position of objects in boreholes or wells {, e.g. the position of an extending arm}; Identifying the free or blocked portions of pipes

**References**

**Informative references**

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

<table>
<thead>
<tr>
<th>Process</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring depth at borehole or well</td>
<td>E21B 47/04</td>
</tr>
<tr>
<td>Measuring borehole or well diameter</td>
<td>E21B 47/08</td>
</tr>
</tbody>
</table>

**E21B 47/092**
by detecting magnetic anomalies

**Definition statement**

This place covers:
Processes or apparatus for determining the whereabouts or position of objects in a borehole or well using magnetic attraction/repulsion force irregularities.

**References**

**Informative references**

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

<table>
<thead>
<tr>
<th>Process</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investigating materials by investigating magnetic variables</td>
<td>G01N 27/72</td>
</tr>
</tbody>
</table>

**E21B 47/10**
Locating fluid leaks, intrusions or movements {(using impression packers **E21B 47/098**)}

**Definition statement**

This place covers:
Processes or apparatus for determining if the pipes are sufficiently fluid-tight to prevent leakage or ingress of liquid or gas.
Processes or apparatus for detecting unwanted fluids flowing from the formation into the borehole.
Processes or apparatus for detecting the presence and properties of production fluids in the borehole.
Processes or apparatus for determining well debit or flow rate.

**References**

**Limiting references**

This place does not cover:

<table>
<thead>
<tr>
<th>Process</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locating or determining the position of objects in boreholes or wells using impression packers</td>
<td>E21B 47/098</td>
</tr>
</tbody>
</table>
Informative references

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

<table>
<thead>
<tr>
<th>Flow measurement in general</th>
<th>G01F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examining density and leaking in general</td>
<td>G01M</td>
</tr>
</tbody>
</table>

E21B 47/117

Detecting leaks, e.g. from tubing, by pressure testing

References

Informative references

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

| Investigating fluid-tightness of structures by using fluid or vacuum | G01M 3/02 |

E21B 47/12

Means for transmitting measuring-signals or control signals from the well to the surface, or from the surface to the well, e.g. for logging while drilling

Definition statement

This place covers:
Processes or apparatus in which an information or control signal is sent to or from equipment located in the borehole over an information transmission link, for the purpose of measuring while boring.

References

Informative references

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

| Remote signaling in general                  | G08C |

E21B 47/125

using earth as an electrical conductor (E21B 47/13 takes precedence)

Definition statement

This place covers:
Processes or apparatus in which the transmission link is through the ground.

References

Limiting references

This place does not cover:

| Means for transmitting measuring-signals or control signals from the well to the surface or from the surface to the well by electromagnetic energy | E21B 47/13 |
Informative references
Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Magnetic or electric prospecting</th>
<th>G01V 3/00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronic transmission systems in which the earth is the medium</td>
<td>H04B 13/02</td>
</tr>
</tbody>
</table>

E21B 47/13
by electromagnetic energy, e.g. radio frequency

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

<table>
<thead>
<tr>
<th>Magnetic or electric prospecting</th>
<th>G01V 3/00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronic transmission in general</td>
<td>H04B</td>
</tr>
</tbody>
</table>

E21B 47/135
using light waves, e.g. infrared or ultraviolet waves

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

<table>
<thead>
<tr>
<th>Light guides, e.g. optical fibres</th>
<th>G02B 6/00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optical transmission in general</td>
<td>H04B 10/00</td>
</tr>
</tbody>
</table>

E21B 47/26
Storing data down-hole, e.g. in a memory or on a record carrier

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

<table>
<thead>
<tr>
<th>Recording in connection with measuring in general</th>
<th>G01D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recording seismic data</td>
<td>G01V 1/24</td>
</tr>
<tr>
<td>Recording data of measuring magnetic field characteristic of the earth</td>
<td>G01V 3/36</td>
</tr>
<tr>
<td>Information storage in general</td>
<td>G11</td>
</tr>
</tbody>
</table>
E21B 49/00
Testing the nature of borehole walls; Formation testing; Methods or apparatus for obtaining samples of soil or well fluids, specially adapted to earth drilling or wells (sampling in general G01N 1/00)

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

| Sampling in general | G01N 1/00 |

Special rules of classification
Reference G01N 1/00 is non-limiting in the main group E21B 49/00. CPC will be corrected once this inconsistency is resolved in IPC.

E21B 49/005
{Testing the nature of borehole walls or the formation by using drilling mud or cutting data}

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

| Investigating chemical or physical properties of materials per se | G01N |

E21B 49/006
{Measuring wall stresses in the borehole}

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

| Investigation of mechanical properties of foundation soil | E02D 1/022 |

E21B 49/008
{by injection test; by analysing pressure variations in an injection or production test, e.g. for estimating the skin factor (measuring pressure E21B 47/06)}

References
Limiting references
This place does not cover:

| Measuring pressure of boreholes or wells | E21B 47/06 |
Informative references

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

| Obtaining fluid samples or testing fluids | E21B 49/08 |

**E21B 49/02**

by mechanically taking samples of the soil (apparatus for obtaining undisturbed cores **E21B 25/00**; investigation of foundation soil in situ **E02D 1/00**)

References

**Limiting references**

This place does not cover:

| Apparatus for obtaining undisturbed cores | E21B 25/00 |

Informative references

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

| Investigation of foundation soil in situ | E02D 1/00 |

**Special rules of classification**

Looping references between **E02D 1/00** and **E21B 49/02** have been identified. Until this inconsistency is resolved in IPC, the current classification practice in CPC is as follows: reference **E02D 1/00** is non-limiting in the subgroup **E21B 49/02**. CPC will be corrected once this inconsistency is resolved in IPC.

**E21B 49/025**

{of underwater soil, e.g. with grab devices}

References

**Informative references**

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

| Underwater coring | E21B 25/18 |

**E21B 49/04**

using explosives in boreholes; using projectiles penetrating the wall

References

**Informative references**

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

| Drilling by use of explosives | E21B 7/007 |
| Gun or shaped charge perforators | E21B 43/116 |
**E21B 49/08**

Obtaining fluid samples or testing fluids, in boreholes or wells

**References**

*Informative references*

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

<table>
<thead>
<tr>
<th>Packers</th>
<th>E21B 33/12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valve arrangements for boreholes or wells</td>
<td>E21B 34/00</td>
</tr>
<tr>
<td>Analysing pressure variations in an injection or production test</td>
<td>E21B 49/008</td>
</tr>
</tbody>
</table>

**E21B 49/0875**

{determining specific fluid parameters}

**References**

*Informative references*

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

| Locating fluid leaks, intrusions or movements | E21B 47/10 |