

# CPC COOPERATIVE PATENT CLASSIFICATION

## B PERFORMING OPERATIONS; TRANSPORTING

(NOTES omitted)

### SHAPING

## B23 MACHINE TOOLS; METAL-WORKING NOT OTHERWISE PROVIDED FOR

(NOTES omitted)

## B23H WORKING OF METAL BY THE ACTION OF A HIGH CONCENTRATION OF ELECTRIC CURRENT ON A WORKPIECE USING AN ELECTRODE WHICH TAKES THE PLACE OF A TOOL; SUCH WORKING COMBINED WITH OTHER FORMS OF WORKING OF METAL (processes for the electrolytic or electrophoretic production of coatings, electroforming, or apparatus therefor [C25D](#); processes for the electrolytic removal of material from objects [C25F](#); manufacturing printed circuits using precipitation techniques to apply the conductive material to form the desired conductive pattern [H05K 3/18](#))

### NOTE

This subclass covers the working of metal described as "electroerosion"

### WARNING

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

<b>1/00</b>	<b>Electrical discharge machining, i.e. removing metal with a series of rapidly recurring electrical discharges between an electrode and a workpiece in the presence of a fluid dielectric</b>	5/02	• Electrical discharge machining combined with electrochemical machining
		5/04	• Electrical discharge machining combined with mechanical working
1/02	• Electric circuits specially adapted therefor, e.g. power supply, control, preventing short circuits or other abnormal discharges	5/06	• Electrochemical machining combined with mechanical working, e.g. grinding or honing
1/022	• . {for shaping the discharge pulse train ( <a href="#">B23H 1/024</a> takes precedence)}	5/08	• . Electrolytic grinding
1/024	• . {Detection of, and response to, abnormal gap conditions, e.g. short circuits (preventing short circuits or other abnormal discharges by altering machining parameters using adaptive control <a href="#">B23H 7/16</a> )}	5/10	• Electrodes specially adapted therefor or their manufacture ( <a href="#">B23H 1/04</a> , <a href="#">B23H 3/04</a> take precedence)
1/026	• . {Power supply protection, e.g. detection of power switch breakdown}	5/12	• Working media
1/028	• . {for multiple gap machining}	5/14	• Supply or regeneration of working media
1/04	• Electrodes specially adapted therefor or their manufacture ( <a href="#">B23H 9/00</a> takes precedence)	<b>7/00</b>	<b>Processes or apparatus applicable to both electrical discharge machining and electrochemical machining</b>
1/06	• . Electrode material	7/02	• Wire-cutting
1/08	• Working media	7/04	• . Apparatus for supplying current to working gap; Electric circuits specially adapted therefor
1/10	• Supply or regeneration of working media	7/06	• . Control of the travel curve of the relative movement between electrode and workpiece
<b>3/00</b>	<b>Electrochemical machining, i.e. removing metal by passing current between an electrode and a workpiece in the presence of an electrolyte</b>	7/065	• . . {Electric circuits specially adapted therefor}
3/02	• Electric circuits specially adapted therefor, e.g. power supply, control, preventing short circuits	7/08	• . Wire electrodes
3/04	• Electrodes specially adapted therefor or their manufacture ( <a href="#">B23H 9/00</a> takes precedence)	7/10	• . . Supporting, winding or electrical connection of wire-electrode
3/06	• . Electrode material	7/101	• . . . {Supply of working media}
3/08	• Working media	7/102	• . . . {Automatic wire threading}
3/10	• Supply or regeneration of working media	7/104	• . . . {Wire tension control}
<b>5/00</b>	<b>Combined machining</b>	7/105	• . . . {Wire guides}
		7/107	• . . . {Current pickups}
		7/108	• . . . {Used wire disposal devices}
		7/12	• Rotating-disc electrodes
		7/14	• Electric circuits specially adapted therefor, e.g. power supply {( <a href="#">B23H 3/02</a> takes precedence)}

7/16	<ul style="list-style-type: none"> <li>for preventing short circuits or other abnormal discharges {by altering machining parameters using adaptive control}</li> </ul>	2300/20	<ul style="list-style-type: none"> <li>Relaxation circuit power supplies for supplying the machining current, e.g. capacitor or inductance energy storage circuits</li> </ul>
7/18	<ul style="list-style-type: none"> <li>for maintaining or controlling the desired spacing between electrode and workpiece</li> </ul>	2300/22	<ul style="list-style-type: none"> <li>Circuits using or taking into account line impedance to shape the discharge pulse</li> </ul>
7/20	<ul style="list-style-type: none"> <li>for program control, e.g. adaptive</li> </ul>	<b>2400/00</b>	<b>Moving mechanisms for tool electrodes</b>
7/22	<ul style="list-style-type: none"> <li>Electrodes specially adapted therefor or their manufacture (<a href="#">B23H 7/08</a>, <a href="#">B23H 7/12</a>, <a href="#">B23H 9/00 take precedence</a>)</li> </ul>	2400/10	<ul style="list-style-type: none"> <li>for rotating the electrode</li> </ul>
7/24	<ul style="list-style-type: none"> <li>Electrode material</li> </ul>	<b>2500/00</b>	<b>Holding and positioning of tool electrodes</b>
7/26	<ul style="list-style-type: none"> <li>Apparatus for moving or positioning electrode relatively to workpiece; Mounting of electrode</li> </ul>	2500/20	<ul style="list-style-type: none"> <li>Methods or devices for detecting wire or workpiece position</li> </ul>
7/265	<ul style="list-style-type: none"> <li>{Mounting of one or more thin electrodes}</li> </ul>	<b>2600/00</b>	<b>Machining conditions</b>
7/28	<ul style="list-style-type: none"> <li>Moving electrode in a plane normal to the feed direction, e.g. orbiting</li> </ul>	2600/10	<ul style="list-style-type: none"> <li>Switching of machining conditions during machining</li> </ul>
7/30	<ul style="list-style-type: none"> <li>Moving electrode in the feed direction (<a href="#">B23H 7/32 takes precedence</a>)</li> </ul>	2600/12	<ul style="list-style-type: none"> <li>Switching from rough cutting to finish machining</li> </ul>
7/32	<ul style="list-style-type: none"> <li>Maintaining desired spacing between electrode and workpiece {, e.g. by means of particulate material}</li> </ul>		
7/34	<ul style="list-style-type: none"> <li>Working media</li> </ul>		
7/36	<ul style="list-style-type: none"> <li>Supply or regeneration of working media</li> </ul>		
7/38	<ul style="list-style-type: none"> <li>Influencing metal working by using specially adapted means not directly involved in the removal of metal, e.g. ultrasonic waves, magnetic fields or laser irradiation</li> </ul>		
<b>9/00</b>	<b>Machining specially adapted for treating particular metal objects or for obtaining special effects or results on metal objects (heat treatment by cathodic discharge <a href="#">C21D 1/38</a>)</b>		
9/001	<ul style="list-style-type: none"> <li>{Disintegrating}</li> </ul>		
9/003	<ul style="list-style-type: none"> <li>{Making screw-threads or gears}</li> </ul>		
9/005	<ul style="list-style-type: none"> <li>{Machining elongated bodies, e.g. rods}</li> </ul>		
9/006	<ul style="list-style-type: none"> <li>{Cavity sinking (<a href="#">B23H 9/14 takes precedence</a>)}</li> </ul>		
9/008	<ul style="list-style-type: none"> <li>{Surface roughening or texturing}</li> </ul>		
9/02	<ul style="list-style-type: none"> <li>Trimming or deburring {(<a href="#">B23H 9/003 takes precedence</a>)}</li> </ul>		
9/04	<ul style="list-style-type: none"> <li>Treating surfaces of rolls</li> </ul>		
9/06	<ul style="list-style-type: none"> <li>Marking or engraving</li> </ul>		
9/08	<ul style="list-style-type: none"> <li>Sharpening</li> </ul>		
9/10	<ul style="list-style-type: none"> <li>Working turbine blades or nozzles</li> </ul>		
9/12	<ul style="list-style-type: none"> <li>Forming parts of complementary shape, e.g. punch-and-die</li> </ul>		
9/14	<ul style="list-style-type: none"> <li>Making holes</li> </ul>		
9/16	<ul style="list-style-type: none"> <li>using an electrolytic jet</li> </ul>		
9/18	<ul style="list-style-type: none"> <li>Producing external conical surfaces or spikes (<a href="#">B23H 9/08 takes precedence</a>)</li> </ul>		
<b>11/00</b>	<b>Auxiliary apparatus or details, not otherwise provided for</b>		
11/003	<ul style="list-style-type: none"> <li>{Mounting of workpieces, e.g. working-tables}</li> </ul>		
11/006	<ul style="list-style-type: none"> <li>{Electrical contacts or wires (<a href="#">B23H 7/10 takes precedence</a>)}</li> </ul>		
<b>2200/00</b>	<b>Specific machining processes or workpieces</b>		
2200/10	<ul style="list-style-type: none"> <li>for making bearings</li> </ul>		
2200/20	<ul style="list-style-type: none"> <li>for making conical bores</li> </ul>		
2200/30	<ul style="list-style-type: none"> <li>for making honeycomb structures</li> </ul>		
<b>2300/00</b>	<b>Power source circuits or energization</b>		
2300/10	<ul style="list-style-type: none"> <li>Pulsed electrochemical machining</li> </ul>		
2300/12	<ul style="list-style-type: none"> <li>Positive and negative pulsed electrochemical machining</li> </ul>		