

# CPC COOPERATIVE PATENT CLASSIFICATION

## C CHEMISTRY; METALLURGY

(NOTES omitted)

### METALLURGY

#### C21 METALLURGY OF IRON

#### C21C PROCESSING OF PIG-IRON, e.g. REFINING, MANUFACTURE OF WROUGHT-IRON OR STEEL; TREATMENT IN MOLTEN STATE OF FERROUS ALLOYS (refining metals in general [C22B 9/00](#))

##### 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>Refining of pig-iron; Cast iron</b>  | 5/445     | . . . . {Lining or repairing the taphole}  |
| 1/02        | . Dephosphorising or desulfurising  | 2005/446  | . . . . {Dry linings}  |
| 1/025       | . . {Agents used for dephosphorising or desulfurising}  | 2005/448  | . . . . {Lining wear indicators}   |
| 1/04        | . Removing impurities other than carbon, phosphorus or sulfur   | 5/46      | . . . Details or accessories   |
| 1/06        | . Constructional features of mixers for pig-iron  | 5/4606    | . . . . {Lances or injectors}  |
| 1/08        | . Manufacture of cast-iron  | 5/4613    | . . . . {Refractory coated lances; Immersion lances}   |
| 1/10        | . Making spheroidal graphite cast-iron  | 5/462     | . . . . {Means for handling, e.g. adjusting, changing, coupling}   |
| 1/105       | . . {Nodularising additive agents}  | 2005/4626 | . . . . {Means for cooling, e.g. by gases, fluids or liquids}  |
| <b>3/00</b> | <b>Manufacture of wrought-iron or wrought-steel</b>   | 5/4633    | . . . . {Supporting means}   |
| <b>5/00</b> | <b>Manufacture of carbon-steel, e.g. plain mild steel, medium carbon steel or cast steel {or stainless steel}</b> | 5/464     | . . . . {Trunnion bearings}  |
| 5/005       | . {Manufacture of stainless steel}  | 5/4646    | . . . . {Cooling arrangements}   |
| 5/02        | . Crucible furnace process {(C21C 5/005 takes precedence)}  | 5/4653    | . . . . {Tapholes; Opening or plugging thereof}  |
| 5/04        | . Manufacture of hearth-furnace steel, e.g. Siemens-Martin steel {(C21C 5/005 takes precedence)}                  | 5/466     | . . . . {Charging device for converters}   |
| 5/06        | . . Processes yielding slags of special composition   | 2005/4666 | . . . . {for charging with organic contaminated scrap}   |
| 5/28        | . Manufacture of steel in the converter {(C21C 5/005 takes precedence)}   | 5/4673    | . . . . {Measuring and sampling devices}   |
| 5/285       | . . {Plants therefor}   | 2005/468  | . . . . {Means for determining the weight of the converter}  |
| 5/30        | . . Regulating or controlling the blowing   | 5/4686    | . . . . {Vehicles for supporting and transporting a converter vessel}  |
| 5/305       | . . . {Afterburning}  | 5/4693    | . . . . {Skull removal; Cleaning of the converter mouth}   |
| 5/32        | . . . Blowing from above (C21C 5/35 takes precedence)   | 5/48      | . . . . Bottoms or tuyères of converters   |
| 5/34        | . . . Blowing through the bath (C21C 5/35 takes precedence)   | 5/50      | . . . . Tilting mechanisms for converters  |
| 5/35        | . . . Blowing from above and through the bath   | 5/52      | . Manufacture of steel in electric furnaces ((C21C 5/005 takes precedence); electric heating per se H05B)          |
| 5/36        | . . Processes yielding slags of special composition   | 5/5205    | . . {in a plasma heated furnace}   |
| 2005/363    | . . . {Slag cements}  | 5/5211    | . . {in an alternating current [AC] electric arc furnace}  |
| 2005/366    | . . . {Foam slags}  | 5/5217    | . . . {equipped with burners or devices for injecting gas, i.e. oxygen, or pulverulent materials into the furnace} |
| 5/38        | . . Removal of waste gases or dust  | 2005/5223 | . . . {with post-combustion}   |
| 5/40        | . . . Offtakes or separating apparatus for converter waste gases or dust  | 5/5229    | . . {in a direct current [DC] electric arc furnace}  |
| 5/42        | . . Constructional features of converters   | 2005/5235 | . . . {with bottom electrodes}   |
| 5/44        | . . . Refractory linings  | 5/5241    | . . {in an inductively heated furnace}   |
| 5/441       | . . . . {Equipment used for making or repairing linings}  |           |  |
| 5/443       | . . . . . {Hot fettling; Flame gunning}   |           |  |

|             |  |                |   |
|-------------|--|----------------|---|
| 5/5247      | . . . {processing a moving metal stream while exposed to an electromagnetic field, e.g. in an electromagnetic counter current channel}   | <b>2100/00</b> | <b>Exhaust gas</b>  |
| 5/5252      | . . {in an electrically heated multi-chamber furnace, a combination of electric furnaces or an electric furnace arranged for associated working with a non electric furnace}   | 2100/02        | . Treatment of the exhaust gas  |
| 2005/5258   | . . {with crater formed by down-melting of scrap or charge through electrode or lance}   | 2100/04        | . Recirculation of the exhaust gas  |
| 5/5264      | . . {Manufacture of alloyed steels including ferro-alloys}   | 2100/06        | . Energy from waste gas used in other processes                                       |
| 5/527       | . . {Charging of the electric furnace}   | <b>2200/00</b> | <b>Recycling of waste material</b>  |
| 2005/5276   | . . . {with liquid or solid rest, e.g. pool, "sumpf"}  | <b>2250/00</b> | <b>Specific additives; Means for adding material different from burners or lances</b> |
| 2005/5282   | . . . {with organic contaminated scrap}  | 2250/02        | . Hot oxygen  |
| 2005/5288   | . . {Measuring or sampling devices}  | 2250/04        | . Liquid gas  |
| 5/5294      | . . {General arrangement or layout of the electric melt shop}  | 2250/042       | . . Liquid oxygen   |
| 5/54        | . . Processes yielding slags of special composition  | 2250/06        | . Hollow electrode  |
| 5/56        | . Manufacture of steel by other methods ( <a href="#">making liquid steel by direct processes C21B 13/00</a> ; <a href="#">C21C 5/005 takes precedence</a> )   | 2250/08        | . Porous plug   |
| 5/562       | . . {starting from scrap}  | <b>2300/00</b> | <b>Process aspects</b>  |
| 5/565       | . . . {Preheating of scrap ( <a href="#">apparatus for preheating scrap in general F27D 13/002</a> )}  | 2300/02        | . Foam creation   |
| 5/567       | . . {operating in a continuous way}  | 2300/04        | . Avoiding foam formation   |
| <b>7/00</b> | <b>Treating molten ferrous alloys, e.g. steel, not covered by groups <a href="#">C21C 1/00</a> - <a href="#">C21C 5/00</a> (<a href="#">treating molten metals during moulding B22D 1/00, B22D 27/00</a>; <a href="#">remelting ferrous metals C22B</a>)</b> | 2300/06        | . Modeling of the process, e.g. for control purposes; CII                             |
| 7/0006      | . {Adding metallic additives}  | 2300/08        | . Particular sequence of the process steps  |
| 2007/0012   | . . {Lead}   |                |   |
| 2007/0018   | . . {Boron}  |                |   |
| 7/0025      | . {Adding carbon material}   |                |   |
| 2007/0031   | . . {being plastics, organic compounds, polymers}  |                |   |
| 7/0037      | . {by injecting powdered material}   |                |   |
| 7/0043      | . . {into the falling stream of molten metal}  |                |   |
| 7/005       | . {using exothermic reaction compositions}   |                |   |
| 7/0056      | . {using cored wires}  |                |   |
| 2007/0062   | . . {with introduction of alloying or treating agents under a compacted form different from a wire, e.g. briquette, pellet}  |                |   |
| 7/0068      | . {by introducing material into a current of streaming metal}  |                |   |
| 7/0075      | . {Treating in a ladle furnace, e.g. up-/reheating of molten steel within the ladle}   |                |   |
| 7/0081      | . {Treating and handling under pressure}   |                |   |
| 7/0087      | . {Treatment of slags covering the steel bath, e.g. for separating slag from the molten metal}   |                |   |
| 2007/0093   | . {Duplex process; Two stage processes}  |                |   |
| 7/04        | . Removing impurities by adding a treating agent   |                |   |
| 7/06        | . . Deoxidising, e.g. killing  |                |   |
| 7/064       | . . Dephosphorising; Desulfurising   |                |   |
| 7/0645      | . . . {Agents used for dephosphorising or desulfurising}   |                |   |
| 7/068       | . . Decarburising  |                |   |
| 7/0685      | . . . {of stainless steel}   |                |   |
| 7/072       | . . Treatment with gases ( <a href="#">C21C 7/06</a> , <a href="#">C21C 7/064</a> , <a href="#">C21C 7/068 take precedence</a> )   |                |   |
| 7/076       | . . Use of slags or fluxes as treating agents ( <a href="#">C21C 7/06</a> , <a href="#">C21C 7/064</a> , <a href="#">C21C 7/068 take precedence</a> )  |                |   |
| 7/10        | . Handling in a vacuum   |                |   |