

CPC**COOPERATIVE PATENT CLASSIFICATION****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](#))

C21C 1/00

Refining of pig-iron; Cast iron

C21C 1/02

. Dephosphorising or desulfurising

C21C 1/025

. . { [Agents used for dephosphorising or desulfurising](#) }

C21C 1/04

. Removing impurities other than carbon, phosphorus or sulfur

C21C 1/06

. Constructional features of mixers for pig-iron

C21C 1/08

. Manufacture of cast-iron

C21C 1/10

. Making spheroidal graphite cast-iron

C21C 1/105

. . { [Nodularising additive agents](#) }

C21C 3/00

Manufacture of wrought-iron or wrought-steel

C21C 5/00

Manufacture of carbon-steel, e.g. plain mild steel, medium carbon steel or cast steel { [or stainless steel](#) }

C21C 5/005

. { [Manufacture of stainless steel](#) }

C21C 5/02

. Crucible furnace process {([C21C 5/005 takes precedence](#))}

C21C 5/04

. Manufacture of hearth-furnace steel, e.g. Siemens-Martin steel {([C21C 5/005 takes precedence](#))}

C21C 5/06

. . Processes yielding slags of special composition

C21C 5/28

. Manufacture of steel in the converter {([C21C 5/005 takes precedence](#))}

C21C 5/285

. . { [Plants therefor](#) }

C21C 5/30

. . Regulating or controlling the blowing

C21C 5/305

. . . { [Afterburning](#) }

C21C 5/32

. . . Blowing from above ([C21C 5/35 takes precedence](#))

C21C 5/34

. . . Blowing through the bath ([C21C 5/35 takes precedence](#))

C21C 5/35

. . . Blowing from above and through the bath

C21C 5/36

. . Processes yielding slags of special composition

C21C 5/38

. . Removal of waste gases or dust

C21C 5/40

. . . Offtakes or separating apparatus for converter waste gases or dust

C21C 5/42

. . Constructional features of converters

C21C 5/44

. . . Refractory linings

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|------------------|-------|---|
| C21C 5/441 | | { Equipment used for making or repairing linings } |
| C21C 5/443 | | { Hot fettling; Flame gunning } |
| C21C 5/445 | .... | { Lining or repairing the taphole } |
| C21C 5/46 | ... | Details or accessories |
| C21C 5/4606 | .... | { Lances or injectors } |
| C21C 5/4613 | ..... | { Refractory coated lances; Immersion lances } |
| C21C 5/462 | ..... | { Means for handling, e.g. adjusting, changing, coupling } |
| C21C 5/4633 | .... | { Supporting means } |
| C21C 5/464 | ..... | { Trunnion bearings } |
| C21C 5/4646 | .... | { Cooling arrangements } |
| C21C 5/4653 | .... | { Tapholes; Opening or plugging thereof } |
| C21C 5/466 | .... | { Charging device for converters } |
| C21C 5/4673 | .... | { Measuring and sampling devices } |
| C21C 5/4686 | .... | { Vehicles for supporting and transporting a converter vessel } |
| C21C 5/4693 | .... | { Skull removal; Cleaning of the converter mouth } |
| C21C 5/48 | .... | Bottoms or tuyères of converters |
| C21C 5/50 | .... | Tilting mechanisms for converters |
| C21C 5/52 | . | Manufacture of steel in electric furnaces ({ C21C 5/005 takes precedence } ; electric heating per se H05B) |
| C21C 5/5205 | .. | { in a plasma heated furnace } |
| C21C 5/5211 | .. | { in an alternating current (AC) electric arc furnace } |
| C21C 5/5217 | ... | { equipped with burners or devices for injecting gas, i.e. oxygen, or pulverulent materials into the furnace } |
| C21C 5/5229 | .. | { in a direct current (DC) electric arc furnace } |
| C21C 5/5241 | .. | { in an inductively heated furnace } |
| C21C 5/5247 | ... | { processing a moving metal stream while exposed to an electromagnetic field, e.g. in an electromagnetic counter current channel } |
| C21C 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 } |
| C21C 5/5264 | .. | { Manufacture of alloyed steels including ferro-alloys } |
| C21C 5/527 | .. | { Charging of the electric furnace } |
| C21C 5/5294 | .. | { General arrangement or layout of the electric melt shop } |
| C21C 5/54 | .. | Processes yielding slags of special composition |
| C21C 5/56 | . | Manufacture of steel by other methods (making liquid steel by direct processes C21B 13/00) { (C21C 5/005 takes precedence) } |
| C21C 5/562 | .. | { starting from scrap } |
| C21C 5/565 | ... | { Preheating of scrap (apparatus for preheating scrap in general F27D 13/002) } |
| C21C 5/567 | .. | { operating in a continuous way } |
| C21C 7/00 | | Treating molten ferrous alloys, e.g. steel, not covered by groups C21C 1/00 to C21C 5/00 (treating molten metals during moulding B22D 1/00, B22D 27/00; remelting ferrous metals C22B) |

- C21C 7/0006 . { Adding metallic additives }
- C21C 7/0025 . { Adding carbon material }
- C21C 7/0037 . { by injecting powdered material }
- C21C 7/0043 . . { into the falling stream of molten metal }
- C21C 7/005 . { using exothermic reaction compositions }
- C21C 7/0056 . { using cored wires }
- C21C 7/0068 . { by introducing material into a current of streaming metal }
- C21C 7/0075 . { Treating in a ladle furnace, e.g. up-/reheating of molten steel within the ladle }
- C21C 7/0081 . { Treating and handling under pressure }
- C21C 7/0087 . { Treatment of slags covering the steel bath, e.g. for separating slag from the molten metal }
- C21C 7/04 . Removing impurities by adding a treating agent
- C21C 7/06 . . Deoxidising, e.g. killing
- C21C 7/064 . . Dephosphorising; Desulfurising
- C21C 7/0645 . . . { Agents used for dephosphorising or desulfurising }
- C21C 7/068 . . Decarburising
- C21C 7/0685 . . . { of stainless steel }
- C21C 7/072 . . Treatment with gases ([C21C 7/06](#), [C21C 7/064](#), [C21C 7/068](#) take precedence)
- C21C 7/076 . . Use of slags or fluxes as treating agents ([C21C 7/06](#), [C21C 7/064](#), [C21C 7/068](#) take precedence)
- C21C 7/10 . Handling in a vacuum
- C21C 2005/00** **Manufacture of carbon-steel, e.g. plain mild steel, medium carbon steel or cast steel { or stainless steel }**
- C21C 2005/28 . Manufacture of steel in the converter {([C21C 5/005](#) takes precedence)}
- C21C 2005/36 . . Processes yielding slags of special composition
- C21C 2005/363 . . . Slag cements
- C21C 2005/366 . . . Foam slags
- C21C 2005/42 . . Constructional features of converters
- C21C 2005/44 . . . Refractory linings
- C21C 2005/445 { Lining or repairing the taphole }
- C21C 2005/446 Dry linings
- C21C 2005/448 Lining wear indicators
- C21C 2005/46 . . Details or accessories
- C21C 2005/4606 . . . { Lances or injectors }

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|--------------------------------|-------|---|
| C21C 2005/4626 | | Means for cooling, e.g. by gases, fluids or liquids |
| C21C 2005/466 | | { Charging device for converters } |
| C21C 2005/4666 | ..... | for charging with organic contaminated scrap |
| C21C 2005/4673 | .... | { Measuring and sampling devices } |
| C21C 2005/468 | ..... | Means for determining the weight of the converter |
| C21C 2005/52 | . | Manufacture of steel in electric furnaces ({ C21C 5/005 takes precedence } ; electric heating per se H05B) |
| C21C 2005/5211 | .. | { in an alternating current (AC) electric arc furnace } |
| C21C 2005/5223 | ... | with post-combustion |
| C21C 2005/5229 | .. | { in a direct current (DC) electric arc furnace } |
| C21C 2005/5235 | ... | with bottom electrodes |
| C21C 2005/5258 | .. | with crater formed by down-melting of scrap or charge through electrode or lance |
| C21C 2005/527 | .. | { Charging of the electric furnace } |
| C21C 2005/5276 | ... | with liquid or solid rest, e.g. pool, "sumpf" |
| C21C 2005/5282 | ... | with organic contaminated scrap |
| C21C 2005/5288 | .. | Measuring or sampling devices |
| C21C 2007/00 | | Treating molten ferrous alloys, e.g. steel, not covered by groups C21C 1/00 to C21C 5/00 (treating molten metals during moulding B22D 1/00, B22D 27/00; remelting ferrous metals C22B) |
| C21C 2007/0006 | . | { Adding metallic additives } |
| C21C 2007/0012 | .. | Lead |
| C21C 2007/0018 | .. | Boron |
| C21C 2007/0025 | . | { Adding carbon material } |
| C21C 2007/0031 | .. | being plastics, organic compounds, polymers |
| C21C 2007/0056 | . | { using cored wires } |
| C21C 2007/0062 | .. | with introduction of alloying or treating agents under a compacted form different from a wire, e.g. briquette, pellet |
| C21C 2007/0093 | . | Duplex process; Two stage processes |
| C21C 2100/00 | | Exhaust gas |
| C21C 2100/02 | . | Treatment of the exhaust gas |
| C21C 2100/04 | . | Recirculation of the exhaust gas |
| C21C 2100/06 | . | Energy from waste gas used in other processes |
| C21C 2200/00 | | Recycling of waste material |
| C21C 2250/00 | | Specific additives ; Means for adding material different from burners or lances |

- C21C 2250/02
 - . Hot oxygen
- C21C 2250/04
 - . Liquid gas
- C21C 2250/042
 - . . Liquid oxygen
- C21C 2250/06
 - . Hollow electrode
- C21C 2250/08
 - . Porous plug
- C21C 2300/00**
 - Process aspects**
- C21C 2300/02
 - . Foam creation
- C21C 2300/04
 - . Avoiding foam formation
- C21C 2300/06
 - . Modeling of the process , e.g. for control purposes ; CII
- C21C 2300/08
 - . Particular sequence of the process steps