

# 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](#))

1/00	<b>Refining of pig-iron; Cast iron</b>	5/4606	. . . .	{Lances or injectors}
1/02	. Dephosphorising or desulfurising	5/4613	. . . .	{Refractory coated lances; Immersion lances}
1/025	. . {Agents used for dephosphorising or desulfurising}	5/462	. . . .	{Means for handling, e.g. adjusting, changing, coupling}
1/04	. Removing impurities other than carbon, phosphorus or sulfur	2005/4626	. . . .	{Means for cooling, e.g. by gases, fluids or liquids}
1/06	. Constructional features of mixers for pig-iron	5/4633	. . . .	{Supporting means}
1/08	. Manufacture of cast-iron	5/464	. . . .	{Trunnion bearings}
1/10	. Making spheroidal graphite cast-iron	5/4646	. . . .	{Cooling arrangements}
1/105	. . {Nodularising additive agents}	5/4653	. . . .	{Tapholes; Opening or plugging thereof}
3/00	<b>Manufacture of wrought-iron or wrought-steel</b>	5/466	. . . .	{Charging device for converters}
5/00	<b>Manufacture of carbon-steel, e.g. plain mild steel, medium carbon steel or cast steel {or stainless steel}</b>	2005/4666	. . . .	{for charging with organic contaminated scrap}
5/005	. {Manufacture of stainless steel}	5/4673	. . . .	{Measuring and sampling devices}
5/02	. Crucible furnace process {(C21C 5/005 takes precedence)}	2005/468	. . . .	{Means for determining the weight of the converter}
5/04	. Manufacture of hearth-furnace steel, e.g. Siemens-Martin steel {(C21C 5/005 takes precedence)}	5/4686	. . . .	{Vehicles for supporting and transporting a converter vessel}
5/06	. . Processes yielding slags of special composition	5/4693	. . . .	{Skull removal; Cleaning of the converter mouth}
5/28	. Manufacture of steel in the converter {(C21C 5/005 takes precedence)}	5/48	. . . .	Bottoms or tuyères of converters
5/285	. . {Plants therefor}	5/50	. . . .	Tilting mechanisms for converters
5/30	. . Regulating or controlling the blowing	5/52	. . . .	Manufacture of steel in electric furnaces {(C21C 5/005 takes precedence); electric heating per se H05B}
5/305	. . . {Afterburning}	5/5205	. . . .	{in a plasma heated furnace}
5/32	. . . Blowing from above (C21C 5/35 takes precedence)	5/5211	. . . .	{in an alternating current [AC] electric arc furnace}
5/34	. . . Blowing through the bath (C21C 5/35 takes precedence)	5/5217	. . . .	{equipped with burners or devices for injecting gas, i.e. oxygen, or pulverulent materials into the furnace}
5/35	. . . Blowing from above and through the bath	2005/5223	. . . .	{with post-combustion}
5/36	. . Processes yielding slags of special composition	5/5229	. . . .	{in a direct current [DC] electric arc furnace}
2005/363	. . . {Slag cements}	2005/5235	. . . .	{with bottom electrodes}
2005/366	. . . {Foam slags}	5/5241	. . . .	{in an inductively heated furnace}
5/38	. . Removal of waste gases or dust	5/5247	. . . .	{processing a moving metal stream while exposed to an electromagnetic field, e.g. in an electromagnetic counter current channel}
5/40	. . . Offtakes or separating apparatus for converter waste gases or dust	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}
5/42	. . Constructional features of converters	2005/5258	. . . .	{with crater formed by down-melting of scrap or charge through electrode or lance}
5/44	. . . Refractory linings			
5/441	. . . . {Equipment used for making or repairing linings}			
5/443	. . . . . {Hot fettling; Flame gunning}			
5/445	. . . . . {Lining or repairing the taphole}			
2005/446	. . . . . {Dry linings}			
2005/448	. . . . . {Lining wear indicators}			
5/46	. . . Details or accessories			

## C21C

- 5/5264 . . {Manufacture of alloyed steels including ferro-alloys}
- 5/527 . . {Charging of the electric furnace}
- 2005/5276 . . . {with liquid or solid rest, e.g. pool, "sumpf"}
- 2005/5282 . . . {with organic contaminated scrap}
- 2005/5288 . . {Measuring or sampling devices}
- 5/5294 . . {General arrangement or layout of the electric melt shop}
- 5/54 . . Processes yielding slags of special composition
- 5/56 . Manufacture of steel by other methods ([making liquid steel by direct processes C21B 13/00](#) ; [C21C 5/005 takes precedence](#))
- 5/562 . . {starting from scrap}
- 5/565 . . . {Preheating of scrap ([apparatus for preheating scrap in general F27D 13/002](#))}
- 5/567 . . {operating in a continuous way}
- 7/00** **Treating molten ferrous alloys, e.g. steel, not covered by groups [C21C 1/00](#) - [C21C 5/00](#) ([treating molten metals during moulding B22D 1/00, B22D 27/00](#); [remelting ferrous metals C22B](#))**
- 7/0006 . {Adding metallic additives}
- 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 ([C21C 7/06](#), [C21C 7/064](#), [C21C 7/068 take precedence](#))
- 7/076 . . Use of slags or fluxes as treating agents ([C21C 7/06](#), [C21C 7/064](#), [C21C 7/068 take precedence](#))
- 7/10 . Handling in a vacuum
- 2100/00** **Exhaust gas**
- 2100/02 . Treatment of the exhaust gas
- 2100/04 . Recirculation of the exhaust gas
- 2100/06 . Energy from waste gas used in other processes
- 2200/00** **Recycling of waste material**
- 2250/00** **Specific additives; Means for adding material different from burners or lances**
- 2250/02 . Hot oxygen
- 2250/04 . Liquid gas
- 2250/042 . . Liquid oxygen
- 2250/06 . Hollow electrode
- 2250/08 . Porous plug
- 2300/00** **Process aspects**
- 2300/02 . Foam creation
- 2300/04 . Avoiding foam formation
- 2300/06 . Modeling of the process, e.g. for control purposes; CII
- 2300/08 . Particular sequence of the process steps