CPC  COOPERATIVE PATENT CLASSIFICATION

MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING

(NOTE omitted)

LIGHTING; HEATING

F27  FURNACES; KILNS; OVENS; RETORTS

(NOTES omitted)

F27B  FURNACES, KILNS, OVENS, OR RETORTS IN GENERAL; OPEN SINTERING OR LIKE APPARATUS

NOTE

Attention is drawn to the references and notes following the title of class F27 and the note (par. III) following the Contents of Section H.

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

   F27B 1/09  covered by  F27B 1/08
   F27B 5/05  covered by  F27B 5/04
   F27B 14/16, F27B 14/18  covered by  F27B 14/0806
   F27B 21/08 - F27B 21/14  covered by  F27D 3/00, F27D 21/00

2. 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.

   1/00  Shaft or like vertical or substantially vertical furnaces (for preheating, burning, calcining or cooling lime, magnesia or dolomite C04B 2/12)

   1/005  (wherein no smelting of the charge occurs, e.g. calcining or sintering furnaces)

   1/02  with two or more shafts or chambers, e.g. multi-storey

   1/025  { with fore-hearth }

   1/04  . . . Combinations or arrangements of shafts

   1/06  . . . of other than up-draught type

   1/08  . . . heated otherwise than by solid fuel mixed with charge

   1/10  . . . Details, accessories, or equipment peculiar to furnaces of these types

   1/12  . . . Shells or casings; Supports therefor

   1/14  . . . Arrangements of linings (linings in general F27D 1/00)

   1/16  . . . Arrangements of tuyeres

   1/18  . . . Arrangements of dust collectors

   1/20  . . . Arrangements of devices for charging

   1/21  . . . Arrangements of devices for discharging


   1/24  . . . Cooling arrangements

   1/26  . . . Arrangements of controlling devices

   1/28  . . . Arrangements of monitoring devices, of indicators, of alarm devices

   3/00  Hearth-type furnaces, e.g. of reverberatory type

   (F27B 9/00, F27B 11/00, F27B 13/00, F27B 14/00, F27B 15/00, F27B 21/00 take precedence); Tank furnaces

   3/002  { Siemens-Martin type furnaces }

   3/005  . . . { Port construction }

   3/007  . . . { Removable burner head }

   3/02  . . . of single-chamber fixed-hearth type

   3/04  . . . of multiple-hearth type; of multiple-chamber type; Combinations of hearth-type furnaces

   3/045  . . . { Multiple chambers, e.g. one of which is used for charging }

   3/06  . . . with movable working chambers or hearths, e.g. tiltable [, oscillating or describing a composed movement]

   3/065  . . . { tiltable }

   3/08  . . . heated electrically, with or without any other source of heat

   3/085  . . . { Arc furnaces }

   3/10  . . . Details, accessories, or equipment peculiar to hearth-type furnaces

   3/105  . . . { Slag chamber }

   3/12  . . . Working chambers or casings; Supports therefor

   2003/125  . . . { Hearths }

   3/14  . . . Arrangements of linings

   3/16  . . . Walls; Roofs

   2003/165  . . . { Roofs }

   3/18  . . . Arrangements of devices for charging

   3/183  . . . { Charging of arc furnaces vertically through the roof, e.g. in three points }

   3/186  . . . { Charging in a vertical chamber adjacent to the melting chamber }

   3/19  . . . Arrangements of devices for discharging

   3/20  . . . Arrangements of heating devices

   3/205  . . . { Burners }

   3/22  . . . Arrangements of air or gas supply devices

   3/225  . . . { Oxygen blowing }

   3/24  . . . Cooling arrangements
Muffle furnaces; Retort furnaces; Other furnaces in which the charge is held completely isolated (F27B 9/00 takes precedence)

- Arrangements of heat-exchange apparatus
- [Regenerators]
- [Exhaust gases reversing flow devices]
- Arrangement of controlling, monitoring, alarm or the like devices

5/00

7/00

Rotary-drum furnaces, i.e. horizontal or slightly inclined

- Arrangements of heat-exchange apparatus
- [Regenerators]
- [Exhaust gases reversing flow devices]
- Arrangement of controlling, monitoring, alarm or the like devices

5/00

7/00

Rotary-drum furnaces, i.e. horizontal or slightly inclined

- Arrangements of heat-exchange apparatus
- [Regenerators]
- [Exhaust gases reversing flow devices]
- Arrangement of controlling, monitoring, alarm or the like devices

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7/00

Rotary-drum furnaces, i.e. horizontal or slightly inclined

- Arrangements of heat-exchange apparatus
- [Regenerators]
- [Exhaust gases reversing flow devices]
- Arrangement of controlling, monitoring, alarm or the like devices

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Rotary-drum furnaces, i.e. horizontal or slightly inclined

- Arrangements of heat-exchange apparatus
- [Regenerators]
- [Exhaust gases reversing flow devices]
- Arrangement of controlling, monitoring, alarm or the like devices

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- Arrangements of heat-exchange apparatus
- [Regenerators]
- [Exhaust gases reversing flow devices]
- Arrangement of controlling, monitoring, alarm or the like devices

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Rotary-drum furnaces, i.e. horizontal or slightly inclined

- Arrangements of heat-exchange apparatus
- [Regenerators]
- [Exhaust gases reversing flow devices]
- Arrangement of controlling, monitoring, alarm or the like devices

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Rotary-drum furnaces, i.e. horizontal or slightly inclined

- Arrangements of heat-exchange apparatus
- [Regenerators]
- [Exhaust gases reversing flow devices]
- Arrangement of controlling, monitoring, alarm or the like devices

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Rotary-drum furnaces, i.e. horizontal or slightly inclined

- Arrangements of heat-exchange apparatus
- [Regenerators]
- [Exhaust gases reversing flow devices]
- Arrangement of controlling, monitoring, alarm or the like devices

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Rotary-drum furnaces, i.e. horizontal or slightly inclined

- Arrangements of heat-exchange apparatus
- [Regenerators]
- [Exhaust gases reversing flow devices]
- Arrangement of controlling, monitoring, alarm or the like devices

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Rotary-drum furnaces, i.e. horizontal or slightly inclined

- Arrangements of heat-exchange apparatus
- [Regenerators]
- [Exhaust gases reversing flow devices]
- Arrangement of controlling, monitoring, alarm or the like devices

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Rotary-drum furnaces, i.e. horizontal or slightly inclined

- Arrangements of heat-exchange apparatus
- [Regenerators]
- [Exhaust gases reversing flow devices]
- Arrangement of controlling, monitoring, alarm or the like devices

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Rotary-drum furnaces, i.e. horizontal or slightly inclined

- Arrangements of heat-exchange apparatus
- [Regenerators]
- [Exhaust gases reversing flow devices]
- Arrangement of controlling, monitoring, alarm or the like devices

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7/00

Rotary-drum furnaces, i.e. horizontal or slightly inclined

- Arrangements of heat-exchange apparatus
- [Regenerators]
- [Exhaust gases reversing flow devices]
- Arrangement of controlling, monitoring, alarm or the like devices

5/00

7/00

Rotary-drum furnaces, i.e. horizontal or slightly inclined

- Arrangements of heat-exchange apparatus
- [Regenerators]
- [Exhaust gases reversing flow devices]
- Arrangement of controlling, monitoring, alarm or the like devices

5/00

7/00

Rotary-drum furnaces, i.e. horizontal or slightly inclined

- Arrangements of heat-exchange apparatus
- [Regenerators]
- [Exhaust gases reversing flow devices]
- Arrangement of controlling, monitoring, alarm or the like devices

5/00

7/00

Rotary-drum furnaces, i.e. horizontal or slightly inclined

- Arrangements of heat-exchange apparatus
- [Regenerators]
- [Exhaust gases reversing flow devices]
- Arrangement of controlling, monitoring, alarm or the like devices

5/00

7/00

Rotary-drum furnaces, i.e. horizontal or slightly inclined

- Arrangements of heat-exchange apparatus
- [Regenerators]
- [Exhaust gases reversing flow devices]
- Arrangement of controlling, monitoring, alarm or the like devices

5/00

7/00

Rotary-drum furnaces, i.e. horizontal or slightly inclined

- Arrangements of heat-exchange apparatus
- [Regenerators]
- [Exhaust gases reversing flow devices]
- Arrangement of controlling, monitoring, alarm or the like devices

5/00

7/00

Rotary-drum furnaces, i.e. horizontal or slightly inclined

- Arrangements of heat-exchange apparatus
- [Regenerators]
- [Exhaust gases reversing flow devices]
- Arrangement of controlling, monitoring, alarm or the like devices

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7/00

Rotary-drum furnaces, i.e. horizontal or slightly inclined

- Arrangements of heat-exchange apparatus
- [Regenerators]
- [Exhaust gases reversing flow devices]
- Arrangement of controlling, monitoring, alarm or the like devices

5/00

7/00

Rotary-drum furnaces, i.e. horizontal or slightly inclined

- Arrangements of heat-exchange apparatus
- [Regenerators]
- [Exhaust gases reversing flow devices]
- Arrangement of controlling, monitoring, alarm or the like devices

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7/00

Rotary-drum furnaces, i.e. horizontal or slightly inclined

- Arrangements of heat-exchange apparatus
- [Regenerators]
- [Exhaust gases reversing flow devices]
- Arrangement of controlling, monitoring, alarm or the like devices

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7/00

Rotary-drum furnaces, i.e. horizontal or slightly inclined

- Arrangements of heat-exchange apparatus
- [Regenerators]
- [Exhaust gases reversing flow devices]
- Arrangement of controlling, monitoring, alarm or the like devices

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7/00

Rotary-drum furnaces, i.e. horizontal or slightly inclined

- Arrangements of heat-exchange apparatus
- [Regenerators]
- [Exhaust gases reversing flow devices]
- Arrangement of controlling, monitoring, alarm or the like devices

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7/00

Rotary-drum furnaces, i.e. horizontal or slightly inclined

- Arrangements of heat-exchange apparatus
- [Regenerators]
- [Exhaust gases reversing flow devices]
- Arrangement of controlling, monitoring, alarm or the like devices

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7/00

Rotary-drum furnaces, i.e. horizontal or slightly inclined

- Arrangements of heat-exchange apparatus
- [Regenerators]
- [Exhaust gases reversing flow devices]
- Arrangement of controlling, monitoring, alarm or the like devices

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7/00

Rotary-drum furnaces, i.e. horizontal or slightly inclined

- Arrangements of heat-exchange apparatus
- [Regenerators]
- [Exhaust gases reversing flow devices]
- Arrangement of controlling, monitoring, alarm or the like devices

5/00

7/00

Rotary-drum furnaces, i.e. horizontal or slightly inclined

- Arrangements of heat-exchange apparatus
- [Regenerators]
- [Exhaust gases reversing flow devices]
- Arrangement of controlling, monitoring, alarm or the like devices

5/00

7/00

Rotary-drum furnaces, i.e. horizontal or slightly inclined

- Arrangements of heat-exchange apparatus
- [Regenerators]
- [Exhaust gases reversing flow devices]
- Arrangement of controlling, monitoring, alarm or the like devices

5/00
Furnaces through which the charge is moved mechanically, e.g. of tunnel type (F27B 7/14 takes precedence); Similar furnaces in which the charge moves by gravity

9/00 of multiple-track type; of multiple-chamber type; Combinations of furnaces
9/02 (having two or more parallel tracks)
9/021 [With two tracks moving in opposite directions]
9/022 [with a U turn at one end]
9/023 [with superimposed tracks]
9/025 (having two or more superimposed tracks (F27B 9/024 takes precedence))

2009/026 (Two or more conveyors, e.g. mounted successively)
2009/027 (working in parallel)
9/028 (Multi-chamber type furnaces, (F27B 9/029 takes precedence))
9/029 (Multicellular type furnaces constructed with add-on modules)
9/04 adapted for treating the charge in vacuum or special atmosphere
9/042 (Vacuum furnaces)
9/045 (Furnaces with controlled atmosphere)
9/047 (the atmosphere consisting of protective gases)
9/06 heated without contact between combustion gases and charge; electrically heated
9/061 (with at least two longitudinal chambers carrying combustion gases, i.e. of the Dressler type)
9/062 [electrically heated]
9/063 (Resistor heating, e.g. with resistors also emitting IR rays)
9/065 (the resistance being transported by the conveyor)
9/066 (heated by lamps)
9/067 (heated by induction)
9/068 (heated by radiant tubes, the tube being heated by a hot medium, e.g. hot gases)
9/08 heated through chamber walls
9/082 (Muffle furnaces)
9/084 (the muffle being fixed and in a single piece)
9/086 (with two or more fixed muffles)
9/088 (Series of separate muffles conveyed through the furnace)
9/10 heated by hot air or gas
9/12 with special arrangements for preheating or cooling the charge

2009/122 (Preheating)
2009/124 (Cooling)
2009/126 (involving the circulation of cooling gases, e.g. air)
2009/128 (the gases being further utilised as oxidants in the burners)
9/14 characterised by the path of the charge during treatment; characterised by the means by which the charge is moved during treatment (F27B 9/28 takes precedence; travelling or movable supports or containers for the charge (F27D 3/12)
9/142 (the charge moving along a vertical axis)
9/145 (the charge moving along a serpentine path)
9/147 (the charge moving on an inclined floor)
9/16 the charge moving in a circular or arcuate path
9/18 under the action of scrapers or pushers
9/185 (multiple hearth type furnaces)
9/20 the charge moving in a substantially straight path (tunnel furnace)
9/201 (walking beam furnace)
9/202 (Conveyor mechanisms therefor)
9/203 (having ramps (F27B 9/206 takes precedence))
9/205 (having eccentric or lever arms (F27B 9/206 takes precedence))
9/206 (consisting of a single central beam)
9/207 (consisting of two or more conveyors)
9/208 . . . . [the workpieces being rotated during their advance]
9/22 . . . . [on rails, e.g.] under the action of scrapers or pushers (F27B 9/26 takes precedence)
9/222 . . . . [the path comprising a section specially adapted for effecting equalisation of the temperature of the charge]
9/225 . . . . [the charge being subjected to an additional manipulation along the path]
9/227 . . . . [with rotation of the charge (F27B 9/147 takes precedence)]
9/24 . . . . being carried by a conveyor [(transport by conveyors in general B65G)]
9/2407 . . . . [the conveyor being constituted by rollers (roller hearth furnace)]
9/2415 . . . . [the charge rotating about an axis transversal to the axis of advancement of the charge]
9/2423 . . . . [the charge rotating about an axis parallel to the axis of advancement of the charge]
9/243 . . . . [Endless-strand conveyor]
2009/2438 . . . . [with means to transfer the heat from the outcoming band to the incoming band]
2009/2446 . . . . [with means to control the tension of the band]
9/2453 . . . . [Vibrating conveyor (shaker hearth furnace)]
9/2461 . . . . [the charge being suspended from the conveyor]
9/2469 . . . . [the conveyor being constituted by rollable bodies]
9/2476 . . . . [the conveyor being constituted by air cushion]
2009/2484 . . . . [the conveyor being a helical device]
2009/2492 . . . . [the conveyor being constituted by series of little rams or ratchets, moving the charge along]
9/26 . . . . on or in trucks, sleds, or containers
9/262 . . . . [on or in trucks]
2009/264 . . . . [the truck carrying a partition]
2009/266 . . . . [the truck having conducts for guiding the atmosphere]
2009/268 . . . . . [through the structure of the car and through the charge]
9/28 . . . . [for treating continuous lengths of work]
9/30 . . . . Details, accessories, or equipment peculiar to furnaces of these types
9/3005 . . . . [arrangements for circulating gases]
9/3011 . . . . [arrangements for circulating gases transversally]
2009/3016 . . . . [with arrangements to circulate gases through the charge]
2009/3022 . . . . [with arrangements to maintain oxidising reducing or neutral zones]
2009/3027 . . . . [Use of registers, partitions]
2009/3033 . . . . [Fumes circulating in the same direction as the charge]
2009/3038 . . . . [Fumes or gases alternatively changing their longitudinal direction]
9/3044 . . . . [Furnace regenerators]
2009/305 . . . . [Particular conformation of the furnace]
2009/3055 . . . . [Non-uniform section through the length of the furnace]
2009/3061 . . . . [Furnaces with longitudinal grooves]
2009/3066 . . . . [Cooling the under-structure of the kiln, e.g. under the cars]
2009/3072 . . . . [Balancing the pressure between the upper part and the lower part of the kiln, above and under the track]
9/3077 . . . . [Arrangements for treating electronic components, e.g. semiconductors]
2009/3083 . . . . [Arrangements to handle skid marks]
2009/3088 . . . . [Drying arrangements]
2009/3094 . . . . [Means to store a part of the charge in the furnace]
9/32 . . . . . Casings
9/34 . . . . . Arrangements of linings
9/36 . . . . . Arrangements of heating devices
2009/3607 . . . . [Heaters located above the track of the charge]
2009/3615 . . . . [Burner in the ceiling directed vertically downwards]
2009/3623 . . . . [Heaters located under the track]
2009/363 . . . . [Burners in the hearth directed towards the ceiling]
2009/3638 . . . . [Heaters located above and under the track]
2009/3646 . . . . [Heating the ceiling or the walls for a reverberatory effect]
2009/3653 . . . . [Preheated fuel]
2009/3661 . . . . [preheated with the exhaust gases]
2009/3669 . . . . [preheated with the gases of the cooling zone]
2009/3676 . . . . [preheated with the gases of the preheating zone]
2009/3684 . . . . [Combustion within a combustion chamber with outlets in the kiln chamber]
2009/3692 . . . . [The charge containing combustible materials]
9/38 . . . . Arrangements of devices for charging
2009/382 . . . . [Charging]
2009/384 . . . . [Discharging]
2009/386 . . . . [Lateral intake or outtake]
2009/388 . . . . . [Centrally in the lateral wall]
9/39 . . . . Arrangements of devices for discharging
9/40 . . . . Arrangements of controlling or monitoring devices

11/00 Bell-type furnaces (for treating metal strips or wire C21D 9/663)

13/00 Furnaces with both stationary charge and progression of heating, e.g. of ring type, of type in which segmental kiln moves over stationary charge
13/02 . . . . of multiple-chamber type with permanent partitions; Combinations of furnaces
13/04 . . . . of single-chamber type with temporary partitions
13/06 . . . . Details, accessories, or equipment peculiar to furnaces of this type
13/08 . . . . . Casings
13/10 . . . . . Arrangements of linings
13/12 . . . . . Arrangements of heating devices
13/14 . . . . . Arrangement of controlling, monitoring, alarm or like devices

14/00 Crucible or pot furnaces
2014/002 . . . . [Smelting process, e.g. sequences to melt a specific material]
2014/004 . . . . [Process involving a smelting step, e.g. vapourisation]
2014/006 . . . . [involving a salt bath or help metal bath]
Fluidised-bed furnaces; Other furnaces using or treating finely-divided materials in dispersion

(15/00)

15/12 . . . Arrangements of dust collectors
15/14 . . . Arrangements of heating devices
15/16 . . . Arrangements of cooling devices
15/18 . . . Arrangements of controlling devices
15/20 . . . Arrangements of monitoring devices, of indicators, of alarm devices

17/00 Furnaces of a kind not covered by any preceding group (structural combinations of furnaces)

17/0008 . . . [Open field furnace for burning bricks]
17/0016 . . . [Chamber type furnaces]
17/0025 . . . [Especially adapted for treating semiconductor wafers]
17/0033 . . . [the floor of the furnaces consisting of the support carrying the charge, e.g. car type furnaces]
17/0041 . . . [specially adapted for burning bricks or pottery]
17/005 . . . [with cylindrical chambers]
17/0058 . . . [with superposed cylindrical chambers]
17/0066 . . . [arrangement of the charge, e.g. bricks]
17/0075 . . . [Heating devices therefor]
17/0083 . . . [with means for circulating the atmosphere]
17/009 . . . [Series of chambers, e.g. associated in their use]
17/02 . . . specially designed for laboratory use
17/025 . . . [for dental workpieces]

19/00 Combinations of furnaces of kinds not covered by a single preceding main group

19/02 . . . combined in one structure
19/04 . . . arranged for associated working

21/00 Open or uncovered sintering apparatus; Other heat-treatment apparatus of like construction

21/02 . . . Sintering grates or tables
21/04 . . . Sintering pots or sintering pans
21/06 . . . Endless-strand sintering machines