

CPC**COOPERATIVE PATENT CLASSIFICATION****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.

WARNING

The following IPC groups are not used in the CPC system. Subject matter covered by these groups is classified in the following CPC groups:

[F27B 1/09](#) covered by [F27B 1/08](#)
[F27B 5/05](#) " " [F27B 5/04](#)
[F27B 14/16](#), [F27B 14/18](#) " " [F27B 14/0806](#)
[F27B 21/08](#) to [F27B 21/14](#) " " [F27D](#)

Guidance heading:**F27B 1/00**

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

F27B 1/005

- . {wherein no smelting of the charge occurs, e.g. calcining or sintering furnaces }

F27B 1/02

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

F27B 1/025

- .. {with fore-hearth }

F27B 1/04

- .. Combinations or arrangements of shafts

F27B 1/06

- . of other than up-draught type

F27B 1/08

- . heated otherwise than by solid fuel mixed with charge

F27B 1/10

- . Details, accessories, or equipment peculiar to furnaces of these types

F27B 1/12

- .. Shells or casings; Supports therefor

F27B 1/14

- ... Arrangements of linings ([linings in general F27D 1/00](#))

F27B 1/16

- .. Arrangements of tuyeres

F27B 1/18

- .. Arrangements of dust collectors

F27B 1/20

- .. Arrangements of devices for charging

F27B 1/21

- .. Arrangements of devices for discharging

F27B 1/22

- .. Arrangements of heat-exchange apparatus ([heat-exchangers in general F28C](#), [F28D](#))

F27B 1/24

- .. Cooling arrangements

F27B 1/26

- .. Arrangements of controlling devices

F27B 1/28

- .. Arrangements of monitoring devices, of indicators, of alarm devices

F27B 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**

- F27B 3/002 . {Siemens-Martin type furnaces }
- F27B 3/005 . . {Port construction }
- F27B 3/007 . . . {Removable burner head }

- F27B 3/02 . of single-chamber fixed-hearth type

- F27B 3/04 . of multiple-hearth type; of multiple-chamber type; Combinations of hearth-type furnaces
- F27B 3/045 . . {Multiple chambers, e.g. one of which is used for charging }

- F27B 3/06 . with movable working chambers or hearths, e.g. tiltable, {oscillating or describing a composed movement }
- F27B 3/065 . . {tiltable }

- F27B 3/08 . heated electrically, with or without any other source of heat
- F27B 3/085 . . {Arc furnaces }

- F27B 3/10 . Details, accessories, or equipment peculiar to hearth-type furnaces
- F27B 3/105 . . {Slag chamber }
- F27B 3/12 . . Working chambers or casings; Supports therefor
- F27B 2003/125 . . . Hearths
- F27B 3/14 . . . Arrangements of linings
- F27B 3/16 . . . Walls; Roofs
- F27B 2003/165 Roofs
- F27B 3/18 . . Arrangements of devices for charging
- F27B 3/183 . . . {Charging of arc furnaces vertically through the roof, e.g. in three points }
- F27B 3/186 {Charging in a vertical chamber adjacent to the melting chamber }
- F27B 3/19 . . Arrangements of devices for discharging
- F27B 3/20 . . Arrangements of heating devices
- F27B 3/205 . . . {Burners }
- F27B 3/22 . . Arrangements of air or gas supply devices
- F27B 3/225 . . . {Oxygen blowing }
- F27B 3/24 . . Cooling arrangements
- F27B 3/26 . . Arrangements of heat-exchange apparatus
- F27B 3/263 . . . {Regenerators }
- F27B 3/266 {Exhaust gases reversing flow devices }
- F27B 3/28 . . Arrangement of controlling, monitoring, alarm or the like devices

F27B 5/00 **Muffle furnaces; Retort furnaces; Other furnaces in which the charge is held completely isolated ([F27B 9/00](#) takes precedence)**

- F27B 5/02 . of multiple-chamber type

- F27B 5/04 . adapted for treating the charge in vacuum or special atmosphere
- F27B 5/06 . Details, accessories, or equipment peculiar to furnaces of these types
- F27B 2005/062 .. Cooling elements
- F27B 2005/064 ... disposed in the furnace, around the chamber, e.g. coils
- F27B 2005/066 ... disposed around the fan
- F27B 2005/068 ... for external cooling
- F27B 5/08 .. Arrangements of linings
- F27B 5/10 .. Muffles
- F27B 5/12 .. Arrangement of devices for charging
- F27B 5/13 .. Arrangement of devices for discharging
- F27B 5/14 .. Arrangements of heating devices
- F27B 2005/143 ... Heating rods disposed in the chamber
- F27B 2005/146 the heating rods being in the tubes which conduct the heating gases
- F27B 5/16 .. Arrangements of air or gas supply devices
- F27B 2005/161 ... Gas inflow or outflow
- F27B 2005/162 through closable or non-closable openings of the chamber walls
- F27B 2005/163 Controlled openings, e.g. orientable
- F27B 2005/164 Air supply through a set of tubes with openings
- F27B 2005/165 Controlled tubes, e.g. orientable or with closable openings
- F27B 2005/166 ... Means to circulate the atmosphere
- F27B 2005/167 the atmosphere being recirculated through the treatment chamber by a turbine
- F27B 2005/168 by more than one turbine
- F27B 2005/169 the atmosphere being continuously renewed by exterior means
- F27B 5/18 .. Arrangement of controlling, monitoring, alarm or like devices

F27B 7/00 Rotary-drum furnaces, i.e. horizontal or slightly inclined

- F27B 2007/005 . for the treatment of slurries or wet materials
- F27B 7/02 . of multiple-chamber or multiple-drum type
- F27B 2007/022 .. the drum having a non-uniform section along its length
- F27B 2007/025 .. with different chambers, e.g. treatment zones
- F27B 2007/027 .. with more than one drum
- F27B 7/04 .. with longitudinal divisions
- F27B 2007/041 ... Longitudinal tubes
- F27B 2007/043 ... the partition being a cylinder, coaxial to the rotary drum, defining two chambers
- F27B 2007/045 the charge going in one direction in one chamber, then after a turn coming back in the other direction in the other chamber
- F27B 2007/046 ... Radial partitions
- F27B 2007/048 defining an helical chamber
- F27B 7/06 . adapted for treating the charge in vacuum or special atmosphere

- F27B 7/08 . externally heated
- F27B 7/10 . internally heated, e.g. by means of passages in the wall
- F27B 7/12 . tiltable
- F27B 7/14 . with means for agitating or moving the charge
- F27B 7/16 .. the means being fixed relatively to the drum, {e.g. composite means } ([F27B 7/04 takes precedence](#))
- F27B 7/161 ... {the means comprising projections jutting out from the wall }
- F27B 7/162 {the projections consisting of separate lifting elements, e.g. lifting shovels }
- F27B 2007/163 using only a ring of lifting elements to lift the charge
- F27B 2007/165 forming a helical lifting projection
- F27B 7/166 ... {the means comprising chains }
- F27B 7/167 ... {the means comprising partitions }
- F27B 2007/168 Annular partition
- F27B 7/18 .. the means being movable within the drum
- F27B 7/20 . Details, accessories, or equipment peculiar to rotary-drum furnaces
- F27B 2007/2008 .. Devices for reintroducing dust in the drum
- F27B 7/2016 .. {Arrangements of preheating devices for the charge }
- F27B 7/2025 ... {consisting of a single string of cyclones }
- F27B 7/2033 {with means for precalcining the raw material }
- F27B 7/2041 ... {consisting of at least two strings of cyclones with two different admissions of raw material }
- F27B 7/205 {with precalcining means on the string supplied with exhaust gases from the cooler }
- F27B 7/2058 {with precalcining means on each string }
- F27B 7/2066 ... {comprising a band transporter }
- F27B 7/2075 .. {Removing incrustations }
- F27B 7/2083 .. {Arrangements for the melting of metals or the treatment of molten metals }
- F27B 2007/2091 .. Means for eliminating compounds from gases by condensation, e.g. alkali metals
- F27B 7/22 .. Rotary drums; Supports therefor
- F27B 7/2206 ... {Bearing rings }
- F27B 2007/2213 mounted floatingly on the drum
- F27B 2007/222 the mounting comprising radially resilient elements, e.g. springs
- F27B 2007/2226 the mounting comprising elements to maintain the ring between series of abutments
- F27B 2007/2233 the ring being fixed to the drum, e.g. welded
- F27B 7/224 ... {Discharge ends }
- F27B 2007/2246 ... Support rollers
- F27B 2007/2253 mounted movable, e.g. resiliently on the ground
- F27B 2007/226 constituted of series of two rollers mounted on tiltable support along the drum

F27B 2007/2266	.....	the mounting allowing a movement of the rollers support in a horizontal plane
F27B 2007/2273	....	with arrangements, e.g. rollers, to maintain the drum against longitudinal movement
F27B 2007/228	....	comprising rollable bodies
F27B 2007/2286	....	supporting the drum directly, without the use of a bearing ring
F27B 2007/2293	...	the furnace being suspended
F27B 7/24	...	Seals between rotary and stationary parts
F27B 7/26	..	Drives
F27B 2007/261	...	working with a ring embracing the drum
F27B 2007/262	....	A gear ring combined with a dented wheel drive
F27B 2007/263	....	A gear ring combined with a ram drive
F27B 2007/265	....	the ring being mounted floatingly
F27B 2007/266	....	the ring being a bearing ring
F27B 2007/267	....	A gear ring combined with a chain drive
F27B 2007/268	...	Details of the motor or the pinions
F27B 7/28	..	Arrangements of linings
F27B 7/30	..	Arrangements of partitions
F27B 7/32	..	Arrangement of devices for charging
F27B 7/3205	...	{Charging }
F27B 2007/3211	....	at the open end of the drum
F27B 2007/3217	.....	axially, optionally at some distance in the kiln
F27B 2007/3223	.....	the charging device being movable axially, e.g. reciprocable
F27B 2007/3229	.....	via a centrifugal device
F27B 2007/3235	.....	the introducing device comprising a spray or a lance
F27B 2007/3241	.....	in the flame of the burner
F27B 2007/3247	....	through a lateral opening in the drum
F27B 2007/3252	.....	with lifting scoops attached to the drum
F27B 2007/3258	....	at the open end of the drum
F27B 2007/3264	.....	using special discharge means located around the discharge end, e.g. lifting scoops or a transversal annular partition
F27B 2007/327	....	centrifugally through lateral openings in the drum
F27B 2007/3276	....	with a collector means extending longitudinally into the drum
F27B 2007/3282	...	Details
F27B 2007/3288	....	Sieves or grading means
F27B 2007/3294	....	Means to fluidise the charge in the air
F27B 7/33	..	Arrangement of devices for discharging
F27B 7/34	..	Arrangements of heating devices
F27B 7/36	..	Arrangements of air or gas supply devices
F27B 7/362	...	{Introducing gas into the drum axially or through the wall }
F27B 2007/365	....	longitudinally
F27B 2007/367	....	transversally through the wall of the drum
F27B 7/38	..	Arrangements of cooling devices

- F27B 7/383 ... {Cooling devices for the charge }
- F27B 7/386 {Rotary-drum cooler }
- F27B 7/40 ... Planetary coolers
- F27B 7/42 .. Arrangement of controlling, monitoring, alarm or like devices

**F27B 9/00 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**

- F27B 9/02 . of multiple-track type; of multiple-chamber type; Combinations of furnaces
- F27B 9/021 .. {having two or more parallel tracks }
- F27B 9/022 ... {With two tracks moving in opposite directions }
- F27B 9/023 {with a U turn at one end }
- F27B 9/024 {with superimposed tracks }
- F27B 9/025 ... {having two or more superimposed tracks (F27B 9/024 takes precedence) }
- F27B 2009/026 .. Two or more conveyers, e.g. mounted successively
- F27B 2009/027 ... working in parallel
- F27B 9/028 .. {Multi-chamber type furnaces, (F27B 9/029 takes precedence) }
- F27B 9/029 .. {Multicellular type furnaces constructed with add-on modules }

- F27B 9/04 . adapted for treating the charge in vacuum or special atmosphere
- F27B 9/042 .. {Vacuum furnaces }
- F27B 9/045 .. {Furnaces with controlled atmosphere }
- F27B 9/047 ... {the atmosphere consisting of protective gases }

- F27B 9/06 . heated without contact between combustion gases and charge; electrically heated
- F27B 9/061 .. {with at least two longitudinal chambers carrying combustion gases, i.e of the
Dressler type }
- F27B 9/062 .. {electrically heated }
- F27B 9/063 ... {Resistor heating, e.g. with resistors also emitting IR rays }
- F27B 9/065 {the resistance being transported by the conveyer }
- F27B 9/066 ... {heated by lamps }
- F27B 9/067 ... {heated by induction }
- F27B 9/068 .. {heated by radiant tubes, the tube being heated by a hot medium, e.g. hot gases }
- F27B 9/08 .. heated through chamber walls
- F27B 9/082 ... {Muffle furnaces }
- F27B 9/084 {the muffle being fixed and in a single piece }
- F27B 9/086 {with two or more fixed muffles }
- F27B 9/088 {Series of separate muffles conveyed through the furnace }
- F27B 9/10 .. heated by hot air or gas

- F27B 9/12 . with special arrangements for preheating or cooling the charge
- F27B 2009/122 .. Preheating
- F27B 2009/124 .. Cooling

F27B 2009/126	...	involving the circulation of cooling gases, e.g. air
F27B 2009/128	....	the gases being further utilised as oxidants in the burners
F27B 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)
F27B 9/142	..	{the charge moving along a vertical axis }
F27B 9/145	..	{the charge moving along a serpentine path }
F27B 9/147	..	{the charge moving on an inclined floor }
F27B 9/16	..	the charge moving in a circular or arcuate path
F27B 9/18	...	under the action of scrapers or pushers
F27B 9/185	....	{multiple hearth type furnaces }
F27B 9/20	..	the charge moving in a substantially straight path {tunnel furnace }
F27B 9/201	...	{walking beam furnace }
F27B 9/202	....	{Conveyer mechanisms therefor }
F27B 9/203	.....	{having ramps (F27B 9/206 takes precedence) }
F27B 9/205	.....	{having excentrics or lever arms (F27B 9/206 takes precedence) }
F27B 9/206	.....	{consisting of a single central beam }
F27B 9/207	.....	{consisting of two or more conveyers }
F27B 9/208	....	{the workpieces being rotated during their advance }
F27B 9/22	...	{on rails, e.g. } under the action of scrapers or pushers (F27B 9/26 takes precedence)
F27B 9/222	....	{the path comprising a section specially adapted for effecting equalisation of the temperature of the charge }
F27B 9/225	....	{the charge being subjected to an additional manipulation along the path }
F27B 9/227	....	{ with rotation of the charge (F27B 9/147 takes precedence) }
F27B 9/24	...	being carried by a conveyer {transport by conveyers in general B65G }
F27B 9/2407	....	{the conveyer being constituted by rollers (roller hearth furnace) }
F27B 9/2415	.....	{the charge rotating about an axis transversal to the axis of advancement of the charge }
F27B 9/2423	.....	{the charge rotating about an axis parallel to the axis of advancement of the charge }
F27B 9/243	....	{Endless-strand conveyer }
F27B 2009/2438	.....	with means to transfer the heat from the outcoming band to the incoming band
F27B 2009/2446	.....	with means to control the tension of the band
F27B 9/2453	....	{Vibrating conveyer (shaker hearth furnace) }
F27B 9/2461	....	{the charge being suspended from the conveyer }
F27B 9/2469	....	{the conveyer being constituted by rollable bodies }
F27B 9/2476	....	{the conveyer being constituted by air cushion }
F27B 2009/2484	....	the conveyer being a helical device
F27B 2009/2492	....	the conveyer being constituted by series of little rams or ratchets, moving the charge along
F27B 9/26	...	on or in trucks, sleds, or containers
F27B 9/262	....	{on or in trucks }

F27B 2009/264	.....	the truck carrying a partition
F27B 2009/266	.....	the truck having conducts for guiding the oven atmosphere
F27B 2009/268	.....	through the structure of the car and through the charge
F27B 9/28	.	for treating continuous lengths of work
F27B 9/30	.	Details, accessories, or equipment peculiar to furnaces of these types
F27B 9/3005	..	{arrangements for circulating gases }
F27B 9/3011	...	{arrangements for circulating gases transversally }
F27B 2009/3016	....	with arrangements to circulate gases through the charge
F27B 2009/3022	....	with arrangements to maintain oxidising reducing or neutral zones
F27B 2009/3027	...	Use of registers, partitions
F27B 2009/3033	...	Fumes circulating in the same direction as the charge
F27B 2009/3038	...	Fumes or gases alternatively changing their longitudinal direction
F27B 9/3044	..	{Furnace regenerators }
F27B 2009/305	..	Particular conformation of the furnace
F27B 2009/3055	...	Non-uniform section through the length of the furnace
F27B 2009/3061	...	Furnaces with longitudinal grooves
F27B 2009/3066	..	Cooling the under-structure of the kiln, e.g. under the cars
F27B 2009/3072	..	Balancing the pressure between the upper part and the lower part of the kiln, above and under the track
F27B 9/3077	..	{Arrangements for treating electronic components, e.g. semiconductors }
F27B 2009/3083	..	Arrangements to handle skid marks
F27B 2009/3088	..	Drying arrangements
F27B 2009/3094	..	Means to store a part of the charge in the furnace
F27B 9/32	..	Casings
F27B 9/34	...	Arrangements of linings
F27B 9/36	..	Arrangements of heating devices
F27B 2009/3607	...	Heaters located above the track of the charge
F27B 2009/3615	....	Burner in the ceiling directed vertically downwards
F27B 2009/3623	...	Heaters located under the track
F27B 2009/363	....	Burners in the hearth directed towards the ceiling
F27B 2009/3638	...	Heaters located above and under the track
F27B 2009/3646	...	Heating the ceiling or the walls for a reverberatory effect
F27B 2009/3653	...	Preheated fuel
F27B 2009/3661	....	preheated with the exhaust gases
F27B 2009/3669	....	preheated with the gases of the cooling zone
F27B 2009/3676	....	preheated with the gases of the preheating zone
F27B 2009/3684	...	Combustion within a combustion chamber with outlets in the kiln chamber
F27B 2009/3692	...	The charge containing combustible materials
F27B 9/38	..	Arrangements of devices for charging
F27B 2009/382	...	Charging
F27B 2009/384	...	Discharging

- F27B 2009/386 . . . Lateral intake or outtake
- F27B 2009/388 Centrally in the lateral wall
- F27B 9/39 . . Arrangements of devices for discharging
- F27B 9/40 . . Arrangements of controlling or monitoring devices

F27B 11/00 **Bell-type furnaces** (for treating metal strips or wire [C21D 9/663](#))

F27B 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**

- F27B 13/02 . of multiple-chamber type with permanent partitions; Combinations of furnaces
- F27B 13/04 . of single-chamber type with temporary partitions
- F27B 13/06 . Details, accessories, or equipment peculiar to furnaces of this type
- F27B 13/08 . . Casings
- F27B 13/10 . . . Arrangements of linings
- F27B 13/12 . . Arrangements of heating devices
- F27B 13/14 . . Arrangement of controlling, monitoring, alarm or like devices

F27B 14/00 **Crucible or pot furnace**

- F27B 2014/002 . Smelting process, e.g. sequences to melt a specific material
- F27B 2014/004 . . Process involving a smelting step, e.g. vaporisation
- F27B 2014/006 . . involving a salt bath or help metal bath
- F27B 2014/008 . Continuous casting
- F27B 14/02 . with tilting or rocking arrangements ([F27B 14/04 takes precedence](#))
- F27B 14/04 . adapted for treating the charge in vacuum or special atmosphere
- F27B 2014/045 . . Vacuum
- F27B 14/06 . heated electrically, e.g. induction crucible furnaces with or without any other source of heat ([F27B 14/04 takes precedence](#))
- F27B 14/061 . . {Induction furnaces }
- F27B 14/063 . . . {Skull melting type }
- F27B 14/065 . . . {Channel type }
- F27B 2014/066 . . . Construction of the induction furnace
- F27B 2014/068 . . with the use of an electrode producing a current in the melt
- F27B 14/08 . Details peculiar to crucible or pot furnaces
- F27B 14/0806 . . {Charging or discharging devices }
- F27B 2014/0812 . . . Continuously charging
- F27B 2014/0818 . . . Discharging

F27B 2014/0825	..	Crucible or pot support
F27B 2014/0831	...	Support or means for the transport of crucibles
F27B 2014/0837	..	Cooling arrangements
F27B 2014/0843	..	Lining or casing
F27B 2014/085	..	Preheating of the charge
F27B 2014/0856	...	Preheating of the crucible
F27B 2014/0862	..	Flux guides
F27B 2014/0868	..	Magnetic shields
F27B 2014/0875	..	Two zones or chambers, e.g. one used for charging
F27B 2014/0881	..	Two or more crucibles
F27B 2014/0887	..	Movement of the melt
F27B 2014/0893	..	Heat-conductive material disposed on the surface of the melt
F27B 14/10	..	Crucibles
F27B 2014/102	...	Form of the crucibles
F27B 2014/104	...	Crucible linings
F27B 2014/106	...	Ladles
F27B 2014/108	...	Cold crucibles (transparent to electromagnetic radiations)
F27B 14/12	...	Covers therefor
F27B 14/14	..	Arrangements of heating devices
F27B 14/143	...	{Heating of the crucible by convection of combustion gases }
F27B 2014/146	...	Recuperation of lost heat, e.g. regenerators
F27B 14/20	..	Arrangement of controlling, monitoring, alarm or like devices
F27B 15/00		Fluidised-bed furnaces; Other furnaces using or treating finely-divided materials in dispersion { (apparatus in general for carrying out chemical or physical processes in a fluidised bed reactor <u>B01J 8/24</u> to <u>B01J 8/44</u>) }
F27B 15/003	.	{Cyclones or chain of cyclones }
F27B 15/006	.	{Equipment for treating dispersed material falling under gravity with ascending gases }
F27B 15/02	.	Details, accessories, or equipment peculiar to furnaces of these types
F27B 15/04	..	Casings; Supports therefor
F27B 15/06	...	Arrangements of linings
F27B 15/08	..	Arrangements of devices for charging
F27B 15/09	..	Arrangements of devices for discharging
F27B 15/10	..	Arrangements of air or gas supply devices
F27B 15/12	..	Arrangements of dust collectors
F27B 15/14	..	Arrangements of heating devices
F27B 15/16	..	Arrangements of cooling devices
F27B 15/18	..	Arrangements of controlling devices
F27B 15/20	..	Arrangements of monitoring devices, of indicators, of alarm devices
F27B 17/00		Furnaces of a kind not covered by any preceding group (structural combinations of furnaces <u>F27B 19/02</u>)

- F27B 17/0008 . {Open field furnace for burning bricks }
- F27B 17/0016 . {Chamber type furnaces }
- F27B 17/0025 . . {Especially adapted for treating semiconductor wafers }
- F27B 17/0033 . . {the floor of the furnaces consisting of the support carrying the charge, e.g. car type furnaces }
- F27B 17/0041 . . { specially adapted for burning bricks or pottery ([F27B 17/0033](#) takes precedence) }
- F27B 17/005 . . . {with cylindrical chambers }
- F27B 17/0058 {with superposed cylindrical chambers }
- F27B 17/0066 . . . {arrangement of the charge, e.g. bricks }
- F27B 17/0075 . . . {Heating devices therefor }
- F27B 17/0083 . . {with means for circulating the atmosphere }
- F27B 2017/0091 . . Series of chambers, e.g. associated in their use
- F27B 17/02 . specially designed for laboratory use
- F27B 17/025 . . {for dental workpieces }
- F27B 19/00 Combinations of furnaces of kinds not covered by a single preceding main group**
- F27B 19/02 . combined in one structure
- F27B 19/04 . arranged for associated working
- F27B 21/00 Open or uncovered sintering apparatus; Other heat-treatment apparatus of like construction**
- F27B 21/02 . Sintering grates or tables
- F27B 21/04 . Sintering pots or sintering pans
- F27B 21/06 . Endless-strand sintering machines