

245	MATERIAL TREATED BY	288	...And spray freeze or immersion
	ELECTROMAGNETIC ENERGY	289	...And heating
246	.Electric current applied	290	....Continuous processing
	directly through material	291	.....Including mixing or
247	.Induction heater		agitating
248	.Magnetic field	292	.....With gas or vapor treating
249	..Controls particle movement in a		(e.g., filtering or
	fluidized bed		condensing)
250	.Electrostatic field	293	...With gas or vapor treating
251	..Having suction means	294	...Desiccant or molecular sieve
252	..Having vibration means	295	...Including mixing or agitating
253	..Having needlelike electrodes	296	...Having specific container
254	..Having heating or cooling means	297	...Having specific type of
255	.Radio or high-frequency energy		material support
256	..Having additional heating means	298	..With gas or vapor treating
257	..Having pressure reducing means	299	...Desiccant or molecular sieve
258	..Plural units or chambers	300	...Using filter
259	.Microwave energy	301	..With additional material
260	..Clothes dryer		cooling by separate
261	...Having rotating drum		refrigeration means
262	..Having vibrating means	302	.Congealing or thickening
263	..Having pressure reducing means	303	..By adding congealing or
264	..Plural units or chambers		thickening agent
265	..Having treating gas or vapor	304	..By cooling of treated material
	circulation	305	..By evaporating moisturizing
266	.Infrared energy		fluid
267	..Having treating gas or vapor	306	.Sheet or web contact preventing
	circulation		by spacer sheet, web, or
268	..Radiation controlled by other		strand
	drying parameters	307	.Retarding or shielding of
269	...Having temperature control		treatment
270	..Vehicle paint dryer	308	..Radiation applying with
271	...Including evolved gas or vapor		shielding
	treatment	309	..Shielding by selective
272	...Including vehicle conveyor		application of gas or vapor
273	..Sheets, webs, or strands		flow
274	...Having gas or vapor treatment	310	..Application of temporary
275	.Ultraviolet energy		coating
276	..Inert gas atmosphere	311	..Shielding by use of physical
277	..Having shutter means		barrier to treating gas or
278	..With cooling means		vapor
279	MATERIAL TREATED BY ACOUSTIC	312	.By centrifugal force
	ENERGY	313	..Continuous processing
280	FEATHER TREATING	314	...With centrifugal spraying of
281	.With agitator		the treated material
282	PROCESS	315	...With heating
283	.Hair on head	316	...With recirculation of treated
284	.Freeze-drying		material
285	..With separating of frozen fluid	317	..With carrier for thin discrete
	from treated material		article
286	...With gas or vapor flow to	318	..Rotating drum or basket
	remove frozen fluid	319	...Variable speed
287	..Including vacuum	320	...With pressurized atmosphere

321	...Including heating	355	...Using absorbent band or belt
322	...Foraminous basket	356	..Solid treating agent treats suspension or slurry
323	...With fluidizing of treated material	357	..Liquid treating agent treats solid material
324	...With inert atmosphere	358	...Treating agent absorbs moisture
325	..With pressurized atmosphere	359	.With fluid current conveying or suspension of treated material
326	..Rotating gas or vapor stream	360	..Suspension of treated material
327	...With heating	361	...Including applying vacuum
328	..With additional conveying means	362	...Including pressurizing atmosphere
329	.With contacting of material treated with solid or liquid agent	363	...With additional heat exchange
330	..With regeneration or removal of treating agent	364	...Including gas or vapor flow variation
331	...Treating agent consists of both solid and liquid	365	....Pulsed flow
332	...Treating agent is a solid	366	...Including downward impinging fluid flow
333	...With treating of solid material	367	...With additional conveying
334	...With treating of suspension or slurry	368	...Including agitating or comminuting of treated material
335	....Using absorbent band or belt	369	...Including baffle or deflector to adjust material flow
336	....Using absorbent roller	370	...With plural treating zones
337	...Treating agent is a liquid	371	...Including material separators or sorters
338	...With treatment of suspension or slurry	372	..Spray drying and cooling of slurry or suspension
339	...With treatment of solid material	373	...With contact with additional gas or vapor flow
340	....Treating liquid displaces moisture	374	...Additional flow is countercurrent
341	....Treating liquid absorbs moisture	375	..Having embedded loop circulation of treated material
342	....Using multiple treating liquids	376	.With treated material recirculation
343	..With addition of heat to drying process	377	..Recirculation of a portion of the treated material
344	...Treating agent consists of both solid and liquid	378	...With additional treating of recirculated portion (e.g., heating, cooling, separating)
345	...Treating agent is a solid	379	...Recirculated portion mixed with untreated material
346	....Solid treating agent treats same material	380	.With nondrying treating of material
347	....Treating of suspension or slurry	381	..Nondrying treating precedes drying
348	...Treating agent is a liquid	382	...Material shaping
349	....Treating suspension or slurry	383	...Puncturing or incising of treated material
350	....Treating solid material		
351	....Treating agent displaces moisture		
352	....Treating agent absorbs moisture		
353	..Solid treating agent treats solid material		
354	...Using agitation or mixing		

384	...Grinding or comminuting	420	...Including radiation or convection treatment
385	..Material shaping	421	....Running length
386	..Mixing or grinding	422	...Running length
387	..Shearing or comminuting	423	..Sequential drying treatments
388	..Compacting or restraining	424	...Of slurry or suspension
389	..Adding of nondrying treating substance	425	...Using rotating drum
390	...Deodorizer	426	..Plural treatments at same location
391	..Cooling of treated material	427	.Combined
392	...Contacting material with cooling drum or roller	428	.Cooling by gas or vapor contact
393	...Contacting material with cooling fluid	429	..Including conveyor
394	....Cooling fluid drawn through material treated	430	...Gas or vapor flow to top and bottom of treated material
395	....Cooling fluid is ambient air	431	...Gas or vapor flow to bottom of treated material
396	....Treated material is wood	432	...Gas or vapor flow concurrent or countercurrent to treated material flow
397	..Mechanical liquid removal	433	..Gas or vapor flow to top and bottom of treated material
398	..Using compression	434	..Gas or vapor flow to bottom of treated material
399	...Expressing liquid by use of roller	435	..Gas or vapor flow concurrent or countercurrent to treated material flow
400	...Expressing liquid by moving treated material through restriction	436	...Gravity flow of treated material
401	..Using vibration	437	.Treating hollow article
402	..Gas or vapor pressure varies during treatment	438	..Having conveyor
403	..Including subatmospheric pressure	439	..Treating fluid directed to interior and exterior of hollow article
404	..With addition of treating agent	440	..With specific support for hollow article
405	..Including superatmospheric pressure	441	...Support surrounds hollow article
406	..Gas or vapor pressure is subatmospheric	442	.Form-supported treated article
407	..With condensation of vapor	443	.Gas or vapor contact with treated material
408	...With heating	444	..Sheet, web, or strand
409	..Including addition of treating agent	445	...With drying parameter control
410	...Treating agent is inert gas	446	....Temperature or moisture control of material treated or treating gas or vapor
411	...Treating agent is steam	447	....Material speed control
412	..With heating	448	...Vapor or gas treatment
413	..Gas or vapor pressure is superatmospheric	449	....Condensation of gas or vapor
414	..Sheet, web, or strand	450	....Combustion of gas or vapor
415	..Including addition of treating agent	451	...Plural treating chambers
416	..Contacting gas or vapor with solid sorbent to store gas or vapor	452	...Gas or vapor drawn through treated material
417	..With sealing of treating chamber	453	....Using vacuum roller
418	..Diverse types of drying operations		
419	..Sheet, web, or strand		

454	...With contact with heat exchanger (e.g., drum or roller)	485	...By temperature of material or chamber
455	....Pocket ventilator	486	..Timing of application of gas or vapor to treated material based on drying variables
456	....Vacuum causes web to contact wire or felt	487	..Gas or vapor flow directing or control
457	....With guide roller	488	...Flow direction changes during treatment
458	....With vacuum guide roller	489	....Reversible flow
459	...Running length of treated material	490	....Timed control
460	....Gas or vapor suspends treated material	491	...Temperature or moisture content of treated material or chamber controls or directs gas or vapor
461	....Gas or vapor directed to opposed surfaces of material	492	...Gas or vapor flow varied during treatment
462	....With spacing or coiling	493	..Temperature of treating gas or vapor controlled
463	....Directing of gas or vapor	494	...To prevent damage to material or system
464	....Gas or vapor directed to opposed surfaces of material	495	...Temperature of gas or vapor regulated by other drying variables
465	....Gas or vapor directed to single surface of material	496	...Multiple temperature levels of gas or vapor
466	...With spacing, coiling, or rolling	497	..Temperature of treating chamber regulated
467	..Treatment of gas or vapor	498	..With treated material motion
468	...Condensation of gas or vapor	499	...Rotating drum
469	...Collecting of condensed gas or vapor	500	...With conveyor
470	....With vaporization of condensed gas or vapor	501	...Gas or vapor directed above and below material
471	....Regulating temperature of gas or vapor	502	...Gas or vapor directed below material
472	...Absorption/adsorption of gas or vapor released from treated material	503	...Concurrent gas or vapor flow
473	....Regeneration of absorption/adsorption material	504	...Countercurrent gas or vapor flow
474	...Gas or vapor humidity regulation	505	....Gravity flow of material
475	....And gas or vapor temperature regulation	506	...Transverse flow of gas or vapor
476	...Gas or vapor temperature regulation	507	..Treating gas or vapor drawn through material
477	...With recirculation of gas or vapor	508	..Gas or vapor directed above and below treated material
478	...Combustion of gas or vapor	509	..Gas or vapor directed below treated material
479	....Combusted gas or vapor recirculated to treating chamber	510	..Gas or vapor directed above treated material
480	...Filtering of gas or vapor	511	..Natural ambient air drying of material
481	..Material thickness controlled	512	...Solar assisted
482	..Material speed or quantity controlled	513	..Heat conserving
483	...By moisture content of treated material		
484	....And temperature of material or chamber		

514	...Exhaust gas or vapor from treatment zone heats treating gas or vapor	553	...Electric heater
515	....Heat pump or recompression increases heating effect	554	...Of heater blower
516	..Special gas or vapor	555	...With means to remove excess heat
517	...Vapor	556	...By web or strand tension or breaking
518	..Piling or arranging material treated	557	..Of contacting gas humidity
519	.Conductive heating	558	..Of gas or vapor pressure in treating enclosure
520	..Within drum	559	...Subatmospheric pressure
521	..With evolved gas or vapor treatment	560	..Of rate of treated material motion
522	.Solar drying	561	...Web or strand
523	APPARATUS	562	..Of time period
524	.With automatic control	563	...By timing motor and cam
525	..By web breaking	564	....By plural timers
526	..Of plural operations	565	..Of flow of gas or vapor treating fluid
527	...Of specific operational sequence	566	...With diverter means to alternate flow paths
528	....Using specific moisture sensor structure	567	...Exhaust controlled by solvent concentration
529	....With photoelectric device	568	...Steam pressure controlled
530	....With vacuum sensor	569	...Of circulation means
531	....With threshold circuit device	570	...With flow control valve
532	.....Gaseous tube (e.g., neon)	571	...With flow control dampers at outlet
533	.....Silicon-controlled rectifier (SCR)	572	..Of starting or stopping
534	....With door switch	573	..Of treated material feeding or discharging
535	..Having two of heater, contacting gas humidity, or gas mixing	574	...Controlled by weight
536	....With weight measuring means	575	...Controlled by temperature
537	....Having wet bulb and dry bulb thermometers	576	.With fluid current conveying of treated material
538	....With means to produce reduced or negative pressure	577	..Downward fluid flow impinging solid floor
539	....With fuel burner	578	..Having tubular heat exchanger
540	....Having plural compartments	579	..With means to vary gas or vapor flow
541	....With delivery nozzle for contacting gas or vapor	580	..With additional conveying means
542	....With means to increase humidity of contacting gas or vapor	581	...Suction conveyor
543	...With heater	582	..With specific gas distributor
544	....And fire control means	583	...Having angled floor or wall
545	....And conveyor	584	...Having thermal expansion adjustment
546	....And blower	585	...Gas or vapor delivery nozzle
547	....And drive motor	586	..With means to agitate or comminute material
548	..Of gas mixing	587	..Gas or vapor presses material against screen or sieve
549	..Of heater	588	..With baffle or deflector to adjust material flow
550	...Sensor engages material	589	..With plural treating zones or compartments
551	...Having burner control		
552	...By steam pressure or temperature		

590	...Serpentine path for material	87	.With means to interlock operable elements
591	..With material separator		
592	...Plural cyclone separators	88	.With display, inspecting, or illuminating means
593	..With mechanical rotating element	89	.With indicating or testing means
594	..Using rotary gas current	89.1	.Blotting means combined with means for purpose other than drying
58	..With apparatus using centrifugal force		
59	..Rotary scattering member	89.2	..With ruler
60	..For diverse operations on treated material	90	.Combined
		91	.Convertible
61	..With two or more nondrying means	92	.Vacuum
		93	.Solar
62	..With treated material cooling means	94	.Sheet or web contact preventing by spacer sheets, webs, or strands
63	...Internal rotary drum drier		
64	...Gravity flow-type drier	95	.Means to remove liquid from treated material by contact with solids
65	...With integral cooling chamber or section		
66	...Cooler chamber integral with or similar to drier	95.1	..Having manipulative means
		95.2	...Attachable to hand (e.g., finger)
67	...Atmospheric		
68	..Diverse heater types and/or gas or vapor contact types only	95.3	...For rolling contact
		95.4	...For rocking contact
69	..Diverse types of liquid removers only	96	.For hair on head
		97	..With gas or vapor flow for contact
70	...With expressing or wringing		
71	...With means to remove liquid from treated material by contact with solids	98	...Plural distributors
		99	...Head conforming distributor
		100	...Recirculation of treating gas or vapor
72	..With means to treat gas or vapor		
73	..By vapor condensation	101	...With hair supports
74	..With other gas or vapor treatment	102	.Treated material recirculating means
75	...Direct contact with cooling substance	103	.Forms
		104	.For hollow article
76	...With forced circulation	105	..With conveying or handling means
77	...Recirculation of treating gas or vapor	106	..With suspension means and bottom retainer
78	..Recirculation of treating gas or vapor	107	.For slender rigid articles
79	..Separation of substances from treating or exhaust gases or vapors	108	.Rotary drums or receptacles
		109	..Compartmented or pocketed
		110	..External
80	...By absorbent	111	...With belt or felt drier
81	...In or forming walls, ceiling, or floor	112	...With hopper feed or article securing means
82	...By filter	113	...Plural
83	..Jet devices	114	...Gas or vapor circulation for contact with treated material
84	..Gas or vapor circulators or flow promoters		
		115	....Through material or introduction through drum
85	..With apparatus cleaner and/or escaping material collector	116	....With belts or felts
86	..With waste gas heat and/or power conservers	117	....With threading, stripping, or guiding devices

118	.....Tightener	137	....Countercurrent gas or vapor flow only
119	....Heat exchange fluid supply and/or removal	138	...Gas or vapor conducting conduits in drum or receptacle
120	....Threading, stripping, or guiding devices	139	...With drum or receptacle enclosing housing
121	....Mounting and/or driving means	140	..Vapor exhaust
122	...Gas or vapor circulation for contact with treated material	141	...Axial treated material feed type
123	...With belts or felts	142	..Axial treated material feed type
124	...Heat exchange fluid supply and/or removal	143	.Stationary press type
125	....Removal only	144	..Plural press units
126	..With additional translating means	145	..Gas or vapor circulation for contact with treated material
127	..Plural	146	..Nonplanar press couples
128	...One within another (e.g., nested)	147	.Spiral treated material path type
129	..With feed from one to another	611	.Sheet, web, or strand
130	..With gas or vapor flow for contact with treated material	612	..Sheet elevator type
131	...Recirculation of treating gas or vapor	613	...Coacting parallel threaded members
132	...With heating means	614	..Sheet on edge
595	....With drum or receptacle enclosing housing	615	...Stationary support
596	.....Combined washer-dryer	616	...Rotary wheellike conveyor
597	.....With material conditioner dispenser	617	...Endless conveyor with fingers
598	.....And heat retaining material	618	..For flexible sheet, web, or strand
599	.....And material tumbling assisting means	619	...Including horizontal support
600	.....And stationary trays in rotatable drum	620	...Including roller-type conveyor
601	.....And supporting, driving, sealing, or bearing means for drum	621	...Including means to suspend work
602	.....Specific drum structure	622	....Portable or collapsible
603	.....Specific housing structure	623	...Running length
604	.....Including gas or vapor circulating means	624	....With contact heater
605	.....Suction means	625	....Winding reel
606	.....And gas or vapor flow regulating means	626	....With fluent heating means inside reel
607	.....And conduit to deliver gas or vapor to drum	627	...Plural webs or strands
608	.....Vertical gas or vapor flow	628	....With means to separate individual webs or strands
609	.....Axial gas or vapor flow	629	...With gas or vapor circulation for contact with treated material
610	.....Radial gas or vapor flow	630	....Having solvent chamber
134	....Heat exchange and/or gas or vapor conducting conduits in drum or receptacle	631	....Having means to adjust relative distance between distributor and material
135	...Axial treated material feed type	632	....Having means to produce turbulence in gas or vapor
136	....Concurrent gas or vapor flow only	633	....Having baffle redirect gas or vapor flow
		634	.....Having sealing means
		635	.....Including suction means

636	.....Including plural chambers or zones	164	.Treated material vibrating type
637	.....Having drive roller	165	.Gravity flow type
638	.....Including gas or vapor nozzle or distributor outlet	166	..Trough or tube, with axially rotary conveyor or agitator
639	.....Having gas or vapor flow transverse to treated material movement	167	..Plural gravity path, plural feed, and/or discharge
640	.....Fluid current support or guide	168	..With gas or vapor flow for contact with treated material
641	.....Having airfoil or Coanda nozzle	169	...Recirculation of treating gas or vapor
642	.....Having nozzles around circular manifold	170	...Inverted imperforate ducts
643	.....Having nozzles on opposite sides of web	171	...Shelf-to-shelf or zigzag treated material flow
644	.....Adjustable distance between opposed nozzles	172	....Dumping shelves or pockets
645	.....Suspended loops	173	....Rotary stirrer or shelf
646	.....Edge holding means	174	...Foraminous distributors or walls
647	.....Zigzag runs of treated material	175	..With venting means or wall
648	.....Including material tension adjusting means	176	..With treated material tubes
649	.....Including gas or vapor recirculation	177	..With heating tubes
650	.....Including endless conveyors	178	..Shelf-to-shelf or zigzag treated material flow
651	.....Plural zones or chambers	179	.Stationary receptacle or tube with agitator or conveyor
652	.....Elongated thin gas or vapor stream	180	..Plural units
653	.....Including distributor comprising tube with elongated slot	181	..With gas or vapor flow for contact with treated material
654	.....Including distributor comprising perforated plate	182	...Axial treated material feed type
655	.....Including distributor having elongated slot	183	..Axial treated material feed type
656	.....Plural associated elongated slots	184	.Rotary or swinging carrier or rack
657	....Zigzag runs of treated material	185	..With agitating means or discharging scrapers
658	...Endless conveyor or movable gripper	186	..Plural rotary or swinging units
659	....Endless conveyor	187	..With gas or vapor circulation for contact with treated material
660	.....Endless conveyor having material gripper	188	...Air scoops and/or suspended treated material supports
661	.....Endless conveyor having material hanger	189	.Elevator type
662	.....Plural opposed cooperating endless conveyors	190	..Plural
663	.....Endless conveyor contacts solid perforated guide	191	.Reversible or pulsating treating gas or vapor flow
664	...Movable treated material holder	192	.Removable shelf or tray type
665	....Rotary holder	193	..Plural nonvertically aligned
		194	..With shelf or tray handling means
		195	..With gas or vapor circulation for contact with treated material
		196	...Recirculation of treating gas or vapor
		197	...With heater

- | | | | |
|-----|---|-----|---|
| 198 | ...With liquid heater or vaporizer | 229 | ...Movable gas or vapor distributor |
| 199 | ...Zigzag treating gas or vapor flow | 230 | ...Plural gas or vapor forcing means |
| 200 | ..With liquid heater or vaporizer | 231 | ...Deflecting baffle in treating chamber |
| 201 | .Houses, kilns, and containers | 232 | ...Plural gas or vapor inlets and/or outlets |
| 666 | ..Car dryer | 233 | ...In wall, ceiling, or floor |
| 202 | ..Article inserted type | 234 | ...Caused by heater only |
| 203 | ..With conveyors providing plural or zigzag treated material paths | 235 | ..With venting means |
| 204 | ...Separable truck or tray | 236 | .Treated material handling or conveying |
| 205 | ...Plural independent paths for treated material | 237 | .Trays or floors |
| 206 | ...Pusher type | 238 | ..Single or plural trays only |
| 207 | ...Plural run endless conveyor | 239 | .Supports |
| 208 | ...Single run endless, both courses carrying treated material | 240 | ..Rods or rolls |
| 209 | ..Plural treating units or compartments | 241 | .Gas or vapor distributing and applying agitators |
| 210 | ...With gas or vapor circulation for contact with treated material | 242 | .Chamber seals |
| 211 |Superposed floors or chambers | 667 | .Debris guard |
| 212 |Recirculation of treating gas or vapor | | |
| 213 |Parallel circulation only | | |
| 214 |Parallel circulation only | | |
| 215 | ...With heater | | |
| 216 |With conveyor and/or movable treated material support | | |
| 217 | ...With conveyor and/or movable treated material support | | |
| 218 | ..With gas or vapor circulation for contact with treated material | | |
| 219 | ...Recirculation of treating gas or vapor | | |
| 220 |Caused by heater action only | | |
| 221 |Caused by jet action | | |
| 222 | ...Movable gas or vapor distributor | | |
| 223 |Plural gas or vapor forcing means | | |
| 224 |Plural gas or vapor inlets and/or outlets | | |
| 225 |In wall, ceiling, or floor | | |
| 226 | ...Tortuous gas or vapor path | | |
| 227 | ...Gas or vapor flow toward or from treated material entrance or exit | | |
| 228 |Countercurrent to treated material motion only | | |

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