

CPC COOPERATIVE PATENT CLASSIFICATION

F MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING (NOTE omitted)

LIGHTING; HEATING

F25 REFRIGERATION OR COOLING; COMBINED HEATING AND REFRIGERATION SYSTEMS; HEAT PUMP SYSTEMS; MANUFACTURE OR STORAGE OF ICE; LIQUEFACTION SOLIDIFICATION OF GASES

F25D REFRIGERATORS; COLD ROOMS; ICE-BOXES; COOLING OR FREEZING APPARATUS NOT COVERED BY ANY OTHER SUBCLASS ([refrigerated show cases A47F 3/04](#); [thermally-insulated vessels for domestic use A47J 41/00](#); [refrigerated vehicles, see the appropriate subclasses of classes B60 - B64](#); [containers with thermal insulation in general B65D 81/38](#); [heat-transfer, heat-exchange or heat-storage materials, e.g. refrigerants, or materials for the production of heat or cold by chemical reactions other than by combustion C09K 5/00](#); [thermally-insulated vessels for liquefied or solidified gases F17C](#); [air-conditioning or air-humidification F24F](#); [refrigeration machines, plants or systems F25B](#); [cooling of instruments and comparable apparatus without refrigeration G12B](#); [cooling of engines or pumps, see the relevant classes](#))

NOTES

- In this subclass, the following term is used with the meaning indicated:
 - "device" means an enclosed space to be cooled; such devices being associated either with refrigerating machinery, e.g. in a refrigerator, or with other cold sources, e.g. in an ice-box.
- Attention is drawn to Note (2) following the title of subclass [F24F](#).

Devices not associated with refrigerating machinery

- 1/00 Devices using naturally cold air or cold water**
 1/02 . using naturally cold water, e.g. household tap water
- 3/00 Devices using other cold materials; Devices using cold-storage bodies**
 3/005 . {combined with heat exchangers}
 3/02 . using ice, e.g. ice-boxes
 3/04 . . Stationary cabinets
 3/045 . . . {Details}
 3/06 . . Movable containers
 3/08 . . . portable, i.e. adapted to be carried personally
 3/10 . using liquefied gases, e.g. liquid air {(for cooling semiconductor devices [H01L 23/445](#))}
- 3/102 . . {Stationary cabinets}
 3/105 . . {Movable containers}
 3/107 . . {portable, i.e. adapted to be carried personally}
 3/11 . . with conveyors carrying articles to be cooled through the cooling space
 3/12 . using solidified gases, e.g. carbon-dioxide snow
 3/122 . . {Stationary cabinets}
 3/125 . . {Movable containers}
 3/127 . . {Stationary devices with conveyors carrying articles to be cooled through the cooling space}
 3/14 . . portable, i.e. adapted to be carried personally
- 5/00 Devices using endothermic chemical reactions, e.g. using frigorific mixtures**

- 5/02 . portable, i.e. adapted to be carried personally
- 7/00 Devices using evaporation effects without recovery of the vapour (butter or cheese dishes with cooling devices [A47G 19/26](#))**
- 9/00 Devices not covered by groups [F25D 1/00 - F25D 7/00](#); Combinations of devices covered by two or more of the groups [F25D 1/00 - F25D 7/00](#)**
 9/005 . {using fluorinated halogenous hydrocarbons}

Devices associated with refrigerating machinery

- 11/00 Self-contained movable devices, e.g. domestic refrigerators**
 11/003 . {Transport containers}
 11/006 . {with cold storage accumulators}
 11/02 . with cooling compartments at different temperatures
 11/022 . . {with two or more evaporators}
 11/025 . . {using primary and secondary refrigeration systems}
 11/027 . . {of the sorption cycle type}
 11/04 . specially adapted for storing deep-frozen articles ([F25D 11/02](#) takes precedence)
- 13/00 Stationary devices, e.g. cold-rooms**
 13/02 . with several cooling compartments, e.g. refrigerated locker systems
 13/04 . . the compartments being at different temperatures

13/06	. with conveyors carrying articles to be cooled through the cooling space	23/00	General constructional features (F25D 21/00 takes precedence)
13/062	. . {with refrigerated conveyors}	23/003	. {for cooling refrigerating machinery}
13/065	. . {Articles being submerged in liquid coolant}	23/006	. {for mounting refrigerating machinery components}
13/067	. . {with circulation of gaseous cooling fluid}	23/02	. Doors; Covers (F25D 23/08 takes precedence {locks or fastenings E05B 65/0042 })
15/00	Devices not covered by group F25D 11/00 or F25D 13/00, e.g. non-self-contained movable devices	23/021	. . {Sliding doors}
16/00	Devices using a combination of a cooling mode associated with refrigerating machinery with a cooling mode not associated with refrigerating machinery	23/023	. . {Air curtain closures}
		23/025	. . {Secondary closures}
		23/026	. . {for open-top cabinets}
		23/028	. . {Details}
		23/04	. . with special compartments, e.g. butter conditioners
		23/06	. Walls (F25D 23/08 takes precedence; containers with thermal insulation B65D 81/38)
		23/061	. . {with conduit means}
		23/062	. . {defining a cabinet}
		23/063	. . . {formed by an assembly of panels}
		23/064	. . . {formed by moulding, e.g. moulding <i>in situ</i> }
		23/065	. . {Details}
		23/066	. . . {Liners}
		23/067	. . . {Supporting elements}
		23/068	. . . {Arrangements for circulating fluids through the insulating material}
		23/069	. . {Cooling space dividing partitions}
		23/08	. Parts formed wholly or mainly of plastics materials
		23/082	. . {Strips}
			NOTE
			When a document describes both breaking and sealing strips it is classified in group F25D 23/082 only.
		23/085	. . . {Breaking strips}
		23/087	. . . {Sealing strips}
		23/10	. Arrangements for mounting in particular locations, e.g. for built-in type, for corner type
		23/12	. Arrangements of compartments additional to cooling compartments; Combinations of refrigerators with other equipment, e.g. stove
		23/123	. . {Butter compartment}
		23/126	. . {Water cooler}
		25/00	Charging, supporting, and discharging the articles to be cooled
		25/005	. {using containers}
		25/02	. by shelves
		25/021	. . {combined with trays}
		25/022	. . {Baskets}
		25/024	. . {Slidable shelves}
		25/025	. . . {Drawers}
		25/027	. . {Rotatable shelves}
		25/028	. . {Cooled supporting means}
		25/04	. by conveyors (<i>in general</i> B65G)
		27/00	Lighting arrangements (<i>in general</i> F21)
		27/005	. {combined with control means}
		29/00	Arrangement or mounting of control or safety devices
		29/001	. {for cryogenic fluid systems}
		29/003	. {for movable devices}
		29/005	. {Mounting of control devices}
		29/006	. {Safety devices}
17/00	Arrangements for circulating cooling fluids; Arrangements for circulating gas, e.g. air, within refrigerated spaces		
17/005	. {in cold rooms}		
17/02	. for circulating liquids, e.g. brine		
17/04	. for circulating air, e.g. by convection		
17/042	. . {Air treating means within refrigerated spaces (<i>air conditioning in general</i> F24F)}		
17/045	. . . {Air flow control arrangements}		
17/047	. . . {Pressure equalising devices}		
17/06	. . by forced circulation		
17/062	. . . {in household refrigerators}		
17/065 {with compartments at different temperatures}		
17/067	. . . {Evaporator fan units}		
17/08	. . . using ducts		
19/00	Arrangement or mounting of refrigeration units with respect to devices {or objects to be refrigerated, e.g. infra-red detectors}		
19/003	. {with respect to movable containers}		
19/006	. {Thermal coupling structure or interface}		
19/02	. plug-in type		
19/04	. with more than one refrigeration unit		
21/00	Defrosting; Preventing frosting; Removing condensed or defrost water (removing ice or water from heat-exchange apparatus in general F28F 17/00; heating arrangements specially adapted for transparent or reflecting areas H05B 3/84)		
21/002	. {Defroster control}		
21/004	. . {Control mechanisms (F25D 21/006 takes precedence)}		
21/006	. . {with electronic control circuits}		
21/008	. . {by timer}		
21/02	. Detecting the presence of frost or condensate		
21/025	. . {using air pressure differential detectors}		
21/04	. Preventing the formation of frost or condensate		
21/06	. Removing frost (<i>defrosting cycles</i> F25B 47/02)		
21/065	. . {by mechanical means}		
21/08	. . by electric heating		
21/10	. . by spraying with fluid		
21/12	. . by hot-fluid circulating system separate from the refrigerant system		
21/125	. . . {the hot fluid being ambient air}		
21/14	. Collecting or removing condensed and defrost water; Drip trays		

- 29/008 . {Alarm devices}
 - 31/00 Other cooling or freezing apparatus**
 - 31/001 . {Plate freezers}
 - 31/002 . {Liquid coolers, e.g. beverage cooler (receptacle coolers F25D 31/006)}
 - 31/003 . . {with immersed cooling element}
 - 31/005 . {Combined cooling and heating devices}
 - 31/006 . {specially adapted for cooling receptacles, e.g. tanks}
 - 31/007 . . {Bottles or cans}
 - 31/008 . . {Drinking glasses}
-
- 2201/00 Insulation**
 - 2201/10 . with respect to heat
 - 2201/12 . . using an insulating packing material
 - 2201/122 . . . of loose fill type
 - 2201/124 . . . of fibrous type
 - 2201/126 . . . of cellular type
 - 2201/1262 with open cells
 - 2201/128 . . . of foil type
 - 2201/1282 with reflective foils
 - 2201/14 . . using subatmospheric pressure
 - 2201/30 . with respect to sound
 - 2300/00 Special arrangements or features for refrigerators; cold rooms; ice-boxes; Cooling or freezing apparatus not covered by any other subclass**
 - 2303/00 Details of devices using other cold materials; Details of devices using cold-storage bodies**
 - 2303/08 . Devices using cold storage material, i.e. ice or other freezable liquid
 - 2303/081 . . using ice cubes or crushed ice
 - 2303/082 . . disposed in a cold storage element not forming part of a container for products to be cooled, e.g. ice pack or gel accumulator
 - 2303/0821 . . . the element placed in a compartment which can be opened without the need of opening the container itself
 - 2303/0822 . . . Details of the element
 - 2303/08221 Fasteners or fixing means for the element
 - 2303/08222 Shape of the element
 - 2303/08223 having the shape of an ice cube
 - 2303/083 . . using cold storage material disposed in closed wall forming part of a container for products to be cooled
 - 2303/0831 . . . the liquid is disposed in the space between the walls of the container
 - 2303/0832 . . . the liquid is disposed in an accumulator pack locked in a closable wall forming part of the container
 - 2303/084 . . Position of the cold storage material in relationship to a product to be cooled
 - 2303/0841 . . . external to the container for a beverage, e.g. a bottle, can, drinking glass or pitcher
 - 2303/0842 . . . inside the beverage contained in a bottle, can, drinking glass, pitcher or dispenser
 - 2303/0843 . . . on the side of the product
 - 2303/0844 . . . above the product
 - 2303/0845 . . . below the product
 - 2303/0846 . . . around the neck of a bottle
 - 2303/085 . . Compositions of cold storage materials
 - 2317/00 Details or arrangements for circulating cooling fluids; Details or arrangements for circulating gas, e.g. air, within refrigerated spaces, not provided for in other groups of this subclass**
 - 2317/04 . Treating air flowing to refrigeration compartments
 - 2317/041 . . by purification
 - 2317/0411 . . . by dehumidification
 - 2317/04111 Control means therefor
 - 2317/0413 . . . by humidification
 - 2317/04131 Control means therefor
 - 2317/0415 . . . by deodorizing
 - 2317/0416 . . . using an ozone generator
 - 2317/0417 . . . using an UV-lamp
 - 2317/043 . . by creating a vacuum in a storage compartment
 - 2317/06 . with forced air circulation
 - 2317/061 . . through special compartments
 - 2317/062 . . along the inside of doors
 - 2317/063 . . with air guides
 - 2317/065 . . characterised by the air return
 - 2317/0651 . . . through the bottom
 - 2317/0652 . . . through the corner
 - 2317/0653 . . . through the mullion
 - 2317/0654 . . . through the side
 - 2317/0655 . . . through the top
 - 2317/066 . . characterised by the air supply
 - 2317/0661 . . . from the bottom
 - 2317/0662 . . . from the corner
 - 2317/0663 . . . from the mullion
 - 2317/0664 . . . from the side
 - 2317/0665 . . . from the top
 - 2317/0666 . . . from the freezer
 - 2317/0667 . . . from the refrigerator
 - 2317/067 . . characterised by air ducts
 - 2317/0671 . . . Inlet ducts
 - 2317/0672 . . . Outlet ducts
 - 2317/068 . . characterised by the fans
 - 2317/0681 . . . Details thereof
 - 2317/0682 . . . Two or more fans
 - 2317/0683 . . . the fans not of the axial type
 - 2317/0684 . . . the fans allowing rotation in reverse direction
 - 2321/00 Details or arrangements for defrosting; Preventing frosting; Removing condensed or defrost water, not provided for in other groups of this subclass**
 - 2321/14 . Collecting condense or defrost water; Removing condense or defrost water
 - 2321/141 . . Removal by evaporation
 - 2321/1411 . . . using compressor heat
 - 2321/1412 . . . using condenser heat or heat of desuperheaters
 - 2321/1413 . . . using heat from electric elements or using an electric field for enhancing removal
 - 2321/142 . . characterised by droplet guides
 - 2321/143 . . characterised by means to fix, clamp, or connect water pipes or evaporation trays
 - 2321/144 . . characterised by the construction of drip water collection pans
 - 2321/1441 . . . inside a refrigerator
 - 2321/1442 . . . outside a refrigerator
 - 2321/145 . . characterised by multiple collecting pans
 - 2321/146 . . characterised by the pipes or pipe connections

- 2321/147 . . characterised by capillary, wick, adsorbent, or evaporation elements
- 2323/00 General constructional features not provided for in other groups of this subclass**
- 2323/0011 . Means for leveling refrigerators
- 2323/002 . Details for cooling refrigerating machinery
- 2323/0021 . . using air guides
- 2323/0022 . . using multiple air flows
- 2323/0023 . . Control of the air flow cooling refrigerating machinery
- 2323/0024 . . Filters in the air flow cooling refrigerating machinery
- 2323/0026 . . characterised by the incoming air flow
- 2323/00261 . . . through the back bottom side
- 2323/00262 . . . through the back top side
- 2323/00263 . . . through the back corner side
- 2323/00264 . . . through the front bottom part
- 2323/00265 . . . through the front top part
- 2323/00266 . . . through the bottom
- 2323/00267 . . . through the side
- 2323/00268 . . . through the top
- 2323/0027 . . characterised by the out-flowing air
- 2323/00271 . . . from the back bottom
- 2323/00272 . . . from the back top
- 2323/00273 . . . from the back corner
- 2323/00274 . . . from the front bottom
- 2323/00275 . . . from the front top
- 2323/00276 . . . from the bottom
- 2323/00277 . . . from the side
- 2323/00278 . . . from the top
- 2323/0028 . . characterised by the fans
- 2323/00281 . . . Two or more fans
- 2323/00282 . . . the fans not of the axial type
- 2323/00283 . . . the fans allowing rotation in reverse direction
- 2323/00284 . . . Details thereof
- 2323/02 . Details of doors or covers not otherwise covered
- 2323/021 . . French doors
- 2323/022 . . Doors that can be pivoted either left-handed or right-handed
- 2323/023 . . Door in door constructions
- 2323/024 . . Door hinges
- 2323/06 . Details of walls not otherwise covered
- 2323/061 . . Collapsible walls
- 2323/062 . . Inflatable walls
- 2323/121 . the refrigerator is characterised by a water filter for the water/ice dispenser
- 2323/122 . the refrigerator is characterised by a water tank for the water/ice dispenser
- 2325/00 Charging, supporting or discharging the articles to be cooled, not provided for in other groups of this subclass**
- 2325/021 . Shelves with several possible configurations
- 2325/022 . Shelves made of glass or ceramic
- 2325/023 . Shelves made of wires
- 2327/00 Lighting arrangements not provided for in other groups of this subclass**
- 2327/001 . Lighting arrangements on the external side of the refrigerator, freezer or cooling box
- 2331/00 Details or arrangements of other cooling or freezing apparatus not provided for in other groups of this subclass**
- 2331/80 . Type of cooled receptacles
- 2331/801 . . Bags
- 2331/8011 . . . to be carried on the back of a person
- 2331/8012 . . . for cosmetics
- 2331/8013 . . . for playing golf
- 2331/8014 . . . for medical use
- 2331/8015 . . . Pouches
- 2331/802 . . Barrels
- 2331/803 . . Bottles
- 2331/804 . . Boxes
- 2331/8041 . . . for drinking
- 2331/805 . . Cans
- 2331/8051 . . . for holding milk
- 2331/806 . . Dispensers
- 2331/807 . . Eggs
- 2331/808 . . Glasses
- 2331/809 . . Holders
- 2331/81 . . Pitchers
- 2331/811 . . Pour-throughs
- 2331/812 . . Trays
- 2400/00 General features of, or devices for refrigerators, cold rooms, ice-boxes, or for cooling or freezing apparatus not covered by any other subclass**
- 2400/02 . Refrigerators including a heater
- 2400/04 . Refrigerators with a horizontal mullion
- 2400/06 . Refrigerators with a vertical mullion
- 2400/08 . Refrigerator tables
- 2400/10 . Refrigerator top-coolers
- 2400/12 . Portable refrigerators
- 2400/14 . Refrigerator multi units
- 2400/16 . Convertible refrigerators
- 2400/18 . Aesthetic features
- 2400/20 . Carts specially adapted for transporting objects to be cooled
- 2400/22 . Cleaning means for refrigerating devices
- 2400/24 . Protection against refrigerant explosions
- 2400/26 . Refrigerating devices for cooling wearing apparel, e.g. garments, hats, shoes or gloves
- 2400/28 . Quick cooling
- 2400/30 . Quick freezing
- 2400/32 . Removal, transportation or shipping of refrigerating devices from one location to another
- 2400/34 . Temperature balancing devices
- 2400/36 . Visual displays
- 2400/361 . . Interactive visual displays
- 2400/38 . Refrigerating devices characterised by wheels
- 2400/40 . Refrigerating devices characterised by electrical wiring
- 2500/00 Problems to be solved**
- 2500/02 . Geometry problems
- 2500/04 . Calculation of parameters
- 2500/06 . Stock management
- 2600/00 Control issues**
- 2600/02 . Timing
- 2600/04 . Controlling heat transfer
- 2600/06 . Controlling according to a predetermined profile
- 2700/00 Means for sensing or measuring; Sensors therefor**

F25D

- 2700/02 . Sensors detecting door opening
- 2700/04 . Sensors detecting the presence of a person
- 2700/06 . Sensors detecting the presence of a product
- 2700/08 . Sensors using Radio Frequency Identification [RFID]
- 2700/10 . Sensors measuring the temperature of the evaporator
- 2700/12 . Sensors measuring the inside temperature
- 2700/121 . . of particular compartments
- 2700/122 . . of freezer compartments
- 2700/123 . . more than one sensor measuring the inside temperature in a compartment
- 2700/14 . Sensors measuring the temperature outside the refrigerator or freezer
- 2700/16 . Sensors measuring the temperature of products