

**CPC****COOPERATIVE PATENT CLASSIFICATION****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](#) to [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)

**NOTE**

1. 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.
2. Attention is drawn to Note (2) following the title of subclass [F24F](#).

**Devices not associated with refrigerating machinery****F25D 1/00****Devices using naturally cold air or cold water**

## F25D 1/02

- . using naturally cold water, e.g. household tap water

**F25D 3/00****Devices using other cold materials; Devices using cold-storage bodies**

## F25D 3/005

- . {combined with heat exchangers}

## F25D 3/02

- . using ice, e.g. ice-boxes

## F25D 3/04

- .. Stationary cabinets

## F25D 3/045

- ... {Details}

## F25D 3/06

- .. Movable containers

## F25D 3/08

- ... portable, i.e. adapted to be carried personally

## F25D 3/10

- . using liquefied gases, e.g. liquid air {(for cooling semiconductor devices [H01L 23/445](#))}

## F25D 3/102

- .. {Stationary cabinets}

## F25D 3/105

- .. {Movable containers}

## F25D 3/107

- .. {portable, i.e. adapted to be carried personally}

## F25D 3/11

- .. with conveyers carrying articles to be cooled through the cooling space

## F25D 3/12

- . using solidified gases, e.g. carbon-dioxide snow

## F25D 3/122

- .. {Stationary cabinets}

## F25D 3/125

- .. {Movable containers}

- F25D 3/127 . . {Stationary devices with conveyers carrying articles to be cooled through the cooling space}
- F25D 3/14 . . portable, i.e. adapted to be carried personally
- F25D 5/00** **Devices using endothermic chemical reactions, e.g. using frigorific mixtures**
- F25D 5/02 . . portable, i.e. adapted to be carried personally
- F25D 7/00** **Devices using evaporation effects without recovery of the vapour (butter or cheese dishes with cooling devices [A47G 19/26](#))**
- F25D 9/00** **Devices not covered by groups [F25D 1/00](#) to [F25D 7/00](#); Combinations of devices covered by two or more of the groups [F25D 1/00](#) to [F25D 7/00](#)**
- F25D 9/005 . . {using fluorinated halogenous hydrocarbons}

#### **Devices associated with refrigerating machinery**

- F25D 11/00** **Self-contained movable devices, e.g. domestic refrigerator**
- F25D 11/003 . . {Transport containers}
- F25D 11/006 . . {with cold storage accumulators}
- F25D 11/02 . . with cooling compartments at different temperatures
- F25D 11/022 . . {with two or more evaporators}
- F25D 11/025 . . {using primary and secondary refrigeration systems}
- F25D 11/027 . . {of the sorption cycle type}
- F25D 11/04 . . specially adapted for storing deep-frozen articles ([F25D 11/02](#) takes precedence)
- F25D 13/00** **Stationary devices, e.g. cold-rooms**
- F25D 13/02 . . with several cooling compartments, e.g. refrigerated locker systems
- F25D 13/04 . . the compartments being at different temperatures
- F25D 13/06 . . with conveyers carrying articles to be cooled through the cooling space
- F25D 13/062 . . {with refrigerated conveyers}
- F25D 13/065 . . {Articles being submerged in liquid coolant}
- F25D 13/067 . . {with circulation of gaseous cooling fluid}
- F25D 15/00** **Devices not covered by group [F25D 11/00](#) or [F25D 13/00](#), e.g. non-self-contained movable devices**
- F25D 16/00** **Devices using a combination of a cooling mode associated with refrigerating machinery with a cooling mode not associated with refrigerating machinery**

#### **Details or features of the devices covered by groups [F25D 1/00](#) to [F25D 16/00](#)**

- F25D 17/00** **Arrangements for circulating cooling fluids; Arrangements for circulating gas, e.g. air, within refrigerated spaces**
- F25D 17/005 . . {in cold rooms}
- F25D 17/02 . . for circulating liquids, e.g. brine

- F25D 17/04 . for circulating air, e.g. by convection
- F25D 17/042 .. {Air treating means within refrigerated spaces ([air conditioning in general F24F](#))}
- F25D 17/045 ... {Air flow control arrangements}
- F25D 17/047 ... {Pressure equalising devices}
- F25D 17/06 .. by forced circulation
- F25D 17/062 ... {in household refrigerators}
- F25D 17/065 .... {with compartments at different temperatures}
- F25D 17/067 ... {Evaporator fan units}
- F25D 17/08 ... using ducts

## **F25D 19/00 Arrangement or mounting of refrigeration units with respect to devices {or objects to be refrigerated, e.g. infra-red detectors}**

- F25D 19/003 . {with respect to movable containers}
- F25D 19/006 . {Thermal coupling structure or interface}
- F25D 19/02 . plug-in type
- F25D 19/04 . with more than one refrigeration unit

## **F25D 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](#))

- F25D 21/002 . {Defroster control}
- F25D 21/004 .. {Control mechanisms ([F25D 21/006](#) takes precedence)}
- F25D 21/006 .. {with electronic control circuits}
- F25D 21/008 .. {by timer}
- F25D 21/02 . Detecting the presence of frost or condensate
- F25D 21/025 .. {using air pressure differential detectors}
- F25D 21/04 . Preventing the formation of frost or condensate
- F25D 21/06 . Removing frost ([defrosting cycles F25B 47/02](#))
- F25D 21/065 .. {by mechanical means}
- F25D 21/08 .. by electric heating
- F25D 21/10 .. by spraying with fluid
- F25D 21/12 .. by hot-fluid circulating system separate from the refrigerant system
- F25D 21/125 ... {the hot fluid being ambient air}
- F25D 21/14 . Collecting or removing condensed and defrost water; Drip trays

## **F25D 23/00 General constructional features ([F25D 21/00](#) takes precedence)**

- F25D 23/003 . {for cooling refrigerating machinery}
- F25D 23/006 . {for mounting refrigerating machinery components}
- F25D 23/02 . Doors; Covers ([F25D 23/08](#) takes precedence {locks or fastenings [E05B 65/0042](#)})
- F25D 23/021 .. {Sliding doors}
- F25D 23/023 .. {Air curtain closures}

- F25D 23/025 .. {Secondary closures}
- F25D 23/026 .. {for open-top cabinets}
- F25D 23/028 .. {Details}
- F25D 23/04 .. with special compartments, e.g. butter conditioners
- F25D 23/06 . Walls ([F25D 23/08](#) takes precedence; containers with thermal insulation [B65D 81/38](#))
- F25D 23/061 .. {with conduit means}
- F25D 23/062 .. {defining a cabinet}
- F25D 23/063 ... {formed by an assembly of panels}
- F25D 23/064 ... {formed by moulding, e.g. moulding in situ}
- F25D 23/065 .. {Details}
- F25D 23/066 ... {Liners}
- F25D 23/067 ... {Supporting elements}
- F25D 23/068 ... {Arrangements for circulating fluids through the insulating material}
- F25D 23/069 .. {Cooling space dividing partitions}
- F25D 23/08 . Parts formed wholly or mainly of plastics materials
- F25D 23/082 .. {Strips}

#### **NOTE**

When a document describes both breaking and sealing strips it is classified in group [F25D 23/082](#) only.

- F25D 23/085 ... {Breaking strips}
- F25D 23/087 ... {Sealing strips}
- F25D 23/10 . Arrangements for mounting in particular locations, e.g. for built-in type, for corner type
- F25D 23/12 . Arrangements of compartments additional to cooling compartments; Combinations of refrigerators with other equipment, e.g. stove
- F25D 23/123 .. {Butter compartment}
- F25D 23/126 .. {Water cooler}

#### **F25D 25/00**

#### **Charging, supporting, and discharging the articles to be cooled**

- F25D 25/005 . {using containers}
- F25D 25/02 . by shelves
- F25D 25/021 .. {combined with trays}
- F25D 25/022 .. {Baskets}
- F25D 25/024 .. {Slidable shelves}
- F25D 25/025 ... {Drawers}
- F25D 25/027 .. {Rotatable shelves}
- F25D 25/028 .. {Cooled supporting means}
- F25D 25/04 . by conveyers ([in general B65G](#))

#### **F25D 27/00**

#### **Lighting arrangements ([in general F21](#))**

- F25D 27/005 . {combined with control means}

**F25D 29/00****Arrangement or mounting of control or safety devices**

- F25D 29/001 . {for cryogenic fluid systems}
- F25D 29/003 . {for movable devices}
- F25D 29/005 . {Mounting of control devices}
- F25D 29/006 . {Safety devices}
- F25D 29/008 . {Alarm devices}

**F25D 31/00****Other cooling or freezing apparatus**

- F25D 31/001 . {Plate freezers}
  - F25D 31/002 . {Liquid coolers, e.g. beverage cooler (receptacle coolers [F25D 31/006](#))}
  - F25D 31/003 . . {with immersed cooling element}
  - F25D 31/005 . {Combined cooling and heating devices}
  - F25D 31/006 . {specially adapted for cooling receptacles, e.g. tanks}
  - F25D 31/007 . . {Bottles or cans}
  - F25D 31/008 . . {Drinking glasses}
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**F25D 2201/00****Insulation**

- F25D 2201/10 . with respect to heat
- F25D 2201/12 . . using an insulating packing material
- F25D 2201/122 . . . of loose fill type
- F25D 2201/124 . . . of fibrous type
- F25D 2201/126 . . . of cellular type
- F25D 2201/1262 . . . . with open cells
- F25D 2201/128 . . . of foil type
- F25D 2201/1282 . . . . with reflective foils
- F25D 2201/14 . . using subatmospheric pressure
- F25D 2201/30 . with respect to sound

**F25D 2230/00****F25D 2240/00****F25D 2250/00****F25D 2260/00****F25D 2270/00****F25D 2300/00****Special arrangements or features for refrigerators; cold rooms; ice-boxes; Cooling or freezing apparatus not covered by any other subclass****F25D 2303/00****{Details of devices using other cold materials; Details of devices using cold-storage bodies}**

- F25D 2303/08 . Devices using cold storage material, i.e. ice or other freezable liquid
- F25D 2303/081 .. using ice cubes or crushed ice
- F25D 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
- F25D 2303/0821 ... the element placed in a compartment which can be opened without the need of opening the container itself
- F25D 2303/0822 ... Details of the element
- F25D 2303/08221 .... Fasteners or fixing means for the element
- F25D 2303/08222 .... Shape of the element
- F25D 2303/08223 ..... having the shape of an ice cube
- F25D 2303/083 .. using cold storage material disposed in closed wall forming part of a container for products to be cooled
- F25D 2303/0831 ... the liquid is disposed in the space between the walls of the container
- F25D 2303/0832 ... the liquid is disposed in an accumulator pack locked in a closable wall forming part of the container
- F25D 2303/084 .. Position of the cold storage material in relationship to a product to be cooled
- F25D 2303/0841 ... external to the container for a beverage, e.g. a bottle, can, drinking glass or pitcher
- F25D 2303/0842 ... inside the beverage contained in a bottle, can, drinking glass, pitcher or dispenser
- F25D 2303/0843 ... on the side of the product
- F25D 2303/0844 ... above the product
- F25D 2303/0845 ... below the product
- F25D 2303/0846 ... around the neck of a bottle
- F25D 2303/085 .. Compositions of cold storage materials
- F25D 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}**
- F25D 2317/04 . Treating air flowing to refrigeration compartments
- F25D 2317/041 .. by purification
- F25D 2317/0411 ... by dehumidification
- F25D 2317/04111 .... Control means therefor
- F25D 2317/0413 ... by humidification
- F25D 2317/04131 .... Control means therefor
- F25D 2317/0415 ... by deodorizing
- F25D 2317/0416 ... using an ozone generator
- F25D 2317/0417 ... using an UV-lamp
- F25D 2317/043 .. by creating a vacuum in a storage compartment
- F25D 2317/06 . with forced air circulation
- F25D 2317/061 .. through special compartments
- F25D 2317/062 .. along the inside of doors
- F25D 2317/063 .. with air guides

F25D 2317/065	..	characterised by the air return
F25D 2317/0651	...	through the bottom
F25D 2317/0652	...	through the corner
F25D 2317/0653	...	through the mullion
F25D 2317/0654	...	through the side
F25D 2317/0655	...	through the top
F25D 2317/066	..	characterised by the air supply
F25D 2317/0661	...	from the bottom
F25D 2317/0662	...	from the corner
F25D 2317/0663	...	from the mullion
F25D 2317/0664	...	from the side
F25D 2317/0665	...	from the top
F25D 2317/0666	...	from the freezer
F25D 2317/0667	...	from the refrigerator
F25D 2317/067	..	characterised by air ducts
F25D 2317/0671	...	Inlet ducts
F25D 2317/0672	...	Outlet ducts
F25D 2317/068	..	characterised by the fans
F25D 2317/0681	...	Details thereof
F25D 2317/0682	...	Two or more fans
F25D 2317/0683	...	the fans not of the axial type
F25D 2317/0684	...	the fans allowing rotation in reverse direction
<b>F25D 2321/00</b>		<b>{Details or arrangements for defrosting; Preventing frosting; Removing condensed or defrost water, not provided for in other groups of this subclass}</b>
F25D 2321/14	.	Collecting condense or defrost water; Removing condense or defrost water
F25D 2321/141	..	Removal by evaporation
F25D 2321/1411	...	using compressor heat
F25D 2321/1412	...	using condenser heat or heat of desuperheaters
F25D 2321/1413	...	using heat from electric elements or using an electric field for enhancing removal
F25D 2321/142	..	characterised by droplet guides
F25D 2321/143	..	characterised by means to fix, clamp, or connect water pipes or evaporation trays
F25D 2321/144	..	characterised by the construction of drip water collection pans
F25D 2321/1441	...	inside a refrigerator
F25D 2321/1442	...	outside a refrigerator
F25D 2321/145	..	characterised by multiple collecting pans
F25D 2321/146	..	characterised by the pipes or pipe connections
F25D 2321/147	..	characterised by capillary, wick, adsorbent, or evaporation elements

**F25D 2323/00**      **{General constructional features not provided for in other groups of this subclass}**

- F25D 2323/0011      . Means for leveling refrigerators
- F25D 2323/002      . Details for cooling refrigerating machinery
- F25D 2323/0021      .. using air guides
- F25D 2323/0022      .. using multiple air flows
- F25D 2323/0023      .. Control of the air flow cooling refrigerating machinery
- F25D 2323/0024      .. Filters in the air flow cooling refrigerating machinery
- F25D 2323/0026      .. characterised by the incoming air flow
  - F25D 2323/00261      ... through the back bottom side
  - F25D 2323/00262      ... through the back top side
  - F25D 2323/00263      ... through the back corner side
  - F25D 2323/00264      ... through the front bottom part
  - F25D 2323/00265      ... through the front top part
  - F25D 2323/00266      ... through the bottom
  - F25D 2323/00267      ... through the side
  - F25D 2323/00268      ... through the top
- F25D 2323/0027      .. characterised by the out-flowing air
  - F25D 2323/00271      ... from the back bottom
  - F25D 2323/00272      ... from the back top
  - F25D 2323/00273      ... from the back corner
  - F25D 2323/00274      ... from the front bottom
  - F25D 2323/00275      ... from the front top
  - F25D 2323/00276      ... from the bottom
  - F25D 2323/00277      ... from the side
  - F25D 2323/00278      ... from the top
- F25D 2323/0028      .. characterised by the fans
  - F25D 2323/00281      ... Two or more fans
  - F25D 2323/00282      ... the fans not of the axial type
  - F25D 2323/00283      ... the fans allowing rotation in reverse direction
  - F25D 2323/00284      ... Details thereof
- F25D 2323/02      . Details of doors or covers not otherwise covered
  - F25D 2323/021      .. French doors
  - F25D 2323/022      .. Doors that can be pivoted either left-handed or right-handed
  - F25D 2323/023      .. Door in door constructions
  - F25D 2323/024      .. Door hinges
- F25D 2323/06      . Details of walls not otherwise covered
  - F25D 2323/061      .. Collapsible walls
  - F25D 2323/062      .. Inflatable walls
- F25D 2323/121      . the refrigerator is characterised by a water filter for the water/ice dispenser



F25D 2323/122	. the refrigerator is characterised by a water tank for the water/ice dispenser
<b>F25D 2325/00</b>	<b>{Charging, supporting or discharging the articles to be cooled, not provided for in other groups of this subclass}</b>
F25D 2325/021	. Shelves with several possible configurations
F25D 2325/022	. Shelves made of glass or ceramic
F25D 2325/023	. Shelves made of wires
<b>F25D 2327/00</b>	<b>{Lighting arrangements not provided for in other groups of this subclass}</b>
F25D 2327/001	. Lighting arrangements on the external side of the refrigerator, freezer or cooling box
<b>F25D 2331/00</b>	<b>{Details or arrangements of other cooling or freezing apparatus not provided for in other groups of this subclass}</b>
F25D 2331/80	. Type of cooled receptacles
F25D 2331/801	.. Bags
F25D 2331/8011	... to be carried on the back of a person
F25D 2331/8012	... for cosmetics
F25D 2331/8013	... for playing golf
F25D 2331/8014	... for medical use
F25D 2331/8015	... Pouches
F25D 2331/802	.. Barrels
F25D 2331/803	.. Bottles
F25D 2331/804	.. Boxes
F25D 2331/8041	... for drinking
F25D 2331/805	.. Cans
F25D 2331/8051	... for holding milk
F25D 2331/806	.. Dispensers
F25D 2331/807	.. Eggs
F25D 2331/808	.. Glasses
F25D 2331/809	.. Holders
F25D 2331/81	.. Pitchers
F25D 2331/811	.. Pour-throughs
F25D 2331/812	.. Trays
<b>F25D 2400/00</b>	<b>General features of, or devices for refrigerators, cold rooms, ice-boxes, or for cooling or freezing apparatus not covered by any other subclass</b>
F25D 2400/02	. Refrigerators including a heater
F25D 2400/04	. Refrigerators with a horizontal mullion
F25D 2400/06	. Refrigerators with a vertical mullion
F25D 2400/08	. Refrigerator tables
F25D 2400/10	. Refrigerator top-coolers
F25D 2400/12	. Portable refrigerators

F25D 2400/14	. Refrigerator multi units
F25D 2400/16	. Convertible refrigerators
F25D 2400/18	. Aesthetic features
F25D 2400/20	. Carts specially adapted for transporting objects to be cooled
F25D 2400/22	. Cleaning means for refrigerating devices
F25D 2400/24	. Protection against refrigerant explosions
F25D 2400/26	. Refrigerating devices for cooling wearing apparel, e.g. garments, hats, shoes or gloves.
F25D 2400/28	. Quick cooling
F25D 2400/30	. Quick freezing
F25D 2400/32	. Removal, transportation or shipping of refrigerating devices from one location to another
F25D 2400/34	. Temperature balancing devices
F25D 2400/36	. Visual displays
F25D 2400/361	. . Interactive visual displays
F25D 2400/38	. Refrigerating devices characterised by wheels
F25D 2400/40	. Refrigerating devices characterised by electrical wiring
<b>F25D 2500/00</b>	<b>Problems to be solved</b>
F25D 2500/02	. Geometry problems
F25D 2500/04	. Calculation of parameters
F25D 2500/06	. Stock management
<b>F25D 2600/00</b>	<b>Control issues</b>
F25D 2600/02	. Timing
F25D 2600/04	. Controlling heat transfer
F25D 2600/06	. Controlling according to a predetermined profile
<b>F25D 2700/00</b>	<b>Means for sensing or measuring; Sensors therefor</b>
F25D 2700/02	. Sensors detecting door opening
F25D 2700/04	. Sensors detecting the presence of a person
F25D 2700/06	. Sensors detecting the presence of a product
F25D 2700/08	. Sensors using Radio Frequency Identification [RFID]
F25D 2700/10	. Sensors measuring the temperature of the evaporator
F25D 2700/12	. Sensors measuring the inside temperature
F25D 2700/121	. . of particular compartments
F25D 2700/122	. . of freezer compartments
F25D 2700/123	. . more than one sensor measuring the inside air temperature in a compartment
F25D 2700/14	. Sensors measuring the temperature outside the refrigerator or freezer
F25D 2700/16	. Sensors measuring the temperature of products