

# 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 OTHERWISE PROVIDED FOR** (refrigerated showcases [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 or comparable apparatus without refrigeration [G12B](#))

#### 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](#).

#### WARNING

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.

#### 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 associated with refrigerating machinery and 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	<ul style="list-style-type: none"> <li>• specially adapted for storing deep-frozen articles (<a href="#">F25D 11/02</a> takes precedence)</li> </ul>	21/10	<ul style="list-style-type: none"> <li>• by spraying with fluid</li> </ul>
<b>13/00</b>	<b>Stationary devices, e.g. cold-rooms</b>	21/12	<ul style="list-style-type: none"> <li>• by hot-fluid circulating system separate from the refrigerant system</li> </ul>
13/02	<ul style="list-style-type: none"> <li>• with several cooling compartments, e.g. refrigerated locker systems</li> </ul>	21/125	<ul style="list-style-type: none"> <li>• . . {the hot fluid being ambient air}</li> </ul>
13/04	<ul style="list-style-type: none"> <li>• . the compartments being at different temperatures</li> </ul>	21/14	<ul style="list-style-type: none"> <li>• Collecting or removing condensed and defrost water; Drip trays</li> </ul>
13/06	<ul style="list-style-type: none"> <li>• with conveyors carrying articles to be cooled through the cooling space</li> </ul>	<b>23/00</b>	<b>General constructional features</b> ( <a href="#">F25D 21/00</a> takes precedence)
13/062	<ul style="list-style-type: none"> <li>• . {with refrigerated conveyors}</li> </ul>	23/003	<ul style="list-style-type: none"> <li>• {for cooling refrigerating machinery}</li> </ul>
13/065	<ul style="list-style-type: none"> <li>• . {Articles being submerged in liquid coolant}</li> </ul>	23/006	<ul style="list-style-type: none"> <li>• {for mounting refrigerating machinery components}</li> </ul>
13/067	<ul style="list-style-type: none"> <li>• . {with circulation of gaseous cooling fluid}</li> </ul>	23/02	<ul style="list-style-type: none"> <li>• Doors; Covers (<a href="#">F25D 23/08</a> takes precedence {locks or fastenings <a href="#">E05B 65/0042</a>})</li> </ul>
<b>15/00</b>	<b>Devices not covered by group <a href="#">F25D 11/00</a> or <a href="#">F25D 13/00</a>, e.g. non-self-contained movable devices</b>	23/021	<ul style="list-style-type: none"> <li>• . {Sliding doors}</li> </ul>
<b>16/00</b>	<b>Devices using a combination of a cooling mode associated with refrigerating machinery with a cooling mode not associated with refrigerating machinery</b>	23/023	<ul style="list-style-type: none"> <li>• . {Air curtain closures}</li> </ul>
<b>Details or features of the devices covered by groups <a href="#">F25D 1/00</a> - <a href="#">F25D 16/00</a></b>		23/025	<ul style="list-style-type: none"> <li>• . {Secondary closures}</li> </ul>
<b>17/00</b>	<b>Arrangements for circulating cooling fluids; Arrangements for circulating gas, e.g. air, within refrigerated spaces</b>	23/026	<ul style="list-style-type: none"> <li>• . {for open-top cabinets}</li> </ul>
17/005	<ul style="list-style-type: none"> <li>• {in cold rooms}</li> </ul>	23/028	<ul style="list-style-type: none"> <li>• . {Details}</li> </ul>
17/02	<ul style="list-style-type: none"> <li>• for circulating liquids, e.g. brine</li> </ul>	23/04	<ul style="list-style-type: none"> <li>• . with special compartments, e.g. butter conditioners</li> </ul>
17/04	<ul style="list-style-type: none"> <li>• for circulating air, e.g. by convection</li> </ul>	23/06	<ul style="list-style-type: none"> <li>• Walls (<a href="#">F25D 23/08</a> takes precedence; containers with thermal insulation <a href="#">B65D 81/38</a>)</li> </ul>
17/042	<ul style="list-style-type: none"> <li>• . {Air treating means within refrigerated spaces (air conditioning in general <a href="#">F24F</a>)}</li> </ul>	23/061	<ul style="list-style-type: none"> <li>• . {with conduit means}</li> </ul>
17/045	<ul style="list-style-type: none"> <li>• . . {Air flow control arrangements}</li> </ul>	23/062	<ul style="list-style-type: none"> <li>• . {defining a cabinet}</li> </ul>
17/047	<ul style="list-style-type: none"> <li>• . . {Pressure equalising devices}</li> </ul>	23/063	<ul style="list-style-type: none"> <li>• . . {formed by an assembly of panels}</li> </ul>
17/06	<ul style="list-style-type: none"> <li>• . by forced circulation</li> </ul>	23/064	<ul style="list-style-type: none"> <li>• . . {formed by moulding, e.g. moulding <i>in situ</i>}</li> </ul>
17/062	<ul style="list-style-type: none"> <li>• . . {in household refrigerators}</li> </ul>	23/065	<ul style="list-style-type: none"> <li>• . {Details}</li> </ul>
17/065	<ul style="list-style-type: none"> <li>• . . . {with compartments at different temperatures}</li> </ul>	23/066	<ul style="list-style-type: none"> <li>• . . {Liners}</li> </ul>
17/067	<ul style="list-style-type: none"> <li>• . . {Evaporator fan units}</li> </ul>	23/067	<ul style="list-style-type: none"> <li>• . . {Supporting elements}</li> </ul>
17/08	<ul style="list-style-type: none"> <li>• . . using ducts</li> </ul>	23/068	<ul style="list-style-type: none"> <li>• . . {Arrangements for circulating fluids through the insulating material}</li> </ul>
<b>19/00</b>	<b>Arrangement or mounting of refrigeration units with respect to devices (or objects to be refrigerated, e.g. infrared detectors)</b>	23/069	<ul style="list-style-type: none"> <li>• . {Cooling space dividing partitions}</li> </ul>
19/003	<ul style="list-style-type: none"> <li>• {with respect to movable containers}</li> </ul>	23/08	<ul style="list-style-type: none"> <li>• Parts formed wholly or mainly of plastics materials</li> </ul>
19/006	<ul style="list-style-type: none"> <li>• {Thermal coupling structure or interface}</li> </ul>	23/082	<ul style="list-style-type: none"> <li>• . {Strips}</li> </ul>
19/02	<ul style="list-style-type: none"> <li>• plug-in type</li> </ul>	<b>NOTE</b>	
19/04	<ul style="list-style-type: none"> <li>• with more than one refrigeration unit</li> </ul>	When a document describes both breaking and sealing strips it is classified in group <a href="#">F25D 23/082</a> only.	
<b>21/00</b>	<b>Defrosting; Preventing frosting; Removing condensed or defrost water (removing ice or water from heat-exchange apparatus in general <a href="#">F28F 17/00</a>; heating arrangements specially adapted for transparent or reflecting areas <a href="#">H05B 3/84</a>)</b>	23/085	<ul style="list-style-type: none"> <li>• . . {Breaking strips}</li> </ul>
21/002	<ul style="list-style-type: none"> <li>• {Defroster control}</li> </ul>	23/087	<ul style="list-style-type: none"> <li>• . . {Sealing strips}</li> </ul>
21/004	<ul style="list-style-type: none"> <li>• . {Control mechanisms (<a href="#">F25D 21/006</a> takes precedence)}</li> </ul>	23/10	<ul style="list-style-type: none"> <li>• Arrangements for mounting in particular locations, e.g. for built-in type, for corner type</li> </ul>
21/006	<ul style="list-style-type: none"> <li>• . {with electronic control circuits}</li> </ul>	23/12	<ul style="list-style-type: none"> <li>• Arrangements of compartments additional to cooling compartments; Combinations of refrigerators with other equipment, e.g. stove</li> </ul>
21/008	<ul style="list-style-type: none"> <li>• . {by timer}</li> </ul>	23/123	<ul style="list-style-type: none"> <li>• . {Butter compartment}</li> </ul>
21/02	<ul style="list-style-type: none"> <li>• Detecting the presence of frost or condensate</li> </ul>	23/126	<ul style="list-style-type: none"> <li>• . {Water cooler}</li> </ul>
21/025	<ul style="list-style-type: none"> <li>• . {using air pressure differential detectors}</li> </ul>	<b>25/00</b>	<b>Charging, supporting, and discharging the articles to be cooled</b>
21/04	<ul style="list-style-type: none"> <li>• Preventing the formation of frost or condensate</li> </ul>	25/005	<ul style="list-style-type: none"> <li>• {using containers}</li> </ul>
21/06	<ul style="list-style-type: none"> <li>• Removing frost (defrosting cycles <a href="#">F25B 47/02</a>)</li> </ul>	25/02	<ul style="list-style-type: none"> <li>• by shelves</li> </ul>
21/065	<ul style="list-style-type: none"> <li>• . {by mechanical means}</li> </ul>	25/021	<ul style="list-style-type: none"> <li>• . {combined with trays}</li> </ul>
21/08	<ul style="list-style-type: none"> <li>• . by electric heating</li> </ul>	25/022	<ul style="list-style-type: none"> <li>• . {Baskets}</li> </ul>
		25/024	<ul style="list-style-type: none"> <li>• . {Slidable shelves}</li> </ul>
		25/025	<ul style="list-style-type: none"> <li>• . . {Drawers}</li> </ul>
		25/027	<ul style="list-style-type: none"> <li>• . {Rotatable shelves}</li> </ul>
		25/028	<ul style="list-style-type: none"> <li>• . {Cooled supporting means}</li> </ul>
		25/04	<ul style="list-style-type: none"> <li>• by conveyors (in general <a href="#">B65G</a>)</li> </ul>
		<b>27/00</b>	<b>Lighting arrangements (in general <a href="#">F21</a>)</b>
		27/005	<ul style="list-style-type: none"> <li>• {combined with control means}</li> </ul>

<b>29/00</b>	<b>Arrangement or mounting of control or safety devices</b>	<b>2303/0842</b>	. . . inside the beverage contained in a bottle, can, drinking glass, pitcher or dispenser
29/001	. {for cryogenic fluid systems}	2303/0843	. . . on the side of the product
29/003	. {for movable devices}	2303/0844	. . . above the product
29/005	. {Mounting of control devices}	2303/0845	. . . below the product
29/006	. {Safety devices}	2303/0846	. . . around the neck of a bottle
29/008	. {Alarm devices}	2303/085	. . Compositions of cold storage materials
<b>31/00</b>	<b>Other cooling or freezing apparatus</b>	<b>2317/00</b>	<b>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</b>
31/001	. {Plate freezers}	2317/04	. Treating air flowing to refrigeration compartments
31/002	. {Liquid coolers, e.g. beverage cooler (receptacle coolers F25D 31/006)}	2317/041	. . by purification
31/003	. . {with immersed cooling element}	2317/0411	. . . by dehumidification
31/005	. {Combined cooling and heating devices}	2317/04111	. . . . Control means therefor
31/006	. {specially adapted for cooling receptacles, e.g. tanks}	2317/0413	. . . by humidification
31/007	. . {Bottles or cans}	2317/04131	. . . . Control means therefor
31/008	. . {Drinking glasses}	2317/0415	. . . by deodorizing
<hr/>		2317/0416	. . . using an ozone generator
<b>2201/00</b>	<b>Insulation</b>	2317/0417	. . . using an UV-lamp
2201/10	. with respect to heat	2317/043	. . by creating a vacuum in a storage compartment
2201/12	. . using an insulating packing material	2317/06	. with forced air circulation
2201/122	. . . of loose fill type	2317/061	. . through special compartments
2201/124	. . . of fibrous type	2317/062	. . along the inside of doors
2201/126	. . . of cellular type	2317/063	. . with air guides
2201/1262	. . . . with open cells	2317/065	. . characterised by the air return
2201/128	. . . of foil type	2317/0651	. . . through the bottom
2201/1282	. . . . with reflective foils	2317/0652	. . . through the corner
2201/14	. . using subatmospheric pressure	2317/0653	. . . through the mullion
2201/30	. with respect to sound	2317/0654	. . . through the side
<b>2300/00</b>	<b>Special arrangements or features for refrigerators; cold rooms; ice-boxes; Cooling or freezing apparatus not covered by any other subclass</b>	2317/0655	. . . through the top
<b>2303/00</b>	<b>Details of devices using other cold materials; Details of devices using cold-storage bodies</b>	2317/066	. . characterised by the air supply
2303/08	. Devices using cold storage material, i.e. ice or other freezable liquid	2317/0661	. . . from the bottom
2303/081	. . using ice cubes or crushed ice	2317/0662	. . . from the corner
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	2317/0663	. . . from the mullion
2303/0821	. . . the element placed in a compartment which can be opened without the need of opening the container itself	2317/0664	. . . from the side
2303/0822	. . . Details of the element	2317/0665	. . . from the top
2303/08221	. . . . Fasteners or fixing means for the element	2317/0666	. . . from the freezer
2303/08222	. . . . Shape of the element	2317/0667	. . . from the refrigerator
2303/08223	. . . . . having the shape of an ice cube	2317/067	. . characterised by air ducts
2303/083	. . using cold storage material disposed in closed wall forming part of a container for products to be cooled	2317/0671	. . . Inlet ducts
2303/0831	. . . the liquid is disposed in the space between the walls of the container	2317/0672	. . . Outlet ducts
2303/0832	. . . the liquid is disposed in an accumulator pack locked in a closable wall forming part of the container	2317/068	. . characterised by the fans
2303/084	. . Position of the cold storage material in relationship to a product to be cooled	2317/0681	. . . Details thereof
2303/0841	. . . external to the container for a beverage, e.g. a bottle, can, drinking glass or pitcher	2317/0682	. . . Two or more fans
		2317/0683	. . . the fans not of the axial type
		2317/0684	. . . the fans allowing rotation in reverse direction
		<b>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>
		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	2327/00	<b>Lighting arrangements not provided for in other groups of this subclass</b>
2321/1441	. . . inside a refrigerator	2327/001	. Lighting arrangements on the external side of the refrigerator, freezer or cooling box
2321/1442	. . . outside a refrigerator		
2321/145	. . characterised by multiple collecting pans	2331/00	<b>Details or arrangements of other cooling or freezing apparatus not provided for in other groups of this subclass</b>
2321/146	. . characterised by the pipes or pipe connections	2331/80	. Type of cooled receptacles
2321/147	. . characterised by capillary, wick, adsorbent, or evaporation elements	2331/801	. . Bags
		2331/8011	. . . to be carried on the back of a person
2323/00	<b>General constructional features not provided for in other groups of this subclass</b>	2331/8012	. . . for cosmetics
2323/0011	. Means for leveling refrigerators	2331/8013	. . . for playing golf
2323/002	. Details for cooling refrigerating machinery	2331/8014	. . . for medical use
2323/0021	. . using air guides	2331/8015	. . . Pouches
2323/0022	. . using multiple air flows	2331/802	. . Barrels
2323/0023	. . Control of the air flow cooling refrigerating machinery	2331/803	. . Bottles
2323/0024	. . Filters in the air flow cooling refrigerating machinery	2331/804	. . Boxes
2323/0026	. . characterised by the incoming air flow	2331/8041	. . . for drinking
2323/00261	. . . through the back bottom side	2331/805	. . Cans
2323/00262	. . . through the back top side	2331/8051	. . . for holding milk
2323/00263	. . . through the back corner side	2331/806	. . Dispensers
2323/00264	. . . through the front bottom part	2331/807	. . Eggs
2323/00265	. . . through the front top part	2331/808	. . Glasses
2323/00266	. . . through the bottom	2331/809	. . Holders
2323/00267	. . . through the side	2331/81	. . Pitchers
2323/00268	. . . through the top	2331/811	. . Pour-throughs
2323/0027	. . characterised by the out-flowing air	2331/812	. . Trays
2323/00271	. . . from the back bottom		
2323/00272	. . . from the back top	2400/00	<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>
2323/00273	. . . from the back corner	2400/02	. Refrigerators including a heater
2323/00274	. . . from the front bottom	2400/04	. Refrigerators with a horizontal mullion
2323/00275	. . . from the front top	2400/06	. Refrigerators with a vertical mullion
2323/00276	. . . from the bottom	2400/08	. Refrigerator tables
2323/00277	. . . from the side	2400/10	. Refrigerator top-coolers
2323/00278	. . . from the top	2400/12	. Portable refrigerators
2323/0028	. . characterised by the fans	2400/14	. Refrigerator multi units
2323/00281	. . . Two or more fans	2400/16	. Convertible refrigerators
2323/00282	. . . the fans not of the axial type	2400/18	. Aesthetic features
2323/00283	. . . the fans allowing rotation in reverse direction	2400/20	. Carts specially adapted for transporting objects to be cooled
2323/00284	. . . Details thereof	2400/22	. Cleaning means for refrigerating devices
2323/02	. Details of doors or covers not otherwise covered	2400/24	. Protection against refrigerant explosions
2323/021	. . French doors	2400/26	. Refrigerating devices for cooling wearing apparel, e.g. garments, hats, shoes or gloves
2323/022	. . Doors that can be pivoted either left-handed or right-handed	2400/28	. Quick cooling
2323/023	. . Door in door constructions	2400/30	. Quick freezing
2323/024	. . Door hinges	2400/32	. Removal, transportation or shipping of refrigerating devices from one location to another
2323/06	. Details of walls not otherwise covered	2400/34	. Temperature balancing devices
2323/061	. . Collapsible walls	2400/36	. Visual displays
2323/062	. . Inflatable walls	2400/361	. . Interactive visual displays
2323/121	. the refrigerator is characterised by a water filter for the water/ice dispenser	2400/38	. Refrigerating devices characterised by wheels
2323/122	. the refrigerator is characterised by a water tank for the water/ice dispenser	2400/40	. Refrigerating devices characterised by electrical wiring
2325/00	<b>Charging, supporting or discharging the articles to be cooled, not provided for in other groups of this subclass</b>		
2325/021	. Shelves with several possible configurations	2500/00	<b>Problems to be solved</b>
2325/022	. Shelves made of glass or ceramic	2500/02	. Geometry problems
2325/023	. Shelves made of wires	2500/04	. Calculation of parameters
		2500/06	. Stock management
		2600/00	<b>Control issues</b>

## F25D

- 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**
- 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