### 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**

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.

**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

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

| 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

<table>
<thead>
<tr>
<th>11/00</th>
<th>Self-contained movable devices, e.g. domestic refrigerators</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/003</td>
<td>. . [Transport containers]</td>
</tr>
<tr>
<td>11/006</td>
<td>. . [with cold storage accumulators]</td>
</tr>
<tr>
<td>11/002</td>
<td>. . with cooling compartments at different temperatures</td>
</tr>
<tr>
<td>11/022</td>
<td>. . [with two or more evaporators]</td>
</tr>
<tr>
<td>11/025</td>
<td>. . [using primary and secondary refrigeration systems]</td>
</tr>
<tr>
<td>11/027</td>
<td>. . [of the sorption cycle type]</td>
</tr>
</tbody>
</table>
Details or features of the devices covered by groups F25D 1/00 - F25D 16/00

17/00 Arrangements for circulating cooling fluids; Arrangements for circulating gas, e.g. air, within refrigerated spaces
17/005 . . [in cold rooms]
17/006 . . for circulating liquids, e.g. brine
17/007 . . for circulating gas, e.g. by convection
17/008 . . [Air treating means within refrigerated spaces (air conditioning in general F24F)]
17/009 . . [Air flow control arrangements]
17/010 . . [Pressure equalising devices]
17/011 . . by forced circulation
17/012 . . [in household refrigerators]
17/013 . . . . [with compartments at different temperatures]
17/014 . . [Evaporator fan units]
17/015 . . 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]
19/004 . . [Thermal coupling structure or interface]
19/005 . . [plug-in type]
19/006 . . 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]
21/010 . . Detecting the presence of frost or condensate
21/012 . . [using air pressure differential detectors]
21/014 . . Preventing the formation of frost or condensate
21/016 . . Removing frost (defrosting cycles F25B 47/02)
21/018 . . [by mechanical means]
21/020 . . by electric heating
21/022 . . by spraying with fluid
21/024 . . by hot-fluid circulating system separate from the refrigerant system
21/026 . . [the hot fluid being ambient air]
21/028 . . Collecting or removing condensed and defrost water; Drip trays

23/00 General constructional features (F25D 21/00 takes precedence)
23/003 . . [for cooling refrigerating machinery]
23/006 . . [for mounting refrigerating machinery components]
23/007 . . Doors; Covers (F25D 23/08 takes precedence [locks or fastenings E05B 65/0042])
23/009 . . [Sliding doors]
23/010 . . [Air curtain closures]
23/012 . . [Secondary closures]
23/013 . . [for open-top cabinets]
23/014 . . [Details]
23/016 . . with special compartments, e.g. butter conditioners
23/018 . . Walls (F25D 23/08 takes precedence; containers with thermal insulation B65D 81/38)
23/020 . . [with conduit means]
23/021 . . [defining a cabinet]
23/022 . . [formed by an assembly of panels]
23/024 . . [formed by moulding, e.g. moulding in situ]
23/026 . . [Details]
23/027 . . [Liners]
23/028 . . [Supporting elements]
23/030 . . [Arrangements for circulating fluids through the insulating material]
23/032 . . [Cooling space dividing partitions]
23/034 . . Parts formed wholly or mainly of plastics materials
23/036 . . [Strips]

NOTE
When a document describes both breaking and sealing strips it is classified in group F25D 23/082 only.

25/00 Charging, supporting, and discharging the articles to be cooled
25/005 . . [using containers]
25/007 . . by shelves
25/009 . . [combined with trays]
25/011 . . [Baskets]
25/013 . . [Slidable shelves]
25/015 . . [Drawers]
25/017 . . [Rotatable shelves]
25/019 . . [Cooled supporting means]
25/021 . . by conveyors (in general B65G)

27/00 Lighting arrangements (in general F21)
27/002 . . [combined with control means]
Details or features of the devices covered by groups F25D1/00 - F25D16/00

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

2321/00 Details or arrangements for defrosting; Preventing frosting; Removing condensed or defrost water, not provided for in other groups of this subclass

2900 Arrangement or mounting of control or safety devices
Problems to be solved

Calculation of parameters
Geometry problems

Refrigerating devices characterised by electrical wiring

Refrigerators including a heater
Refrigerators with a horizontal mullion
Refrigerators with a vertical mullion
Refrigerator tables
Refrigerator top-coolers
Convertible refrigerators
Aesthetic features
Carts specially adapted for transporting objects to be cooled
Cleaning means for refrigerating devices
Protection against refrigerant explosions
Refrigerating devices for cooling wearing apparel, e.g. garments, hats, shoes or gloves
Quick cooling
Quick freezing
Removal, transportation or shipping of refrigerating devices from one location to another
Temperature balancing devices
Visual displays
Interactive visual displays
Refrigerating devices characterised by wheels
Refrigerating devices characterised by electrical wiring

Details or arrangements of other cooling or freezing apparatus not provided for in other groups of this subclass

Lighting arrangements not provided for in other groups of this subclass

Lighting arrangements on the external side of the refrigerator, freezer or cooling box

Type of cooled receptacles
Bags
to be carried on the back of a person
for cosmetics
for playing golf
for medical use
Pouches
Barrels
Bottles
Boxes
for drinking
Cans
for holding milk
Dispensers
Eggs
Glasses
Holders
Pitchers
Pour-throughs
Trays

General constructional features not provided for in other groups of this subclass

Means for leveling refrigerators
Details for cooling refrigerating machinery
using air guides
using multiple air flows
Control of the air flow cooling refrigerating machinery
Filters in the air flow cooling refrigerating machinery
characterised by the incoming air flow
through the back bottom side
through the back top side
through the back corner side
through the front bottom part
through the front top part
through the bottom
to the side
to the top
characterised by the out-flowing air
from the back bottom
from the back top
from the back corner
from the front bottom
from the front top
from the bottom
from the side
characterised by the fans
Two or more fans
the fans not of the axial type
the fans allowing rotation in reverse direction
Details thereof
Details of doors or covers not otherwise covered
French doors
Doors that can be pivoted either left-handed or right-handed
Door in door constructions
Doors
Details of walls not otherwise covered
Collapsible walls
Inflatable walls
the refrigerator is characterised by a water filter for the water/ice dispenser
the refrigerator is characterised by a water tank for the water/ice dispenser

Charging, supporting or discharging the articles to be cooled, not provided for in other groups of this subclass

Shelves with several possible configurations
Shelves made of glass or ceramic
Shelves made of wires

General features of, or devices for refrigerators, cold rooms, ice-boxes, or for cooling or freezing apparatus not covered by any other subclass

Refrigerators including a heater
Refrigerators with a horizontal mullion
Refrigerators with a vertical mullion
Refrigerator tables
Refrigerator top-coolers
Portable refrigerators
Refrigerator multi units
Convertible refrigerators
Aesthetic features
Carts specially adapted for transporting objects to be cooled
Cleaning means for refrigerating devices
Protection against refrigerant explosions
Refrigerating devices for cooling wearing apparel, e.g. garments, hats, shoes or gloves
Quick cooling
Quick freezing
Removal, transportation or shipping of refrigerating devices from one location to another
Temperature balancing devices
Visual displays
Interactive visual displays
Refrigerating devices characterised by wheels
Refrigerating devices characterised by electrical wiring

Problems to be solved

Calculation of parameters
Stock management

Control issues
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2600/02</td>
<td>Timing</td>
</tr>
<tr>
<td>2600/04</td>
<td>Controlling heat transfer</td>
</tr>
<tr>
<td>2600/06</td>
<td>Controlling according to a predetermined profile</td>
</tr>
<tr>
<td>2700/00</td>
<td>Means for sensing or measuring; Sensors therefor</td>
</tr>
<tr>
<td>2700/02</td>
<td>Sensors detecting door opening</td>
</tr>
<tr>
<td>2700/04</td>
<td>Sensors detecting the presence of a person</td>
</tr>
<tr>
<td>2700/06</td>
<td>Sensors detecting the presence of a product</td>
</tr>
<tr>
<td>2700/08</td>
<td>Sensors using Radio Frequency Identification [RFID]</td>
</tr>
<tr>
<td>2700/10</td>
<td>Sensors measuring the temperature of the evaporator</td>
</tr>
<tr>
<td>2700/12</td>
<td>Sensors measuring the inside temperature</td>
</tr>
<tr>
<td>2700/121</td>
<td>of particular compartments</td>
</tr>
<tr>
<td>2700/122</td>
<td>of freezer compartments</td>
</tr>
<tr>
<td>2700/123</td>
<td>more than one sensor measuring the inside temperature in a compartment</td>
</tr>
<tr>
<td>2700/14</td>
<td>Sensors measuring the temperature outside the refrigerator or freezer</td>
</tr>
<tr>
<td>2700/16</td>
<td>Sensors measuring the temperature of products</td>
</tr>
</tbody>
</table>