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

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]
Devices associated with refrigerating machinery

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
13/062 . [with refrigerated conveyors]
13/065 . [Articles being submersed in liquid coolant]
13/067 . [with circulation of gaseous cooling fluid]
15/00  Devices not covered by group F25D 11/00 or
         F25D 13/00, e.g. non-self-contained movable
         devices
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 - 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]
17/02  . for circulating liquids, e.g. brine
17/04  . for circulating air, e.g. by convection
17/042 . [Air treating means within refrigerated spaces (air
         conditioning in general 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 (defrosting cycles 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
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 . . . [for building in refrigerating machinery units]
23/008 . . . [for mounting in particular locations, e.g.
         for built-in type, for corner type]
23/012 . . . . Arrangements of compartments additional
         to cooling compartments; Combinations of
         refrigerators with other equipment, e.g. stove
23/013 . . . . [Butter compartment]
23/016 . . . . [Water cooler]
23/019 . . . . [Water for household refrigerators]
23/027 . . . . [Rotatable shelves]
23/028 . . . . [Cooled supporting means]
23/029 . . . . . . [Secondary closures]
23/031 . . . . . . [Sliding doors]
23/035 . . . . . . [Air curtain closures]
23/037 . . . . . . [Secondary closures]
23/038 . . . . . . [for open-top cabinets]
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 in situ]
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 (in general B65G)
27/00  Lighting arrangements (in general F21)
27/005 . . . . [combined with control means]
Details or features of the devices covered by groups F25D1/00 - F25D16/00

**F25D**

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]
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
2303/0845  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

2317/004  Treating air flowing to refrigeration compartments
2317/0041  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
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 Characterised by the back bottom side
2323/00262 Characterised by the back top side
2323/00263 Characterised by the back corner side
2323/00264 Characterised by the front bottom part
2323/00265 Characterised by the front top part
2323/00266 Characterised by the bottom
2323/00267 Characterised by the side
2323/00268 Characterised by the top
2323/0027 Characterised by the out-flowing air
2323/00271 Characterised from the back bottom
2323/00272 Characterised from the back top
2323/00273 Characterised from the back corner
2323/00274 Characterised from the front bottom
2323/00275 Characterised from the front top
2323/00276 Characterised from the bottom
2323/00277 Characterised from the side
2323/00278 Characterised from the top
2323/0028 Characterised by the fans
2323/00281 Two or more fans
2323/00282 Fans not of the axial type
2323/00283 Fans allowing rotation in reverse direction
2323/00284 Details thereof
2323/002 Details of doors or covers not otherwise covered
2323/0021 French doors
2323/0022 Doors that can be pivoted either left-handed or right-handed
2323/0023 Door in door constructions
2323/0024 Door hinges
2323/006 Details of walls not otherwise covered
2323/0061 Collapsible walls
2323/0062 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

2325/001 Shelves with several possible configurations
2325/002 Shelves made of glass or ceramic
2325/003 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
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<td>2700/16</td>
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