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

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

F25D

Arrangements for circulating cooling fluids;
Arrangements for circulating gas, e.g. air, within refrigerated spaces

17/00

17/0005 . [in cold rooms]
17/002 . for circulating liquids, e.g. brine
17/004 . for circulating air, e.g. by convection
17/0042 . [Air treating means within refrigerated spaces (air conditioning in general F24F)]
17/0045 . [Air flow control arrangements]
17/0047 . [Pressure equalising devices]
17/006 . by forced circulation
17/0062 . [in household refrigerators]
17/0065 . . . . [with compartments at different temperatures]
17/0067 . . . [Evaporator fan units]
17/008 . . . using ducts

Arrangement or mounting of refrigeration units with respect to devices (or objects to be refrigerated, e.g. infra-red detectors)

19/00

19/0003 . [with respect to movable containers]
19/0006 . [Thermal coupling structure or interface]
19/02 . plug-in type
19/04 . with more than one refrigeration unit

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)

21/00

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

Defrosting; Preventing frosting; Removing condensed or defrost water: Drip trays

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

General constructional features (F25D 21/00 takes precedence)

23/00

23/003 . [for cooling refrigerating machinery]
23/006 . [for mounting refrigerating machinery components]
23/008 . [for open-top cabinets]
23/009 . [for refrigerated conveyors]
23/021 . [Sliding doors]
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 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.

Charging, supporting, and discharging the articles to be cooled

25/00

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)

Lighting arrangements (in general F21)

27/00

27/005 . [combined with control means]
Details or features of the devices covered by groups F25D1/00 - F25D16/00

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]
31/004. [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 freezeable 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
2317/004. Treating air flowing to refrigeration compartments
2317/0041. by purification
2317/00411. by dehumidification
2317/004111. Control means therefor
2317/00413. by humidification
2317/004131. Control means therefor
2317/00415. by deodorizing
2317/00416. using an ozone generator
2317/00417. using an UV-lamp
2317/0043. by creating a vacuum in a storage compartment
2317/006. with forced air circulation
2317/0061. through special compartments
2317/0062. along the inside of doors
2317/0063. with air guides
2317/0065. characterised by the air return
2317/00651. through the bottom
2317/00652. through the corner
2317/00653. through the milliun
2317/00654. through the side
2317/00655. through the top
2317/0066. characterised by the air supply
2317/00661. from the bottom
2317/00662. from the corner
2317/00663. from the milliun
2317/00664. from the side
2317/00665. from the top
2317/00666. from the freezer
2317/00667. from the refrigerator
2317/0067. characterised by air ducts
2317/00671. Inlet ducts
2317/00672. Outlet ducts
2317/0068. characterised by the fans
2317/00681. Details thereof
2317/00682. Two or more fans
2317/00683. the fans not of the axial type
2317/00684. the fans allowing rotation in reverse direction

2321/00 Details or arrangements for defrosting; Preventing frostling; 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
2325/00  General constructional features not provided for in other groups of this subclass  
2325/0011  Means for leveling refrigerators  
2325/002  Details for cooling refrigerating machinery  
2325/0021  . using air guides  
2325/0022  . using multiple air flows  
2325/0023  . Control of the air flow cooling refrigerating machinery  
2325/0024  . Filters in the air flow cooling refrigerating machinery  
2325/0026  . characterised by the incoming air flow  
2325/00261  . through the back bottom side  
2325/00262  . through the back top side  
2325/00263  . through the back corner side  
2325/00264  . through the front bottom part  
2325/00265  . through the front top part  
2325/00266  . through the bottom  
2325/00267  . through the side  
2325/00268  . through the top  
2325/0027  . characterised by the out-flowing air  
2325/00271  . from the back bottom  
2325/00272  . from the back top  
2325/00273  . from the back corner  
2325/00274  . from the front bottom  
2325/00275  . from the front top  
2325/00276  . from the bottom  
2325/00277  . from the side  
2325/00278  . from the top  
2325/0028  . characterised by the fans  
2325/00281  . Two or more fans  
2325/00282  . the fans not of the axial type  
2325/00283  . the fans allowing rotation in reverse direction  
2325/00284  . Details thereof  
2325/002  . Details of doors or covers not otherwise covered  
2325/0021  . French doors  
2325/0022  . Doors that can be pivoted either left-handed or right-handed  
2325/0023  . Door in door constructions  
2325/0024  . Door hinges  
2325/006  . Details of walls not otherwise covered  
2325/0061  . Collapsible walls  
2325/0062  . Inflatable walls  
2325/121  . the refrigerator is characterised by a water filter for the water/ice dispenser  
2325/122  . 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  General features of, or devices for refrigerators, cold rooms, ice-boxes, or for cooling or freezing apparatus not provided for in other subclass  
2327/001  Lighting arrangements not provided for in other groups of this subclass  
2327/0011  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  
2331/001  Type of cooled receptacles  
2331/0011  Bags  
2331/00111  to be carried on the back of a person  
2331/0013  for cosmetics  
2331/0014  for medical use  
2331/0015  Pouches  
2331/002  Barrels  
2331/003  Bottles  
2331/004  Boxes  
2331/0041  for drinking  
2331/005  Cans  
2331/0051  for holding milk  
2331/006  Dispensers  
2331/007  Eggs  
2331/008  Glasses  
2331/009  Holders  
2331/01  Pitchers  
2331/011  Pour-throughs  
2331/012  Trays  

2400/00  Problems to be solved  
2400/001  Geometry problems  
2400/004  Calculation of parameters  
2400/006  Stock management  

2500/00  Control issues  
2500/001  .
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