This heading comprises two parts:

PART A: Compression, condensation and evaporation refrigeration systems and apparatus for the production of cold
PART B: Other refrigeration subjects

Explanation of heading subject matter and relationships with other headings

PART A: Compression, condensation and evaporation refrigeration systems and apparatus for the production of cold

Classified here are:
. associations of such systems with other systems and apparatus
. overall organisation of and control arrangements for such systems and apparatus
. perfecting and ancillary subjects and elements and subsystems of such systems and apparatus

PART B: Other refrigeration subjects

Classified here are:
. bottle coolers
. cold bodies placed in beverages and other liquids
. cooling fish, animal and vegetable substances in the uncomminuted solid state
. ice making, and congelation or freezing of liquids, semi-liquids, or pasty substances;
. refrigerating systems and apparatus for the production of cold or heat other than the compression, condensation and evaporation type
. refrigerators and other chambers, vessels, tables and slabs for cooling and cold storage
. combined heating and refrigerating plant
. cooling leaf, roll and cake tobacco
. gas turbine plant working on a refrigerating cycle
. heating air and gases by compression
. installations involving cooling of air or gas by expansion thereof
. means for cooling beer, milk, and wine in bottles, casks and other containers
. refrigerator-cars and ship and other cooling-chambers

Excluded from this heading are:

. concentrating and purifying liquids by freezing or hydrate formation—B1G, Crystallizing from a liquid &c; C1C, Treating water, sewage &c; *and headings for the liquids, e.g.* C2C, Organic compounds; C5E, Destructive pyrolysis, gas, hydrocarbons &c
. construction of compressors, engines, exhausters and pumps, *eg*, F1F, Rotary positive displacement devices; F1W, Fluid-pressure reciprocating machines
. doors of cold storage rooms—E1J, Windows, doors &c
. ice-breaking tools—A4C, Cutting foodstuffs &c
. ice-sawing apparatus—B5L, Sawing, woodworking &c
. liquefying and revaporizing air and gases by mechanical and thermal processes not incidental to the production of cold on a large scale—F4P, Gas storing, liquefying &c
. making carbonic acid ice and other solidified gas—F4P, Gas storing, liquefying &c
. mixing and agitating apparatus—B1C, Mixing &c
. mixtures for cooling—C4X, Miscellaneous compositions and materials
. moulding powdered ice—B5A, Moulding plastic substances &c
. non-conducting coverings and compositions—F2X, Miscellaneous machine parts
. plate and tubular heat exchange elements for refrigerating-apparatus—F4S, Indirect heating and cooling
. preserving food, animal and vegetable substances &c. by cooling and freezing processes not characterised by particular cooling and freezing apparatus; preservatives incorporated in ice; compositions for aiding the preservation of chilled or frozen substances; restoring (*including* thawing) preserved substances—A2D, Preserving food, animal and vegetable substances &c
. refrigerating apparatus utilizing Peltier and like thermo-electric effects—
. . control systems therefor—H2H, Electricity supply systems &c
. . in general—H1K, Electric solid-state devices &c
. refrigerating wells and shafts in connection with sinking—E1F, Earth and rock working &c
. regulating and controlling refrigerating systems by electric systems and fluid pressure servomotors—G3P, Fluid-pressure servomotor systems; G3R, Electric retroactive control

The exclusion references listed in this heading are not exhaustive. Reference should be made to the appropriate general heading/s for processes, materials, elements or devices which may be more widely applicable than can appropriately be classified in this heading

Relationship with the Universal Indexing Schedules (heading U1S)

U1S is used, subject to its indexing rules, to record uses and applications of inventions classified here and to index materials or articles operated on (except that terms are not assigned for references to food and like perishable animal or vegetable materials, domestic water or air supplies, which are regarded as commonplace applications), except insofar as these are inherent in the assigned terms of this heading

Operative date for Key entries

The operative date of the terms in this heading is:

1. for all terms annotated by a marginal code, that of the Edition corresponding to the code
2. for all other terms, earlier than that of Edition A

PART A

Classifying Schedule

l	HGXS	. analysers, purifiers, rectifiers, separators (*including* oil separators), receivers, reservoirs, accumulators, driers
		. valves &c—
l	HGXT1	. . valves (including disposition thereof *other than* expansion devices)
l	HGXT2	. . expansion devices (*including* disposition thereof)
l	HGXT3	. . flow restrictors and capillary tubes (*including* disposition thereof)
l	HGXU	. turbines
l	HGXV	. refrigerants
l	HGXW	other subjects
		perfecting and ancillary subjects—
l	HGXH	. removing foreign gases
l	HGXJ	. charging or discharging refrigerant
l	HGXK	. dealing with leakage; sealing
l	HGXL	. lubricating
l	HGXM	. flow circulation arrangements (*including* system bypasses); defrosting
l	HGXN	. adapted for use with particular source of energy, *eg* solar radiation
		elements and subsystems—
l	HGXP	. physical construction of refrigerator elements and subsystems (and systems), *eg* for a particular environment or use
l	HGXQ	. rotary units (*ie* with compressor, condenser and evaporator rotating as a single unit)
l	HGXR	. heat pumps (*including* reversible cycles)
l	HGXA	association of compression, condensation and evaporation systems with other systems and apparatus
		overall organisation of systems—
		. *See also* term HGXP *above*
l	HGXB	. concerned with condensers
l	HGXC	. concerned with evaporators
l	HGXD	. concerned with compressors *including* maintaining low temperature in compressors; multi-stage compression
l	HGXE	. systems not wholly closed
l	HGXF	. systems incorporating ancillary features *eg* auxilliary heat exchanges, gas burners, electric resistance heating, ejectors
l	HGXG	control arrangements *including* heat pump control
		. control systems of general interest—See such headings as G3N, Automatic electric control systems, G3P, Fluid-pressure servomotor systems, G3R, Electric retractive control

Indexing Schedule

Note: *terms from this Schedule are applied in a discretionary manner and only when the classifying terms in this Part are applied*

HG2L	condensers (*including* coolers for liquid refrigerant)
HG2V	discharging air and other foreign gases from systems
HG2T	employment of compressors *other than* stationary-cylinder and reciprocating-piston only
HG2M	evaporators
HG2D	expanding refrigerant in motors
HG2F	keeping temperature in compressors low (*otherwise than* by jacketing cylinders)
HG2G	leakage, special provisions for preventing and dealing with
HG2C	lubricating passages, channels, and reservoirs
HG2X1	apparatus using natural heat
HG2X2	electric motor in refrigerant space and supplied from independent plant
HG2X3	measuring rate of flow of refrigerant, application of means for
HG2X4	parts connected permanently by long flexible conduits
HG2X5	plurality of compressor-condenser units mounted on the same stand
HG2X6	utilizing water condensed on evaporator, *other than* for cooling condenser
HG2U	moisture from charge of refrigerant, eliminating
HG2B	multi-stage compression
HG2E	refrigerants
HG2S	self-controlling
HG2K	systems not wholly closed
	liquefied gases, evaporating from containers without subsequent recovery—*See* term HG13 &c
HG2N	valves and cocks arrangement and disposition of
HG2J	with analysers, purifiers, rectifiers, and separators
HG2H	with coaxial rotary condenser and evaporator casings
HG2A	with receivers and refrigerant supply reservoirs
HG2R	with restricted tube or like fixed expansion devices

PART B

Note: In this part of the heading there are many terms which are only assigned to those features with which novelty is associated and thus in general it is not possible to use a combination of terms for searching

HA apparatus for cooling fish, animal, and vegetable substances
. processes not characterised by particular apparatus—A2D, Preserving food, animal and vegetable substances &c
. refrigerating and cooling chambers, tanks, and vessels—*See* refrigerators &c
ice-making and congelation or freezing of liquids, semi-liquids, and pasty substances—
. freezing separate batches of substances passing successively through chambers, tanks, and other apparatus—*See* refrigerators &c
. processes, systems, and apparatus for the generation and production of cold to be utilized subsequently for ice-making and for congelation of liquids—*See* refrigerating systems &c
. refrigerating-chambers—*See* refrigerators &c
. rollers or cylinders, hollow, general construction of—*See* F2U, Rollers, shafts &c
. agitating water and other liquids to be frozen or congealed—
HD1A . . by air and gases
HD1B . . mechanically
HD2 . clear and pure ice and other congealed liquids, special means for obtaining, (*other than* agitating liquids to be frozen)
. . water, purifying prior to freezing—*See* C1C, Treating water, sewage &c
HD4 . direct contact with air and other gases, by
. drops, solidifying—*See* spray, freezing
HD5 . evaporation in part, by
. freezers and like machines—*See* ice-cream freezers &c
HD6 . freezing-buildings
. freezing-tanks—*See* ice &c blocks &c
. ice and other congealed-liquid blocks and shapes, forming and thawing-off—
. . ice-blocks, crushing—*See* B2A, Comminuting
. . solidifying and removing films, apparatus for—*See* solidifying &c
HD7A . . can and mould systems and apparatus (*including* forming ice as tubes or rods)
HD7B . . plate systems and apparatus
HD7C . . removing, marking, uniting, and reshaping frozen blocks and shapes
. . . lifting-appliances—*See* B8B, Winches, tackles &c; counterbalancing
HD7D . . rotary-cylinder apparatus producing blocks by accumulation
HD7E . . valves and cocks, arrangement and disposition of
HD14 . ice composed of water and other substances
. . other substance being a preservative, or a composition for aiding the preservation of frozen or chilled substances—*See* A2D, Preserving food, animal and vegetable substances &c
HD8Y . ice-cream freezers and like freezing-apparatus—
. . solidifying and then removing films, apparatus for—*See* solidifying &c
HD8A . . control means responsive to viscosity
. ice-moulds—*See* ice &c blocks &c
HD9 . ice-surfaces, making and maintaining
. . imitation-ice surfaces for skating-rinks—*See* A6D, Outdoor sports &c
HD11 . preliminary cooling
HD12Y . solidifying and removing films—
HD12A . . compacting ice removed by scraping
HD13 . spray, freezing
. . freezing by spraying on to film-solidifying apparatus—*See* solidifying &c
. water, freeing air from—*See* clear &c

Part B—*cont*

refrigerating systems and apparatus for the production of cold—
. ammonia, manufacture of—*See* C1A, Inorganic substances
. flow of liquids, measuring—*See* G1R, Measuring fluid flow
. injectors and ejectors—*See* F1E, Injectors and ejectors
. refrigerating-chambers—*See* refrigerators &c
. separating and recovering lubricating-oils—*See* C5E, Destructive pyrolysis, gas, hydrocarbons &c
. stuffing-boxes—*See* F2B, Seals
. absorption systems and apparatus, ammonia and like—
. . vacuum or exhaust vapour-generation systems and apparatus—*See* vacuum &c
HG1A . . absorbers
HG1B . . analysers, rectifiers, and like devices for eliminating absorbent from refrigerant
HG1L . . condensers (*including* coolers for liquid refrigerant)
HG1C . . continuous-cycle systems and apparatus
HG1U . . discharging foreign gases from systems
HG1M . . evaporators and cold producers
HG1J . . gas heat-exchangers
HG1D . . generators
. . intermittent and reversing systems and apparatus—
HG1G . . . alternate generating-condensing and evaporating-absorbing periods (*e.g.* reversing systems)
HG1F . . . generator replenished intermittently during continuous evaporation
HG1K . . liquid heat-exchangers
. . miscellaneous—
HG1X1 . . . apparatus using solar or natural heat
HG1X2 . . . cessation of heat supply, indicating and signalling
HG1X3 . . . combined with and receiving heat from cooking stove
HG1X4 . . . preparing charge of solid absorbent and refrigerant
HG1X5 . . . pressure of gas or vapour, utilizing to drive pumps
HG1X6 . . . receivers for liquid ammonia, construction of
HG1X7 . . . waste heat from gas-producer plant, utilizing
HG1H . . refrigerating and absorbing agents *other than* ammonia and water
. . reversing systems and apparatus—*See* intermittent &c
HG1S . . self-controlling
HG1E . . systems, unclassified
HG1N . . valves and cocks, arrangement and disposition of
HG8 . brine and other cooling-liquid circulating systems for chambers and buildings
HG9 . cold accumulators
. cold-air and like compression systems and apparatus operating without liquefaction and evaporation—*See* compression (non-condensing) systems &c
. compression, condensation, and evaporation systems and apparatus—

Part B—*cont*

. compression (non-condensing) systems and apparatus, cold-air and like—
HG3L . . coolers for compressed air
HG3E . . employment of compressors and expansion motors *other than* stationary-cylinder and reciprocating-piston
HG3D . . keeping temperature in compressors low (*otherwise than* by jacketing cylinders)
. . miscellaneous—
HG3X1 . . . cold air mixed with untreated air circulated by fans or blowers
HG3X2 . . . expanding air or gas directly into air or gas to be compressed
HG3X3 . . . expansion of air, utilizing for purposes *other than* those of assisting the motor of the plant
HG3X4 . . . systems involving expansion from atmospheric pressure
HG3X5 . . . working two sets of apparatus together or singly
HG3H . . motors, compressors, and coolers, arrangements and dispositions of
HG3B . . multi-stage compression
HG3M . . refrigerators, air-expansion
HG3S . . self-controlling
HG3N . . valves and cocks, arrangement and disposition of
HG3F . . with air-purifiers and moisture-separators
HG3A . . with reservoirs for compressed air
HG3G . . with separate compression and expansion pistons in one cylinder or chamber
HG17 . condensers for use in refrigerating apparatus of unspecified type
HG11 . cooling-cartridges opened to produce cold
HG18 . evaporators for use in refrigerating-apparatus of unspecified type
HG12 . heat, producing from refrigerating systems for utilization (*other than* rime, thawing and removing, preventing formation of and otherwise dealing with)
. hydrogen compression systems and apparatus—*See* compression (non-condensing) systems &c
HG13 . processes, systems, and apparatus, unclassified
HG20 . regulating and controlling flow of refrigerant in unspecified apparatus
HG15 . rime, thawing and removing, preventing formation of, and otherwise dealing with
. sulphurous-acid systems and apparatus—*See* absorption &c; compression, condensation &c
. vacuum systems and apparatus (*including* sulphuric-acid and like evaporation and absorption systems and apparatus)—
HG5A . . absorbers
HG5B . . concentrating absorbents
HG5E . . evaporating and absorbing agents *other than* water or brine, and sulphuric-acid
HG5C . . evaporators or refrigerators
HG5D . . exhausters, arrangement and applications of
. . miscellaneous—
HG5X1 . . . liquids cooled in stages in vacuum pans
HG5X2 . . . vapours decomposed by electric discharge
HG5X3 . . . water cooled prior to evaporation
HG5N . . valves and cocks, arrangement and disposition of
HG16 . valves and cocks, arrangement and disposition of in refrigerating apparatus of unspecified type
HG14 . vortex tubes
. working-fluids or refrigerants—*See subdivisions for systems and apparatus*

Part B—*cont*

refrigerators and other chambers, vessels, tables, and slabs for cooling and cold-storage, bottle coolers, *and* cold bodies placed in beverages and other liquids—

. *Use of particular receptacles employed in freezers and ice-making and refrigerating apparatus for cooling and storage is not indexed here*

. apparatus for solidifying and removing films—*See* ice-making &c

. drip-water collectors—*See* E1C, Sanitation and sewerage

. drying air for—*See* B1L, Separating and drying gases

. ice-making, and congelation of liquids by cooling—*See* ice-making &c

. refrigerating systems and apparatus for the production of cold—*See* refrigerating systems &c

. seals for refrigerator doors—*See* E1J, Windows, doors &c

. separating impurities from air—*See* B1T, Separating particles from gases

. shelves and shelf fittings—*See* A4B, Cabinets, shelves, runners &c

. temperature alarms—*See* G4N, Supervisory, alarm and safety systems

H5Y . casings and frames (*including* arrangements and applications of insulation)—

H5A . . foamed plastics insulation

. chambers, tanks, and other apparatus for cooling and freezing separate batches of substances passing successively therethrough—

. . conveyers and elevators—*See* B8A, Conveyers &c

H12A . . by direct contact with liquids

H12B . . other than by direct contact with liquids

. cold-storage rooms and like refrigerating-chambers of large capacity (*including* refrigerating arrangements of ships and refrigerator-cars)—

H1H . . provided with disinfecting, preserving, and sterilizing means

H1G . . rail and road vehicles and aircraft, refrigerator arrangements of

H1A . . storage arrangements for goods

H1B . . with cooled air or gas supply

H1C . . with cooling-pipes serving as direct cooling means

H1E . . with ice and freezing-mixture containers and supported ice-blocks serving as direct-cooling means

H1K . . with means for heating storage space

H1D . . with wetted-fabric and like evaporative cooling arrangements

H1F . . with unclassified cooling means

. domestic, shop, and like refrigerators and cooling-cabinets—

H2G . . combined with and convertible into other articles and apparatus

H2H . . fitted with refrigerating-machines

H2M . . heating storage chamber to prevent excessive cooling

H2N . . permanently open for access

H2L . . show cases, refrigerator arrangements of

H2A . . storage arrangements for goods

H2K . . water and other liquid coolers

H2B . . with cooled air or gas supply

H2C . . with cooling-pipes serving as direct-cooling means

H2E . . with ice freezing-mixture containers and supported ice-blocks serving as direct cooling means

H2D . . with wetted-fabric and like evaporative cooling arrangements

H2F . . with unclassified cooling means

H10 . forced air circulation

H6 . forced ventilation of (*other than* by cooled air or gas supply)

H7 . ice, freezing-mixture, and like receptacles or containers, construction of

. . stoppers for. *See* B8T, Bottling, stoppers &c

. miscellaneous—

HX1 . . goods immersed directly in a cooling or freezing liquid circulating within a chamber

HX2 . . shaft-like chambers sunk into ground

H8 . moisture condensation, preventing and removing

H9 . natural ventilation of

H3 . pails, bottles, cans, casks, and other receptacles and covers provided with cooling means (*including* bottle coolers *and* cold bodies placed in beverages and other liquids)

H11 . preventing and minimizing rise of temperatures on opening doors

H4 . slabs, tables, and like cooling surfaces