CPC COOPERATIVE PATENT CLASSIFICATION

B PERFORMING OPERATIONS; TRANSPORTING

(NOTES omitted)

TRANSPORTING

B64 AIRCRAFT; AVIATION; COSMONAUTICS

B64G COSMONAUTICS; VEHICLES OR EQUIPMENT THEREFOR (apparatus for, or methods of, winning materials from extraterrestrial sources E21C 51/00)

NOTES

1. This subclass covers only vehicles, equipment or the like, which are specially adapted for cosmonautics.
2. This subclass does not cover vehicles and equipment applicable to both cosmonautics and aeronautics, which are covered by the appropriate aeronautical subclasses of class B64.
3. In this subclass, the following term is used with the meaning indicated:
   - "cosmonautics" includes all transport outside the earth's atmosphere, and thus includes artificial earth satellites, and interplanetary and interstellar travel.

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.

1/00	**Cosmonautic vehicles**
1/002	. {Launch systems}
1/005	. . {Air launch}
1/007	. . {Orbit transfer}
1/10	. Artificial satellites; Systems of such satellites; Interplanetary vehicles (space shuttles B64G 1/14; radio transmission systems using satellites H04B 7/185)
1/1007	. . {Communications satellites (communications aspects H04B 7/185)}
1/1014	. . {Navigation satellites (navigation systems G01S 5/145)}
1/1021	. . {Earth observation satellites}
2001/1028	. . . {using optical means for mapping, surveying or detection, e.g. of intelligence}
2001/1035	. . . {using radar for mapping, surveying or detection, e.g. of intelligence}
2001/1042	. . . {specifically adapted for meteorology}
1/105	. . {Space science}
2001/1057	. . . {specifically adapted for astronomy}
2001/1064	. . . {specifically adapted for interplanetary, solar or interstellar exploration}
2001/1071	. . . . {Planetary landers intended for the exploration of the surface of planets, moons or comets}
1/1078	. . {Maintenance satellites}
1/1085	. . {Swarms and constellations}
2001/1092	. . {Special features of modular spacecraft systems}
1/12	. . manned
1/14	. Space shuttles
1/16	. Extraterrestrial cars (land vehicle aspects B60 - B62)
1/22	. Parts of, or equipment specially adapted for fitting in or to, cosmonautic vehicles
1/222	. . {Appendage deployment mechanisms}
2001/224	. . {Inflatable space structures}
1/226	. . {Special coatings for spacecraft}
2001/228	. . {Damping of high-frequency vibration effects on spacecraft elements, e.g. by using acoustic vibration dampers}
1/24	. . Guiding or controlling apparatus, e.g. for attitude control (jet-propulsion plants F02K; navigation or navigational instruments, see the relevant subclass, e.g. G01C; automatic pilots G05D 1/00)
1/242	. . . {Orbits and trajectories}
1/244	. . . {Attitude control}
2001/245	. . . {Attitude control algorithms for spacecraft attitude control}
2001/247	. . . {Advanced control concepts for autonomous, robotic spacecraft, e.g. by using artificial intelligence, neural networks or autonomous agents}
1/26	. . . using jets
1/28	. . . using inertia or gyro effect
1/281	. . . . {Spin-stabilised spacecraft}
1/283	. . . . {using reaction wheels}
1/285	. . . . {using momentum wheels}
1/286	. . . . {using control momentum gyroscopes (CMGs)}
1/288	. . . . {using gyroscopes as attitude sensors}
1/32	. . . using earth's magnetic field
1/34	. . . using gravity gradient
1/36	. . . using sensors, e.g. sun-sensors, horizon sensors
1/361	. . . . {using star sensors}
1/363	. . . . {using sun sensors}
1/365	. . . . {using horizon or Earth sensors}
1/366	. . . . {using magnetometers}
1/368	. . . . {using gravimeters}
1/38	. . . damping of oscillations, e.g. nutation dampers
1/40	. . Arrangements or adaptations of propulsion systems (propulsion plants per se, see the relevant subclasses, e.g. F02K, F03H)

1/401 . . . {Liquid propellant rocket engines (per se F02K 9/42)}
1/402 . . . {Propellant tanks; Feeding propellants (in general F02K 9/44)}
1/403 . . . {Solid propellant rocket engines (per se F02K 9/08)}
1/404 . . . . {Hybrid rocket engines (per se F02K 9/72)}
1/405 . . . {Ion or plasma engines (per se F03H 1/00)}
1/406 . . . {Arcjets and other resistojets}
1/407 . . . {Solar sailing (includes also attitude control using solar sailing)}
1/408 . . . {Nuclear spacecraft propulsion}
1/409 . . . {Unconventional spacecraft propulsion systems}
1/42 . . Arrangements or adaptations of power supply systems (power supply systems per se, see the relevant subclasses)
1/421 . . . {Non-solar power generation}
1/422 . . . . {Nuclear power generation}
1/423 . . . . {Fuel cells}
1/425 . . . {Power storage}
1/426 . . . . {Flywheels}
1/427 . . . . {Thermal power storage}
1/428 . . . {Power distribution and management}
1/44 . . . using radiation, e.g. deployable solar arrays (solar cells per se H01L 31/00)
1/443 . . . . {Photovoltaic cell arrays}
1/446 . . . . {Thermal solar power generation}
1/46 . . Arrangements or adaptations of devices for control of environment or living conditions (space suits B64G 6/00)
1/48 . . . for treatment of the atmosphere (B64G 1/50 takes precedence; air conditioning in general F24F)
1/50 . . . for temperature control (temperature control in general G05D 23/00)
1/503 . . . . {Radiator panels}
1/506 . . . . {Heat pipes}
1/52 . . Protection, safety or emergency devices; Survival aids (life-saving in general A62)
2001/525 . . . {Survival aids}
1/54 . . . Protection against radiation (against radiation in general G21F)
1/543 . . . . {protecting the crew in manned spacecraft}
1/546 . . . . {shielding electronic equipment}
1/56 . . . Protection against meteoroids or space debris (meteoroid or space debris detectors B64G 1/68)
1/58 . . . Thermal protection, e.g. heat shields (thermal insulation in general F16L 59/00; chemical aspects, see the relevant classes)
1/60 . . Crew or passenger accommodations
1/62 . . Systems for re-entry into the earth's atmosphere; Retarding or landing devices
1/64 . . Systems for coupling or separating cosmonautic vehicles or parts thereof, e.g. docking arrangements
1/641 . . . {Interstage or payload connectors}
2001/643 . . . . {Dispensers for arranging multiple satellites in a single launcher}
1/645 . . . {Separators}
1/646 . . . {Docking or rendez-vous systems}
1/648 . . . {Tethers}
1/66 . . Arrangements or adaptations of apparatus or instruments, not otherwise provided for (instruments per se, see the relevant classes, e.g. antennas for use in satellites H01Q 1/28)
1/68 . . . of meteoroid or space debris detectors

3/00 **Observing or tracking cosmonautic vehicles** (radio or other waves systems for navigating or tracking G01S)

4/00 **Tools specially adapted for use in space**
2004/005 . {Robotic manipulator systems for use in space}

5/00 **Ground equipment for vehicles, e.g. starting towers, fuelling arrangements** (B64G 3/00 takes precedence)
2005/005 . {Systems for launching spacecraft from a platform at sea}

6/00 **Space suits**

7/00 **Simulating cosmonautic conditions, e.g. for conditioning crews** (simulators for teaching or training purposes G09B 9/00)
2007/005 . {Space simulation vacuum chambers}

99/00 **Subject matter not provided for in other groups of this subclass**