CPC COOPERATIVE PATENT CLASSIFICATION

H ELECTRICITY

(NOTE omitted)

H05 ELECTRIC TECHNIQUES NOT OTHERWISE PROVIDED FOR

H05H PLASMA TECHNIQUE (fusion reactors G21B; ion-beam tubes H01J 27/00; magneto-hydrodynamic generators H02K 44/08; producing X-rays involving plasma generation H05G 2/00); PRODUCTION OF ACCELERATED ELECTRICALLY-CHARGED PARTICLES OR OF NEUTRONS (obtaining neutrons from radioactive sources G21, e.g. G21B, G21C, G21G); PRODUCTION OR ACCELERATION OF NEUTRAL MOLECULAR OR ATOMIC BEAMS (atomic clocks G04F 5/14; devices using stimulated emission H01S; frequency regulation by comparison with a reference frequency determined by energy levels of molecules, atoms, or subatomic particles H03L 7/26)

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.

I/00 Generating plasma; Handling plasma
1/006 . . . [Investigating plasma, e.g. degree of ionisation (electron temperature)]
1/0012 . . . [by using radiation]
1/0018 . . . [Details]
1/0025 . . . [by using photoelectric means (H05H 1/0031 - H05H 1/0043 take precedence)]
1/0031 . . . [by interferrometry]
1/0037 . . . [by spectrometry (see G01N 3/00)]
1/0043 . . . [by using infra-red or ultra-violet radiation]
1/005 . . . [by using X-rays or alpha rays (see G01N 23/00)]
1/0056 . . . [by using neutrons (see G01N 23/00)]
1/0062 . . . [by using microwaves (see G01N 23/223)]
1/0068 . . . [by thermal means (see G01N 25/00)]
1/0075 . . . [Langmuir probes]
1/0081 . . . [by electric means (see G01N 27/00, G01R)]
1/0087 . . . [by magnetic means (see G01N 27/00, G01R)]
1/0093 . . . [by acoustic, e.g. ultrasonic means (see G01N 29/02)]
1/02 . . . Arrangements for confining plasma by electric or magnetic fields; Arrangements for heating plasma ([G21B 1/00 takes precedence]; electron optics H01J)
1/03 . . . [using electrostatic fields]
1/04 . . . [using magnetic fields substantially generated by the discharge in the plasma]
1/06 . . . [Longitudinal pinch devices]
1/08 . . . [Theta pinch devices , e.g. SCYLLA]
1/10 . . . [using externally-applied magnetic fields only , e.g. Q-machines, Yin-Yang, base-ball]
1/105 . . . [using magnetic pumping]
1/11 . . . [using cusp configuration (H05H 1/14 takes precedence)]
1/12 . . . [wherein the containment vessel forms a closed or nearly closed loop ([G21B 1/05 takes precedence])]
1/14 . . . [wherein the containment vessel is straight and has magnetic mirrors]
1/16 . . . [using externally-applied electric and magnetic fields]
1/18 . . . [wherein the fields oscillate at very high frequency, e.g. in the microwave range , e.g. using cyclotron resonance]
1/20 . . . [Ohmic heating]
1/22 . . . [for injection heating ([G21B 1/15 takes precedence])]
1/24 . . . Generating plasma ([gas-filled discharge reactors H01J 37/22; nuclear fusion reactors G21B 1/00; ohmic heating H05H 1/20; injection heating H05H 1/22])
2001/2406 . . . [Dielectric barrier discharges]
2001/2412 . . . [the dielectric being interposed between the electrodes]
2001/2418 . . . [the electrodes being embedded in the dielectric]
2001/2425 . . . [the electrodes being flush with the dielectric]
2001/2431 . . . [Cylindrical electrodes]
2001/2437 . . . [Multilayer systems]
2001/2443 . . . [Flow through, i.e. the plasma fluid flowing in a dielectric tube]
2001/245 . . . [Internal electrodes]
2001/2456 . . . [External electrodes]
2001/2462 . . . [Ring electrodes]
2001/2468 . . . [Spiral electrodes]
1/2475 . . . [Acoustic pressure discharge]
2001/2481 . . . [Piezoelectric actuators]
2001/2487 . . . [Mechanical actuators]
2001/2493 . . . [Horns]
1/26 . . . [Plasma torches ([metal working with constricted arc B23K 10/00, B23K 10/02; metal spraying B05B 7/18, B05B 7/20])]
1/28 . . . [Cooling arrangements]
using applied electromagnetic fields, e.g. high frequency or microwave energy (H05H 1/28 takes precedence)

using an arc (H05H 1/28 takes precedence)

Details, e.g. electrodes, nozzles (cf. B23K 9/24)

{ Arc stabilising or constricting arrangements, e.g. by an additional gas flow (by externally applied magnetic field H05H 1/40); by using powders or liquids H05H 1/42; using coaxial protecting fluid H05H 1/341)

{ using coaxial protecting fluid (arc stabilising or constricting arrangements H05H 1/3405; introducing materials into the plasma H05H 1/42)

{ indexing scheme associated with H05H 1/34)

{ transferred arc mode)

{ pilot arc)

{ coaxial cylindrical electrodes)

{ hollow cathode with internal coolant flow)

{ cathode with inserted tip)

{ rod-like cathode)

{ supplementary electrodes between cathode and anode, e.g. cascade)

{ nozzle protection devices)

{ oblique nozzle)

{ vortex generator)

{ safety means)

{ geometrical details)

{ convergent/divergent nozzle)

{ contact starting)

{ discharge parameter control)

Circuit arrangements (H05H 1/38, H05H 1/40 take precedence)

Guiding or centering of electrodes

using applied magnetic fields, e.g. for focusing or rotating the arc (cf. B23K 9/08, B23K 9/073)

with provisions for introducing materials into the plasma, e.g. powder, liquid (electrostatic spraying, spraying apparatus with means for charging the spray electrically H05B 5/00 (cf. B23K 9/324, B05B 7/22; arc stabilising or constricting arrangements H05H 1/3405; coaxial protecting fluids H05H 1/341))

using more than one torch

using applied electromagnetic fields, e.g. high frequency or microwave energy (H05H 1/26 takes precedence)

{ Microwave discharges)

{ Surface waves)

{ Waveguides)

{ Antennas or applicators)

{ Cables)

{ Radiofrequency discharges)

{ Inductively coupled)

{ Electrodes)

{ Coiled antennas)

{ Capacitively coupled)

[Associated power generators, e. G. Circuits, matching networks]

[Flow through, i.e. the plasma fluid flowing in a non-dielectric vessel]

{ dielectric barrier discharge (H05H 1/2406 takes precedence)

{ Arc discharge)

{ Glow discharge)

using an arc (H05H 1/26 takes precedence)

{ Corona discharges)

{ Pointed electrodes)

{ Cylindrical electrodes, e.g. Rotary drums electrodes)

{ Filamentary electrodes)

{ Segmented electrodes)

and using applied magnetic fields, e.g. for focusing or rotating the arc

using exploding wires or spark gaps (H05H 1/26 takes precedence; spark gaps in general H01T)

Plasma accelerators

Production or acceleration of neutral particle beams, e.g. molecular or atomic beams

Molecular or atomic beam generation {charge exchange devices G21K 1/14; polarising devices G21K 1/16; using resonance or molecular beams for analysing or investigating materials G01N 24/002; atomic clock G04P 5/14; beam masers H01S 1/06)

Acceleration by electromagnetic wave pressure

Generating neutron beams (targets for producing nuclear reactions H05H 6/00; neutron sources G21G 4/02)

Direct voltage accelerators; Accelerators using single pulses (H05H 3/06 takes precedence)

Details (targets for producing nuclear reactions H05H 6/00)

Accelerating tubes (vessels or containers of electric discharge tubes with improved potential distribution over surface of vessel H01J 5/06; shields of X-ray tubes associated with vessels or containers H01J 35/16)

energised by electrostatic generators

{ [of the van de Graaf type)

{ High voltage cascades, e.g. Greinacher cascade)

{ Pulsed generators)

Multistage accelerators

{ [Tandems)

{ [Onion-like structures)

Particle accelerators using step-up transformers, e.g. resonance transformers

Targets for producing nuclear reactions (supports for targets or objects to be irradiated G21K 5/08 (; preparation of tritium G01B 4/00; targets, e.g. pellets for fusion reactions by laser or charged particles beam injection H01J 1/22))

{ Windows)

{ Polarisated targets (polarising devices, e.g. for obtaining a polarised ion beam G21K 1/16)

{ Radiation protection arrangements, e.g. screens)

Details of devices of the types covered by groups H05H 9/00, H05H 11/00, H05H 13/00
11/00 Magnetic induction accelerators, e.g. betatrons
11/02 Air-cored betatrons
11/04 Biased betatrons
13/00 Magnetic resonance accelerators; Cyclotrons
13/005 (Cyclotrons)
13/02 Synchrocyclotrons, i.e. frequency modulated cyclotrons
13/04 Synchrotrons
13/06 Air-cored magnetic resonance accelerators
13/08 Alternating-gradient magnetic resonance accelerators
13/085 (Fixed-field alternating gradient accelerators [FFAG])
13/10 Accelerators comprising one or more linear accelerating sections and bending magnets or the like to return the charged particles in a trajectory parallel to the first accelerating section, e.g. microtrons
15/00 Methods or devices for acceleration of charged particles not otherwise provided for
2240/00 Test
2240/10 at atmospheric pressure
2240/20 Non-thermal plasma
2242/00 Auxiliary systems
2242/10 Cooling arrangements
2242/1005 Power supply other than for plasma torches
2245/00 test
2245/104 spiral electrodes
2245/12 Applications
2245/121 treatment of exhaust gas, e.g. Ambient air, ozonizers
2245/1215 Exhaust gas
2245/122 medical applications, e.g. plasma scalpels, blades, bistouri
2245/1225 Sterilization of objects
2245/123 surface treatments
2245/1235 coating of large volume items
2245/124 production of nanostructures
2245/125 portable devices
2247/00 Applications
2247/10 Medical devices
2247/11 Radiotherapy
2247/113 Diagnostic systems
2247/116 Isotope production
2247/12 Ion implantation
2247/13 High energy applications, e.g. fusion
2247/14 Portable devices
2247/1405 Detection systems