COOPERATIVE PATENT CLASSIFICATION

ELECTRICITY

BASIC ELECTRIC ELEMENTS

ELECTRICALLY-CONDUCTIVE CONNECTIONS; STRUCTURAL ASSOCIATIONS
OF A PLURALITY OF MUTUALLY-INSULATED ELECTRICAL CONNECTING
ELEMENTS; COUPLING DEVICES; CURRENT COLLECTORS

NOTES

1. This subclass covers:
   • all kinds of contact-making disconnectible and non-disconnectible electric line connectors, coupling devices, lamp or similar holders or current collectors for all kinds of electric lines, cables or apparatus;
   • non-printed means for electric connections to or between printed circuits.

2. This subclass does not cover mounting of connections in or specified apparatus. Such mounting is covered by the relevant subclass for such apparatus, e.g. mounting in junction or distribution boxes is covered by subclass H02B or H02G, high-temperature connections for heating elements is covered by group H05B 3/08. Structural association of one part of a two-part coupling device with specific electric apparatus is classified with the apparatus e.g. association of cap with incandescent lamp is covered by subclass H01K.

3. In this subclass, the following expressions are used with the meaning indicated:
   • “pin” is a rigid or flexible conductor for engagement with an appropriately shaped socket to establish contact therewith;
   • “socket” is a rigid or flexible conductor for receiving an appropriate pin to establish electrical contact therewith;
   • “coupling devices” are devices having two or more parts specially adapted so as to be capable of ready and repeated physical engagement or disengagement, without the use of a tool, for the purpose of establishing or breaking an electrical path. Examples of such devices having more than two parts are:
     a. adapters for linking two coupling parts;
     b. rails or bus-bars provided with a plurality of discrete connecting locations for counterparts.

4. General details are classified in groups H01R 4/00, H01R 9/00, H01R 11/00.

5. (In this subclass, a contact in a coupling device is regarded as an additional earth contact only if this contact is clearly designed for that purpose.)

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.

3/00  Electrically-conductive connections not otherwise provided for
   3/08   . for making connection to a liquid ((slip rings with liquid contacts H01R 39/30, H01R 39/646))

4/00  Electrically-conductive connections between two or more conductive members in direct contact, i.e. touching one another; Means for effecting or maintaining such contact; Electrically-conductive connections having two or more spaced connecting locations for conductors and using contact members penetrating insulation
   4/01   . Connections using shape memory materials, e.g. shape memory metal
   4/02   . Soldered or welded connections ((H01R 4/625, H01R 4/723, H01R 12/59 take precedence))
   4/021  . [between two or more cables or wires]
   4/022  . . (comprising preapplied solder)
   4/023  . . [between cables or wires and terminals]
   4/024  . . [comprising preapplied solder]
   4/025  . . [with built-in heat generating elements]
   4/026  . . (comprising means for eliminating an insulative layer prior to soldering or welding)
   4/027  . . (comprising means for positioning or holding the parts to be soldered or welded)
   4/028  . . (comprising means for preventing flowing or wicking of solder or flux in parts not desired)
   4/029  . . (Welded connections (H01R 4/021 - H01R 4/028 take precedence))
   4/04   . using electrically conductive adhesives
   4/06   . Riveted connections (by explosion H01R 4/08)
   4/08   . effected by an explosion
   4/10   . effected solely by twisting, wrapping, bending, crimping, or other permanent deformation
   4/12   . by twisting
   4/14   . by wrapping
   4/16   . by bending
   4/18   . by crimping ((H01R 4/01, H01R 4/2495 take precedence; for coaxial cables H01R 9/0518))
   2004/181 . . (using memory material)
   4/182  . . (for flat conductive elements, e.g. flat cables (H01R 4/01 takes precedence))
[for cylindrical elongated bodies, e.g. cables having circular cross-section (H01R 4/01 takes precedence)]

{ comprising a U-shaped wire-receiving portion }

{ combined with a U-shaped insulation-receiving portion }

{ using a body comprising a plurality of cable-accommodating recesses or bores }

{ combined with soldering or welding }

using a crimping sleeve (H01R 4/01 takes precedence)

{ having an uneven wire-receiving surface to improve the contact }

using a crimping sleeve (H01R 4/01 takes precedence)

{ having an uneven wire-receiving surface to improve the contact }

[with transversal grooves or threads]

End caps, i.e. of insulating or conductive material for covering or maintaining connections between wires entering the cap from the same end

Connections using contact members penetrating or cutting insulation or cable strands

the contact members having teeth, prongs, pins or needles penetrating the insulation

WARNING
Group H01R 4/2404 is impacted by reclassification into groups H01R 4/2406 and H01R 4/2407.
Groups H01R 4/2404, H01R 4/2406 and H01R 4/2407 should be considered in order to perform a complete search.

having needles or pins

WARNING
Group H01R 4/2406 is incomplete pending reclassification of documents from groups H01R 4/2404, H01R 4/2408 and H01R 4/2412.
Groups H01R 4/2404, H01R 4/2406, H01R 4/2408 and H01R 4/2412 should be considered in order to perform a complete search.

having saw-tooth projections

WARNING
Group H01R 4/2407 is incomplete pending reclassification of documents from group H01R 4/2404, H01R 4/2408 and H01R 4/2412.
Groups H01R 4/2404, H01R 4/2407, H01R 4/2408 and H01R 4/2412 should be considered in order to perform a complete search.

actuated by clamping screws

WARNING
Group H01R 4/2408 is impacted by reclassification into groups H01R 4/2406 and H01R 4/2407.
Groups H01R 4/2406, H01R 4/2407 and H01R 4/2408 should be considered in order to perform a complete search.

actuated by insulated cams or wedges

WARNING
Group H01R 4/2412 is impacted by reclassification into groups H01R 4/2406 and H01R 4/2407.
Groups H01R 4/2406, H01R 4/2407 and H01R 4/2412 should be considered in order to perform a complete search.

the contact members having insulation-cutting edges, e.g. of tuning fork type

the contact members being plates having a single slot

Flat plates, e.g. multi-layered flat plates

mounted in an insulating base

one part of the base being movable to push the cable into the slot

Curved plates

tube-shaped

the contact members having additional means acting on the insulation or the wire, e.g. additional insulation penetrating means, strain relief means or wire cutting knives

the additional means having two or more slotted flat portions

WARNING
Group H01R 4/245 is impacted by reclassification into groups H01R 4/2452 and H01R 4/2456.
Groups H01R 4/245, H01R 4/2452 and H01R 4/2456 should be considered in order to perform a complete search.

in serial configuration, e.g. opposing folded slots

WARNING
Group H01R 4/2452 is incomplete pending reclassification of documents from group H01R 4/245.
Groups H01R 4/245 and H01R 4/2452 should be considered in order to perform a complete search.

forming a U-shape with slotted branches

WARNING
Group H01R 4/2454 is impacted by reclassification into group H01R 4/2455.
Groups H01R 4/2454 and H01R 4/2455 should be considered in order to perform a complete search.
4/2455 . . . . . forming a slotted bight

**WARNING**

Group H01R 4/2455 is incomplete pending reclassification of documents from group H01R 4/244.

Groups H01R 4/244 and H01R 4/2455 should be considered in order to perform a complete search.

4/2456 . . . . . in parallel configuration

**WARNING**

Group H01R 4/2456 is incomplete pending reclassification of documents from group H01R 4/24.

Groups H01R 4/245 and H01R 4/2456 should be considered in order to perform a complete search.

4/2458 . . . . . the contact members being in a slotted tubular configuration, e.g. slotted tube-end

4/2462 . . . . . the contact members being in a slotted bent configuration, e.g. slotted bight

4/2466 . . . . . the contact members having a channel-shaped part, the opposite sidewalls of which comprise insulation-cutting means

4/247 . . . . . the contact members penetrating the insulation being actuated by springs

4/2475 . . . . . the contact members penetrating the insulation being actuated by screws, nuts or bolts

4/2479 . . . . . penetrating the area under the screw head

4/2483 . . . . . penetrating the area under the screw tip

4/2487 . . . . . penetrating by means of the screw thread

4/2491 . . . . . the contact members penetrating the insulation being actuated by conductive cams or wedges

4/2495 . . . . . Insulation penetration combined with permanent deformation of the contact member, e.g. crimping

4/26 . . . Connections in which at least one of the connecting parts has projections which bite into or engage the other connecting part in order to improve the contact ([H01R 4/188, H01R 4/203, H01R 4/5075 take precedence]; using shape memory materials H01R 4/401)

4/28 . . . Clamped connections, spring connections (made by means of terminals specially adapted for contact with, or insertion into, printed circuits H01R 12/00)

4/30 . . . utilising a screw or nut clamping member (H01R 4/50 takes precedence; utilising a clamping member acted on by screw or nut H01R 4/38; for coaxial cables H01R 9/0721))

4/301 . . . . . [having means for preventing complete unscrewing of screw or nut]

4/302 . . . . . [having means for preventing loosening of screw or nut, e.g. vibration-proof connection]

4/304 . . . . . [having means for improving contact]

4/305 . . . . . [having means for facilitating engagement of conductive member or for holding it in position]

4/307 . . . . . [characterised by the thread of the screw or nut]

4/308 . . . . . Conductive members located parallel to axis of screw

4/32 . . . . . Conductive members located in slot or hole in screw

4/34 . . . . . Conductive members located under head of screw

4/36 . . . . . Conductive members located under tip of screw

4/363 . . . . . [with intermediate part between tip and conductive member]

4/366 . . . . . [intermediate part attached to the tip of the screw]

4/38 . . . utilising a clamping member acted on by screw or nut (H01R 4/50 takes precedence)

4/40 . . . . . Pivotal clamping member

4/42 . . . Clamping area to one side of screw only

4/44 . . . Clamping areas on both sides of screw

4/46 . . . Clamping area between two screws placed side by side

4/48 . . . utilising a spring, clip, or other resilient member (H01R 4/52 takes precedence)

4/4809 . . . . . [using a leaf spring]

4/4818 . . . . . [adapted for axial insertion of a wire end]

4/4827 . . . . . [with an opening in the housing for insertion of a release tool]

4/4836 . . . . . [with integral release means]

4/4845 . . . . . [insertion of a wire only possible by pressing on the spring]

4/4854 . . . . . [using a wire spring]

4/4863 . . . . . [Coil spring]

4/4872 . . . . . [axially compressed to retain wire end]

4/4881 . . . . . [using a louver type spring]

4/489 . . . . . [spring force increased by screw, cam, wedge, or other fastening means]

4/50 . . . utilising a cam, wedge, cone or ball [also combined with a screw]

4/5008 . . . . . [using rotatable cam]

4/5016 . . . . . [using a cone]

4/5025 . . . . . [combined with a threaded ferrule operating in a direction parallel to the conductor]

4/5033 . . . . . [using wedge or pin penetrating into the end of a wire in axial direction of the wire]

4/5041 . . . . . [using a tapered groove]

4/505 . . . . . [using an eccentric element]

4/5058 . . . . . [using a ball]

4/5066 . . . . . [mounted in an insulating housing having a cover providing clamping force]

4/5075 . . . . . [having an uneven wire receiving surface to improve the contact]

4/5083 . . . . . [using a wedge]

4/5091 . . . . . [combined with a screw]

4/52 . . . which is spring loaded

4/54 . . . [Bayonet or keyhole]

4/56 . . . one conductor screwing into another

4/58 . . . characterised by the form or material of the contacting members (H01R 4/01 takes precedence)

4/60 . . . Connections between or with tubular conductors (H01R 4/56 takes precedence)

4/62 . . . Connections between conductors of different materials; Connections between or with aluminium or steel-core aluminium conductors (H01R 4/68 takes precedence)

4/625 . . . . . [Soldered or welded connections]

4/64 . . . Connections between or with conductive parts having primarily a non-electric function, e.g. frame, casing, rail
9/00 Structural associations of a plurality of mutually-insulated electrical connecting elements, e.g. terminal strips or terminal blocks; Terminals or binding posts mounted upon a base or in a case; Bases therefor

9/03 Connectors arranged to contact a plurality of the conductors of a multiconductor cable [, e.g. tapping connections]  
9/031 . . . [for multiphase cables, e.g. with contact members penetrating insulation of a plurality of conductors (insulation penetrating contact members in general H01R 4/24)]

9/032 . . . [for shielded multiconductor cable (coaxial cables with one conductor surrounded by shield H01R 9/05; flat shielded cables H01R 12/594)]

**WARNING:**

Groups H01R 9/032-H01R 9/038 are no longer used for the classification of new documents as from January 1, 2011. The content of these groups is being reclassified into groups H01R 13/658 – H01R 13/659.

All groups listed in this Warning should be considered in order to perform a complete search.

9/034 . . . [connection of the shield to an additional grounding conductor]  
9/035 . . . [twisted pair surrounded by shield]  
(Frozen)  
9/037 . . . [connection to shield by action of a resilient member]  
9/038 . . . [each conductor being individually surrounded by shield]  
(Frozen)  
9/05 . . . for coaxial cables  
9/0503 . . . [Connection between two cable ends]  
9/0506 . . . [Connection between three or more cable ends]  
9/0509 . . . [Tapping connections]  
9/0512 . . . [Connections to an additional grounding conductor]  
9/0515 . . . [Connection to a rigid planar substrate, e.g. printed circuit board]  
9/0518 . . . [Connection to outer conductor by crimping or by crimping ferrule]  
9/0521 . . . [Connection to outer conductor by action of a nut]  
9/0524 . . . [Connection to outer conductor by action of a clamping member, e.g. screw fastening means (H01R 9/0515 takes precedence)]

9/0527 . . . [Connection to outer conductor by action of a resilient member, e.g. spring]  
9/053 . . . using contact members penetrating insulation  
9/11 . . . End pieces for multiconductor cables supported by the cable and for facilitating connections to other conductive members [, e.g. for liquid cooled welding cables]  
9/15 . . . Connectors for wire wrapping  
9/16 . . . Fastening of connecting parts to base or case; Insulating connecting parts from base or case  
9/18 . . . Fastening by means of screw or nut  
9/20 . . . Fastening by means of rivet or eyelet  
9/22 . . . Bases, e.g. strip, block, panel [(for printed circuits H01R 12/50)]

9/223 . . . [Insulating enclosures for terminals (for switches H01H 9/0264)]

9/226 . . . [comprising a plurality of conductive flat strips providing connection between wires or components (H01R 9/2425 takes precedence)]

9/24 . . . Terminal blocks  
9/2408 . . . [Modular blocks (H01R 9/26 takes precedence)]

9/2416 . . . [Means for guiding or retaining wires or cables connected to terminal blocks]

9/2425 . . . [Structural association with built-in components (for coupling parts H01R 13/66)]

9/2433 . . . [with built-in switch]

9/2441 . . . [with built-in overvoltage protection]

9/245 . . . [with built-in fuse]

9/2458 . . . [Electrical interconnections between terminal blocks]

9/2466 . . . [using a planar conductive structure, e.g. printed circuit board]

9/2475 . . . [Means facilitating correct wiring, e.g. marking plates, identification tags]

9/2483 . . . [specially adapted for ground connection]

9/2491 . . . [Terminal blocks structurally associated with plugs or sockets]

9/26 . . . Clip-on terminal blocks for side-by-side rail- or strip-mounting

9/2608 . . . [Fastening means for mounting on support rail or strip (H01R 9/2691 takes precedence; for switch or other electrical device H02B 1/042)]

9/2616 . . . [End clamping members]

9/2625 . . . [with built-in electrical component]

9/2633 . . . [with built-in switch]

9/2641 . . . [with built-in overvoltage protection]

9/265 . . . [with built-in fuse]

9/2658 . . . [with built-in data-bus connection]

9/2666 . . . [with built-in test-points]

9/2675 . . . [Electrical interconnections between two blocks, e.g. by means of busbars]

9/2683 . . . [Marking plates or tabs]

9/2691 . . . [with ground wire connection to the rail]

9/28 . . . Terminal boards
Individual connecting elements providing two or more spaced connecting locations for conductive members which are, or may be, thereby interconnected, e.g. end pieces for wires or cables supported by the wire or cable and having means for facilitating electrical connection to some other wire, terminal, or conductive member, blocks of binding posts

- characterised by the form or arrangement of the conductive interconnection between the connecting locations
- characterised by the relationship between the connecting locations (H01R 11/11 takes precedence)
- the connecting locations having different types of direct connections
- the connecting locations being of the same type but different sizes
- the connecting locations being identical
- End pieces or tapping pieces for wires, supported by the wire and for facilitating electrical connection to some other wire, terminal or conductive member (H01R 11/01 takes precedence)

- End pieces terminating in an eye, hook, or fork
- the hook being adapted for hanging on overhead or other suspended lines, e.g. hot line clamp
- Hook in the form of a screw clamp
- End pieces terminating in a soldering tip or socket
- End pieces terminating in a probe
- End pieces terminating in a needle point or analogous contact for penetrating insulation or cable strands
- End pieces terminating in a spring clip
- with gripping jaws, e.g. crocodile clip
- End pieces terminating in a screw clamp, screw or nut
- End pieces consisting of a ferrule or sleeve
- for connections to batteries
- comprising means for facilitating engagement or disengagement, e.g. quick release terminal
- Bolt, screw or threaded ferrule parallel to the battery post
- comprising means for preventing corrosion, e.g. covers, enclosures filled with gel
- Battery post and cable secured by the same locking means
- having means for improving contact between battery post and clamping member, e.g. uneven interior surface
- Intermediate parts between battery post and cable end piece
- Interconnections between batteries
- characterised by the shape or the structure of the battery post

- End pieces held in contact by a magnet
- End pieces with two or more terminations

Structural associations of a plurality of mutually-insulated electrical connecting elements, specially adapted for printed circuits, e.g. printed circuit boards [PCBs], flat or ribbon cables, or like generally planar structures, e.g. terminal strips, terminal blocks; Coupling devices specially adapted for printed circuits, flat or ribbon cables, or like generally planar structures; Terminals specially adapted for contact with, or insertion into, printed circuits, flat or ribbon cables, or like generally planar structures (print connections to, or between, printed circuits H05K 1/11)

- Fixed connections
- for rigid printed circuits or like structures
- [Terminal blocks providing connections to wires or cables]
- connecting to other rigid printed circuits or like structures
- [by interconnection through aligned holes in the boards or multilayer board]
- [the printed circuits being on the same board (with plated through holes H05K 3/42)]
- connecting to cables except for flat or ribbon cables
- characterised by the terminals
- surface mounting terminals
- terminals for insertion into holes
- [Terminals having a press fit or a complaint portion and a shank passing through a hole in the printed circuit board]
- for flexible printed circuits, flat or ribbon cables or like structures
- [connections to contact elements]
- [for shielded flat cable]
- [Connection of the shield to an additional grounding conductor, e.g. drain wire]
- [Each conductor being individually surrounded by shield, e.g. multiple coaxial cables in flat structure]
- connecting to flexible printed circuits, flat or ribbon cables or like structures
- [by means of interconnecting elements]
- [having contacts penetrating insulation for making contact with conductors, e.g. needle points]
- connecting to rigid printed circuits or like structures
- connecting to another shape cable
- characterised by the terminal
- insulation penetrating terminals
- [with contacts having at least a slotted plate for penetration of cable insulation, e.g. insulation displacement contacts for round conductor flat cables]
- comprising deformable portions
- deformable terminals, e.g. crimping terminals
- Coupling devices
- [Guiding, mounting, polarizing or locking means; Extractors (for printed circuit boards H05K)]
- [Locking or fixing a connector to a PCB]
- [Snap means]
- [integral with the coupling device]
- [not integral with the coupling device]
or like structures
for flexible printed circuits, flat or ribbon cables
for rigid printing circuits or like structures
{ with switch operated by engagement of PCB }

Arrangements for power supply
with PCB }

H01R 12/79

Analogous contacts (H01R 12/78,

analogous counter-contacts (H01R 12/78; H01R 12/79 take precedence))

coupling to other flexible printed circuits, flat or ribbon cables or like structures

coupling to rigid printed circuits or like structures

coupling to another cable except for flat or ribbon cable

connected with low or zero insertion force

connected with pivoting of printed circuits or like after insertion

contact pressure producing means, contacts activated after insertion of printed circuits or like structures

Fluid activated]

[activated by shape memory material]

acting automatically by insertion of rigid printed or like structures

acting manually by rotating or pivoting connector housing parts

acting manually by moving connector housing parts linearly, e.g. slider

allowing relative movement between coupling parts, e.g. floating or self-aligning (for coupling devices not specially adapted for printed circuits, flat or ribbon cables, or like generally planar structures, H01R 13/6312 takes precedence)

Details of coupling devices of the kinds covered by groups H01R 12/70 or H01R 24/00 - H01R 33/00

Electrical coupling combined with fluidic coupling

Contact members

formed by the conductors of a cable end

characterised by the material, e.g. plating, or coating materials

Plated dielectric material

Pins or blades for co-operation with sockets

Resilient pins or blades (carrying separate resilient parts

{operating with sockets having a circular transverse section}

{operating with sockets having a rectangular transverse section}

{operating with sockets having a square transverse section}

{Co-operating with sockets having a square transverse section}

Resiliently-mounted rigid pins or blades

Sockets for co-operation with pins or blades

Resilient sockets (carrying separate resilient parts H01R 13/15)

Resiliently-mounted rigid sockets

Pins, blades or sockets having separate spring member for producing or increasing contact pressure
Insulating of contact members

Securing contact members in or to a base or case; Securing in a demountable manner moulding, riveting

Securing in non-demountable manner, e.g. socket co-operating for non-simultaneous co-operation with different types of contact member, e.g. socket co-operating for sliding cooperation with identically-shaped contact, e.g. for hermaphroditic coupling devices

Means for increasing contact pressure at the end of engagement of coupling part, e.g. zero insertion force or no friction

Pins, blades, or sockets shaped, or provided with separate member, to retain co-operating parts together

by screw-in connection

by bayonet connection

Contacts for co-operating by abutting

resilient; resiliently-mounted

[characterized by the resilient means]

(conductive elastomers)

(using coil springs)

(using meander springs)

[with opposite contact points, e.g. C beam]

[with a single cantilevered beam]

[by stamped-out resilient contact arm]

[consisting of at least two resilient arms contacting the same counterpart]

[characterized by the contact point]

(pin shaped)

(spherical)

(for contacting a ball)

(multiple contact points)

Pin or blade contacts for sliding co-operation on one side only

Contacts for sliding cooperation with identically-shaped contact, e.g. for hermaphroditic coupling devices

Contact members made of resilient wire

for non-simultaneous co-operation with different types of contact member, e.g. socket co-operating with either round or flat pin

Securing contact members in or to a base or case; Insulating of contact members

Securing in non-demountable manner, e.g. moulding, riveting

by frictional grip in grommet, panel or base

by permanent deformation of contact member

Securing in a demountable manner

Securing in resilient one-piece base or case, e.g. by friction; One-piece base or case formed with resilient locking means

[comprising integral flexible contact retaining fingers]

[comprising two or more integral flexible retaining fingers acting on a single contact]

Securing in base or case composed of a plurality of insulating parts having at least one resilient insulating part

Securing by a separate resilient retaining piece supported by base or case, e.g. collar [or metal contact-retention clip]

by resilient locking means on the contact members; by locking means on resilient contact members

by stamped-out resilient tongue snapping behind shoulder in base or case

by separate resilient locking means on contact member, e.g. retainer collar or ring around contact member

Securing a plurality of contact members by one locking piece, e.g. modular jack type connectors

[Insertion of locking piece perpendicular to direction of contact insertion]

[comprising a temporary and a final locking position]

[Insertion of locking piece from the front]

[comprising a temporary and a final locking position]

[Insertion of locking piece from the rear]

[comprising a temporary and a final locking position]

Means for preventing access to live contacts (making use of a switch actuated by engagement of counterpart)

Dummy plugs

Shutter or cover plate

Shutter or cover plate opened by engagement of counterpart

[Rotating shutter]

[Laterally sliding shutter]

[Inwardly pivoting shutter]

[Covers sliding or withdrawing in the direction of engagement]

Bases; Cases

Identification means, e.g. labels, tags, markings

formed as an integral body

[comprising an integral hinge or a frangible part]

composed of different pieces

[one or more pieces being of resilient material]

different pieces being moulded, cemented, welded, e.g. ultrasonic, or swaged together

different pieces being assembled by press-fit

assembled by snap action of the parts

assembled by a separate clip or spring

assembled by screw or screws

assembled as a modular blocks or assembly, i.e. composed of co-operating parts provided with contact members or holding contact members between them

Means for holding or embracing insulating body, e.g. casing [hoods]

for holding or embracing several coupling parts, e.g. frames

Dustproof, splashproof, drip-proof, waterproof, or flameproof cases

[Sealing means between parts of housing or between housing part and a wall, e.g. sealing rings]

[Sealing means between cable and housing, e.g. grommet (H01R 13/5221 takes precedence)]

[having at least two cable receiving openings]

[Sealing between contact members and housing, e.g. sealing insert]
of coupling parts or for holding them in engagement

Means for facilitating engagement or disengagement

Device terminating a cable (for flat or ribbon cables between wires and terminals within a coupling cord grip), for avoiding loosening of connections

Means for relieving strain on wire connection, e.g. leads at outlet from coupling part

Means for preventing chafing or fracture of flexible cables (H01R 13/5825 takes precedence)

by a magnet

13/527 . . . Flameproof cases (H01R 13/70 takes precedence)

13/53 . . . Bases or cases for heavy duty; Bases or cases (for high voltage) with means for preventing corona or arcing

13/533 . . . Bases, cases made for use in extreme conditions, e.g. high temperature, radiation, vibration, corrosive environment, pressure (H01R 13/52 takes precedence)

13/56 . . . Means for preventing chafing or fracture of flexible leads at outlet from coupling part

13/562 . . . [Bending-relieving]

13/565 . . . [Torsion-relieving]

13/567 . . . [Traverse cable outlet or wire connection]

13/58 . . . Means for relieving strain on wire connection, e.g. cord grip [, for avoiding loosening of connections between wires and terminals within a coupling device terminating a cable (for flat or ribbon cables H01R 12/771)]

13/5804 . . . [comprising a separate cable clamping part (H01R 13/5841 takes precedence)]

13/5808 . . . [formed by a metallic element crimped around the cable (H01R 4/185 takes precedence)]

13/5812 . . . [the cable clamping being achieved by mounting the separate part on the housing of the coupling device]

13/5816 . . . [for cables passing through an aperture in a housing wall, the separate part being captured between cable and contour of aperture]

13/582 . . . [the cable being clamped between assembled parts of the housing]

13/5825 . . . [the means comprising additional parts captured between housing parts and cable]

13/5829 . . . [the clamping part being flexibly or hingedly connected to the housing]

13/5833 . . . [the cable being forced in a tortuous or curved path, e.g. knots in cable (H01R 13/582 takes precedence)]

13/5837 . . . [specially adapted for accommodating various sized cables (H01R 13/5825 takes precedence)]

13/5841 . . . [allowing different orientations of the cable with respect to the coupling direction]

13/5845 . . . [the strain relief being achieved by molding parts around cable and connections]

13/585 . . . [Grip increasing with strain force]

13/59 . . . [Threaded ferrule or bolt operating in a direction parallel to the cable or wire]

13/595 . . . [Bolts operating in a direction transverse to the cable or wire]

13/60 . . . Means for supporting coupling part when not engaged

13/62 . . . Means for facilitating engagement or disengagement of coupling parts or for holding them in engagement

13/6205 . . . [Two-part coupling devices held in engagement by a magnet]

13/621 . . . Bolt, set screw or screw clamp

13/6215 . . . [using one or more bolts]

13/622 . . . Screw-ring or screw-casing (H01R 13/623 takes precedence)

13/623 . . . Casing or ring with helicoidal groove

13/625 . . . Casing or ring with bayonet engagement

13/627 . . . Snap or like fastening

13/6271 . . . [Latching means integral with the housing (H01R 13/6276, H01R 13/6277, H01R 13/6278 take precedence)]

13/6272 . . . [comprising a single latching arm]

13/6273 . . . [comprising two latching arms]

13/6275 . . . [Latching arms not integral with the housing (H01R 13/6276, H01R 13/6277, H01R 13/6278 take precedence)]

13/6276 . . . [comprising one or more balls engaging in a hole or a groove]

13/6277 . . . [comprising annular latching means, e.g. ring snapping in an annular groove]

13/6278 . . . [comprising a pin snipping into a recess]

13/629 . . . Additional means for facilitating engagement or disengagement of coupling parts, e.g. aligning or guiding means, levers, gas pressure (electrical locking indicators, manufacturing tolerances [separate tools or apparatus H01R 43/26])

13/62905 . . . [comprising a camming member (H01R 13/62933 and H01R 13/641 takes precedence)]

13/62911 . . . [U-shaped sliding element]

13/62916 . . . [Single camming plate]

13/62922 . . . [Pair of camming plates]

13/62927 . . . [Comprising supplementary or additional locking means]

13/62933 . . . [Comprising exclusively pivoting lever]

13/62938 . . . [Pivoting lever comprising own camming means]

13/62944 . . . [Pivoting lever comprising gear teeth]

13/6295 . . . [Pivoting lever comprising means indicating incorrect coupling of mating connectors]

13/62955 . . . [Pivoting lever comprising supplementary/additional locking means]

13/62961 . . . [Pivoting lever having extendable handle]

13/62966 . . . [Comprising two pivoting levers]

13/62972 . . . [Wherein the pivoting levers are two lever plates]

13/62977 . . . [Pivoting levers actuating linearly camming means]

13/62983 . . . [Linear camming means or pivoting lever for connectors for flexible or rigid printed circuit boards, flat or ribbon cables]

13/62988 . . . [Lever acting directly on flexible or rigid printed circuit boards, flat or ribbon cables, e.g. recess provided to this purposeon the surface or edge of the flexible or rigid printed circuit boards, flat or ribbon cables]

13/62994 . . . [Lever acting on a connector mounted onto the flexible or rigid printed circuit boards, flat or ribbon cables]

13/631 . . . [for engagement only]
13/6315 . . . . [allowing relative movement between coupling parts, e.g. floating connection (for coupling devices specially adapted for printed circuits, flat or ribbon cables, or like generally planar structures, H01R 12/91 takes precedence)]
13/633 . . . . for disengagement only [(in combination with safety switch H01R 13/7132)]
13/6335 . . . . [comprising a handle]
13/635 . . . . . by mechanical pressure, e.g. spring force
13/637 . . . . . by fluid pressure, e.g. explosion
13/639 . . . . . Additional means for holding or locking coupling parts together, after engagement, [e.g. separate keylock, retainer strap]
13/6392 . . . . [for extension cord]
13/6395 . . . . [for wall or panel outlets]
13/6397 . . . . [with means for preventing unauthorised use]
13/64 . . . . Means for preventing incorrect coupling
13/641 . . . . by indicating incorrect coupling; by indicating correct or full engagement
13/642 . . . . by position or shape of contact members
13/645 . . . . by exchangeable elements on case or base
13/6453 . . . . [comprising pin-shaped elements, capable of being orientated in different angular positions around their own longitudinal axes, e.g. pins with hexagonal base]
13/6456 . . . . [comprising keying elements at different positions along the periphery of the connector]
13/646 . . . . specially adapted for high-frequency, e.g. structures providing an impedance match or phase match (non-coaxial protective earth or shield arrangements H01R 13/648; coaxial connectors specially adapted for high frequency H01R 24/40)

**WARNINGS**

This group and its subgroups are not complete pending completion of a reclassification, see also H01R 9/035, H01R 13/6658, H01R 24/44, H01R 24/00, H01R 12/00

13/6461 . . . . Means for preventing cross-talk
13/6463 . . . . using twisted pairs of wires
13/6464 . . . . by adding capacitive elements
13/6466 . . . . . on substrates, e.g. PCBs [Printed Circuit Boards]
13/6467 . . . . by cross-over of signal conductors
13/6469 . . . . . on substrates
13/6471 . . . . . special arrangement of ground and signal conductors, e.g. GSGS [Ground-Signal-Ground-Signal]
13/6473 . . . . Impedance matching
13/6474 . . . . by variation of conductive properties, e.g. by dimension variations
13/6476 . . . . by making an aperture, e.g. a hole
13/6477 . . . . by variation of dielectric properties
13/648 . . . . Protective earth or shield arrangements on coupling devices, e.g. anti-static shielding] (coaxially arranged shields H01R 24/38)
13/6485 . . . . (Electrostatic discharge protection in general H05F 100, for electric apparatus H05K 9/0067)
13/652 . . . . with earth pin, blade or socket
13/655 . . . . with earth brace
13/658 . . . . High frequency shielding arrangements, e.g. against EMI [Electro-Magnetic Interference] or EMP [Electro-Magnetic Pulse] [(coaxial coupling devices specially adapted for high frequency H01R 24/40; for flat or ribbon cable connectors H01R 12/7774; for coaxial cable H01R 9/005)]

**WARNING**

Groups H01R 13/658 – H01R 13/659 are incomplete pending reclassification of documents from groups H01R 9/032 – H01R 9/038.

All groups listed in this Warning should be considered in order to perform a complete search.
WARNING

The subgroups of H01R 13/68 are not complete pending completion of a reclassification, see also H01R 13/646 and the respective subgroups

13/7193 . . . with ferrite filters
13/7195 . . . with planar filters with openings for contacts
13/7197 . . . with filters integral with or fitted onto contacts, e.g. tubular filters

13/72 . Means for accommodating flexible lead within the holder
13/73 . Means for mounting coupling parts to apparatus or structures, e.g. to a wall
13/74 . Means for mounting coupling parts in openings of a panel
13/741 . . . {using snap fastening means}
13/743 . . . {integral with the housing}
13/745 . . . {separate from the housing}
13/746 . . . {using a screw ring}
13/748 . . . {using one or more screws (H01R 13/746 takes precedence)}

24/00 Two-part coupling devices, or either of their cooperating parts, characterised by their overall structure (contact members H01R 13/02; securing contact members in or to a base or case or insulating contact members H01R 13/40; bases or cases H01R 13/46; means for supporting coupling part when not engaged H01R 13/60; means for facilitating engagement or disengagement of coupling parts or for holding them in engagement H01R 13/62; means for preventing, inhibiting or avoiding incorrect coupling H01R 13/64)

NOTE

In this group, it is desirable to add the indexing codes of groups H01R 2101/00 - H01R 2107/00
24/46 . . . comprising switches
24/48 . . . comprising protection devices, e.g. overvoltage protection
24/50 . . . mounted on a PCB [Printed Circuit Board]
24/52 . . . mounted in or to a panel or structure
24/52 . . . [Outlets]
24/54 . . . Intermediate parts, e.g. adapters, splitters or elbows
24/54 . . . [Adapters]
24/54 . . . [Elbows]
24/56 . . . [Splitters]
24/56 . . . specially adapted to a specific shape of cables, e.g. corrugated cables, twisted pair cables, cables with two screens or hollow cables
24/56 . . . [Cables with two screens]
24/56 . . . [Corrugated cables]
24/56 . . . [Hollow cables]
24/56 . . . [Twisted pair cables]
24/58 . Contacts spaced along longitudinal axis of engagement
24/60 . Contacts spaced along planar side wall transverse to longitudinal axis of engagement
24/62 . . . Sliding engagements with one side only, e.g. modular jack coupling devices
24/64 . . . for high frequency, e.g. RJ 45
24/66 . . . with pins, blades or analogous contacts and secured to apparatus or structure, e.g. to a wall
24/68 . . . mounted on directly pluggable apparatus
24/70 . . . with additional earth or shield contacts
24/76 . . . with sockets, clips or analogous contacts and secured to apparatus or structure, e.g. to a wall
24/78 . . . with additional earth or shield contacts
24/84 . Hermaphroditic coupling devices
24/86 . Parallel contacts arranged about a common axis

25/00 Coupling parts adapted for simultaneous co-operation with two or more identical counterparts, e.g. for distributing energy to two or more circuits (supported only by co-operation with a counterpart H01R 31/00; with a holder adapted for supporting apparatus to which its counterpart is attached H01R 33/88)

25/003 . . . [the coupling part being secured only to wires or cables]
25/006 . . . [the coupling part being secured to apparatus or structure, e.g. duplex wall receptacle]
25/14 . Rails or bus-bars constructed so that the counterparts can be connected thereto at any point along their length (supporting elements for lighting devices, displacable along guiding elements and making electrical contact with conductors running along the guiding elements F21V 21/35)
25/142 . . . [Their counterparts]
25/145 . . . [Details, e.g. end pieces or joints (H01R 25/147 takes precedence)]
25/147 . . . [Low voltage devices, i.e. safe to touch live conductors]
25/16 . Rails or bus-bars provided with a plurality of discrete connecting locations for counterparts
25/161 . . . [Details]
25/162 . . . [Electrical connections between or with rails or bus-bars (rails having primarily a non electrical function H01R 4/64)]

25/164 . . . [Connecting locations formed by flush mounted apparatus]
25/165 . . . [Connecting locations formed by surface mounted apparatus]
25/167 . . . [Connecting locations formed by staggering mounted apparatus]
25/168 . . . [the connecting locations being situated away from the rail or bus-bar]

27/00 Coupling parts adapted for co-operation with two or more dissimilar counterparts (H01R 13/35); supported only by co-operation with a counterpart H01R 31/00; with a holder adapted for supporting apparatus to which its counterpart is attached H01R 33/90)

27/02 . . . for simultaneous co-operation with two or more (dissimilar) counterparts

29/00 Coupling parts for selective co-operation with a counterpart in different ways to establish different circuits, e.g. for voltage selection, for series-parallel selection, [programmable connectors]

31/00 Coupling parts supported only by co-operation with counterpart

31/005 . . . [Intermediate parts for distributing signals]
31/02 . . . Intermediate parts for distributing energy to two or more circuits in parallel, e.g. splitter (with a holder adapted for supporting apparatus to which its counterpart is attached H01R 33/92)
31/06 . Intermediate parts for linking two coupling parts, e.g. adapter (with a holder adapted for supporting apparatus to which its counterpart is attached H01R 33/94)
31/065 . . . [with built-in electric apparatus]
31/08 . Short-circuiting members for bridging contacts in a counterpart
31/085 . . . [Short circuiting bus-strips]

33/00 Coupling parts specially adapted for supporting apparatus and having one part acting as a holder providing support and electrical connection via a counterpart which is structurally associated with the apparatus, e.g. lamp holders; Separate parts thereof

33/02 . . . Single-pole devices, e.g. holder for supporting one end of a tubular incandescent or neon lamp
33/05 . . . Two-pole devices
33/06 . . . with two current-carrying pins, blades or analogous contacts, having their axes parallel to each other
33/065 . . . [for supporting starter switches]
33/08 . . . for supporting tubular fluorescent lamp
33/0809 . . . [having contacts on one side only]
33/0818 . . . [for a plurality of lamps]
33/0827 . . . [characterised by the contacts]
33/0836 . . . [characterised by the lamp holding means]
33/0845 . . . [with axially resilient member]
33/0854 . . . [with lamp rotating means]
33/0863 . . . [characterised by the mounting means]
33/0872 . . . [for mounting in an opening of a structure]
33/0881 . . . [composed of different pieces]
33/089 . . . [integral with starter holding structure (H01R 33/065 for starters only)]
33/09 . . . for baseless lamp bulb
33/18 . . having only abutting contacts
33/20 . . having concentrically or coaxially arranged contacts
33/205 . . . [secured to structure or printed circuit board]
33/22 . . for screw type base, e.g. for lamp
33/225 . . . [secured to structure or printed circuit board]
33/46 . . for bayonet type base
33/465 . . . [secured to structure or printed circuit board]
33/72 . . Three-pole devices
33/74 . . Devices having four or more poles {, e.g. holders for compact fluorescent lamps}
33/76 . . . Holders with sockets, clips, or analogous contacts adapted for axially-sliding engagement with parallely-arranged pins, blades, or analogous contacts on counterpart, e.g. electronic tube socket
33/7607 . . . [the parallel terminal pins having a circular disposition]
33/7614 . . . . [the terminals being connected to individual wires]
33/7621 . . . . . [the wires being connected using screw, clamp, wrap or spring connection]
33/7628 . . . . . . [the wires being connected using solder]
33/7635 . . . . . . . [the terminals being collectively connected, e.g. to a PCB]
33/7642 . . . . . . . . [socket snap fastened in an opening of a PCB]
33/765 . . . . [the terminal pins having a non-circular disposition]
33/7657 . . . . . [characterised by keying or marking means]
33/7664 . . . . . . [having additional guiding, adapting, shielding, anti-vibration or mounting means]
33/7671 . . . . . . . [having multiple positions or sockets, e.g. stacked sockets while mounting]
33/7678 . . . . . . . . [having a separated part for spark preventing means]
33/7685 . . . . . [having internal socket contact by abutting]
33/7692 . . . . . . [for supporting a tubular fluorescent lamp (for two-pole devices H01R 33/06)]
33/88 . . adapted for simultaneous co-operation with two or more identical counterparts
33/90 . . adapted for co-operation with two or more dissimilar counterparts
33/92 . . Holders formed as intermediate parts for distributing energy in parallel through two or more counterparts at least one of which is attached to apparatus to be held
33/94 . . Holders formed as intermediate parts for linking a counter-part to a coupling part
33/942 . . . [for tubular fluorescent lamps]
33/945 . . Holders with built-in electrical component
33/9453 . . . [for screw type coupling devices]
33/9456 . . . [for bayonet type coupling devices]
33/95 . . with fuse; with thermal switch
33/955 . . . with switch operated manually and independent of engagement or disengagement of coupling
33/9555 . . . . [for screw type coupling devices]
33/96 . . with switch operated by engagement or disengagement of coupling
33/962 . . . [for screw type coupling devices]
33/965 . . Dustproof, splashproof, drip-proof, waterproof, or flameproof holders
33/9651 . . . [for screw type coupling devices]
33/9653 . . . . [neither pole becoming electrically connected until the coupling parts are substantially engaged]
33/9655 . . . [for bayonet type coupling devices]
33/9656 . . . [neither pole becoming electrically connected until the coupling parts are substantially engaged]
33/9658 . . . [for tubular fluorescent lamps]
33/97 . . Holders with separate means to prevent loosening of the coupling or unauthorised removal of apparatus held
33/971 . . . [for screw type coupling devices]
33/973 . . . [for bayonet type coupling devices]
33/975 . . Holders with resilient means for protecting apparatus against vibrations or shocks
33/9753 . . . [for screw type coupling devices]
33/9756 . . . [for bayonet type coupling devices]
35/00 Flexible or turnable line connectors {, i.e. the rotation angle being limited} (rotary current collectors, distributors H01R 39/00)
35/02 Flexible line connectors {without frictional contact members}
35/025 . . . . . [having a flexible conductor wound around a rotation axis]
35/04 Turnable line connectors with limited rotation angle {with frictional contact members}
39/00 Rotary current collectors, distributors or interrupters
39/02 Details {for dynamo electric machines (for current collectors not particularly for dynamo electric machines H01R 39/60, H01R 39/64)}
39/022 . . . [characterised by the materials used, e.g. ceramics]
39/025 . . . . [Conductive materials]
39/027 . . . . . [Insulating materials]
39/04 Commutators (wherein the segments are formed by extensions of dynamo-electric machine winding H02K)
39/045 . . . . . . [the commutators being made of carbon]
39/06 . . . other than with external cylindrical contact surface, e.g. flat commutators
39/08 . . Slip-rings
39/085 . . . . . [the slip-rings being made of carbon]
39/10 . . . other than with external cylindrical contact surface, e.g. flat slip-rings
39/12 . . . using bearing or shaft surface as contact surface
39/14 . . Fastenings of commutators or slip-rings to shafts
39/16 . . . by means of moulded or cast material applied during or after assembly
39/18 . . Contacts for co-operation with commutator or slip-ring, e.g. contact brush
39/20 . . characterised by the material thereof
39/22 . . . . incorporating lubricating or polishing ingredient
39/24 . . . . Laminated contacts; Wire contacts, e.g. metallic brush, carbon fibres
39/26 . . . Solid sliding contacts, e.g. carbon brush
39/27 . . . . End caps on carbon brushes to transmit spring pressure
39/28 . . Roller contacts; Ball contacts
39/30 . . Liquid contacts
39/32 . . Connections of conductor to commutator segment
39/34 . . . Connections of conductor to slip-ring
39/36 . . . Connections of cable or wire to brush
39/38 . . . Brush holders
39/381 . . . [characterised by the application of pressure to brush]
39/383 . . . [characterised by the electrical connection to the brush holder]
39/385 . . . [Means for mechanical fixation of the brush holder]
39/386 . . . [Electrically insulated bolts]
39/388 . . . [characterised by the material of the brush holder]
39/39 . . . wherein the brush is fixedly mounted in the holder
39/40 . . . enabling brush movement within holder during current collection
39/41 . . . cartridge type
39/415 . . . with self-recoiling spring
39/42 . . . Devices for lifting brushes
39/44 . . . Devices for shifting brushes
39/46 . . . Auxiliary means for improving current transfer, or for reducing or preventing sparking or arcing
39/48 . . . by air blast; by surrounding collector with non-conducting liquid or gas
39/50 . . . Barriers placed between brushes
39/52 . . . by use of magnets
39/54 . . . by use of impedance between brushes or segments
39/56 . . . Devices for lubricating or polishing slip-rings or commutators during operation of the collector
39/58 . . . Means structurally associated with the current collector for indicating condition thereof, e.g. for indicating brush wear
39/59 . . . Means structurally associated with the brushes for interrupting current (H01R 39/58 takes precedence)
39/60 . . . Devices for interrupted current collection, e.g. commutating device, distributor, interrupter (self-interrupters H01H, e.g. H01H 51/34)
39/62 . . . with more than one brush co-operating with the same set of segments
39/64 . . . Devices for uninterrupted current collection
39/643 . . . (through ball or roller bearing)
39/646 . . . (through an electrical conductive fluid)

41/00 Non-rotary current collectors for maintaining contact between moving and stationary parts of an electric circuit (end pieces terminating in a hook or the like H01R 11/12; current collectors for power supply lines of electrically-propelled vehicles B60L 5/00)
41/02 . . . Devices for interrupted current collection, e.g. distributor (electrically-operated selector switches H01H 67/00)

43/00 Apparatus or processes specially adapted for manufacturing, assembling, maintaining, or repairing of line connectors or current collectors or for joining electric conductors (of trolley lines B60M 1/28)
43/002 . . . [Maintenance of line connectors, e.g. cleaning]
43/005 . . . [for making dustproof, splashproof, drip-proof, waterproof, or flameproof connection, coupling, or casing]
43/007 . . . [for elastomeric connecting elements]
43/205 . . [with a panel or printed circuit board]
43/22 . . Hand tools
43/24 . . Assembling by moulding on contact members
43/26 . . for engaging or disengaging the two parts of a
coupling device (structural association with two-part
coupling device H01R 13/629)
43/28 . . for wire processing before connecting to
contact members, not provided for in groups
H01R 43/02 - H01R 43/26

2101/00 One pole
2103/00 Two poles
2105/00 Three poles
2107/00 Four or more poles

2201/00 Connectors or connections adapted for particular
applications
2201/02 . . for antennas
2201/04 . . for network, e.g. LAN connectors
2201/06 . . for computer periphery
2201/08 . . for halogen lamps
2201/10 . . for dynamoelectric machines
2201/12 . . for medicine and surgery
2201/14 . . seismic connectors
2201/16 . . for telephony
2201/18 . . for television
2201/20 . . for testing or measuring purposes
2201/22 . . for transformers or coils
2201/24 . . for radio transmission
2201/26 . . for vehicles