[0040] 31 内侧端

[0041] 32 弹性部

[0042] 40 盖体

[0043] 41 舌片

[0044] 42 左侧片

[0045] 43 右侧片

[0046] 44 冲孔

[0047] 45 接地片

[0048] 50 电路板

[0049] 51 凹孔

[0050] 60 退卡装置

[0051] 61 滑块

[0052] 62 弹簧

[0053] 63 口字去掉下面一横型杆

[0054] 631 外端部

[0055] 632 内端部

[0056] 611 滑轨曲道

[0057] 612 横向推臂

[0058] 613 容置容间

[0059] 614 第一定位部

[0060] 615 第二定位部

[0061] 70 连接器

具体实施方式

[0062] 首先，请参阅图 2 ～图 4 所示，本实用新型第一实施例包含有：

[0063] 一绝缘基体 20，设置在一电路板 50 表面，其具备一基板 21，并于基板 21 上分别设有一左侧墙 22、一右侧墙 23 及一内侧墙 24，据以形成一外侧呈开口的容置槽 25，且该基板 21 上配合一系统级封装 (SIP) 记忆模组卡 10 的金手指 11 位置，设有与之对应的四道纵向端子槽 26。

[0064] 本实施例中所揭示的 SIP 记忆模组卡 10，其尺寸约在长 24.8× 宽 11.3× 厚 1.4mm，因此该容置槽 25 的宽度约为 11.4mm，以让 SIP 记忆模组卡 10 嵌入，至于长度则较无限定，只要足够导电金属端子装设即可。此外，绝缘基体 20 底面设有一凸体 29，可套入该电路板 50 的凹孔 51 内，以达定位之用。

[0065] 四支导电金属端子 30，分别设在前述端子槽 26 内，其可与该绝缘基体 20 一体射出成型，但不限于此；亦即其可于绝缘基体 20 射出成型后，再将导电金属端子 30 以机具装设在端子槽 26 内。然，无论是一体成型或机具装设，该等导电金属端子 30 的内侧端 31 与该绝缘基体 20 的内侧墙 24 呈固定状，并与该电路板 50 呈电性连接，再者其外侧所形成的弯折弹性部 32 凸露于基板 21 表面。

[0066] 一盖体 40，配合该绝缘基体 20 的外形而罩盖在左、右侧墙 22、23 及内侧墙 24 上，

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据以构成一可供 SIP 记忆模组卡 10 插入呈电性导通的专用连接器 70。

[0067] 本实施例中，该盖体 40 由金属片所冲压成型，但不限定于此；再者，该绝缘基体 20 的内侧墙 24 顶面包括设有一横向凹入的装设槽 27，且该左、右侧墙 22、23 的外表面设有二个卡制凸块 28；再者，该盖体 40 内侧底缘相对于该装设槽 27，设有一可嵌入定位的舌片 41，又其左、右侧相对于该左、右侧墙 22、23，设有向下弯折的左、右侧片 42、43，且该左、右侧片 42、43 相对于该卡制凸块 28，设有能与其扣合的冲孔 44。又，该盖体 42 的左、右侧片 42、43 底缘包括有向外弯折延伸的接地片 45。

[0068] 请参阅图 5 ～图 8 本实用新型第二实施例所示，其是延续第一实施例的特征，故相同结构以相同图号表示，其差异性在于：该绝缘基体 20 于该左、右侧墙 22、23 其中任一内侧，设有一滑槽 231，且该滑槽 231 上设有一 (Push-Push) 退卡装置 60，其包括有：

[0069] 一滑块 61，可于该滑槽 231 上纵向位移，其外端上表面有一个二段式滑轨曲道 611，且该滑块 61 内端向内延伸设有一横向推臂 612；

[0070] 一弹簧 62，设在该滑槽 231 的内侧面与该滑块 61 内端之间；

[0071] 一口字去掉下面一横型杆 63，其外端部 631 定位在该滑槽 231 外侧的定位孔 242 上，其内端部 632 位于该滑块 61 上所设的二段式滑轨曲道 611 内，以随着滑块 61 的移动，令该内端部 632 在该二段式滑轨曲道 611 内，依预定轨迹滑移，使该 SIP 记忆模组卡 10 进行插卡或退卡动作时，得以定位或退出该连接器 70。且，该滑块 61 内端供该弹簧 62 设置的位置，包括设有凹形容置空间 613，且该滑槽 231 的内侧面包括设有一供该弹簧 62 定位的纵向凸柱 241。

[0072] 基于上述构成，本实施例中，该退卡装置 60 设在右侧墙 23 的内缘面，但不限定于此，亦即也可设在左侧墙 22 内缘面。而本实用新型第二实施例利用此一退卡装置 60，当 SIP 记忆模组卡 10 插入容置槽 25 时，如图 6 所示，其前端顶抵该横向推臂 612，进而带动滑块 61 向内位移，此时该口字去掉下面一横型杆 63 的内端部 632 由该滑轨曲道 611 的第一定位部 614 位移至如图 8 及图 8A 所示的第二定位部 615，使得滑块 61 被定位在此一位置。且该口字去掉下面一横型杆 63 被该盖体 40 的弹片 46 所压制，而可顺利在滑轨曲道 611 上滑移，而不会脱落。

[0073] 进一步，当再按推压 SIP 模组卡 10 时，因口字去掉下面一横型杆 63 的内端部 632 会脱离该滑轨曲道 611 的第二定位部 615，于是，该滑块 61 借由弹簧 62 的恢复力，而退出至图 6 所示的位置，顺利将 SIP 记忆模组卡 10 退出。至于，该二段式滑轨曲道 611 的形体及轨迹，属现有技术，容不赘述。

[0074] 本实用新型借助上述技术特征，使其可依需求将 SIP 记忆模组卡 10 迅速且方便与电路板 50 连接使用，改善现有 SIP 仅能以表面接合方式与电路板接合或配合其他连接介面而与 USB 2.0 插座电性连接的缺点，进而达到使用便捷并增进应用层面的目的。

[0075] 以上所述，仅是本实用新型的较佳实施例而已，并非对本实用新型作任何形式上的限制，凡是依据本实用新型的技术实质对以上实施例所作的任何简单修改、等同变化与修饰，均仍属于本实用新型技术方案的范围内。

[0076] 综上所述，本实用新型在结构设计、使用实用性及成本效益上，完全符合产业发展所需，且所揭示的结构亦是具有前所未有的创新构造，具有新颖性、创造性、实用性，符合有关新型专利要件的规定，故依法提起申请。

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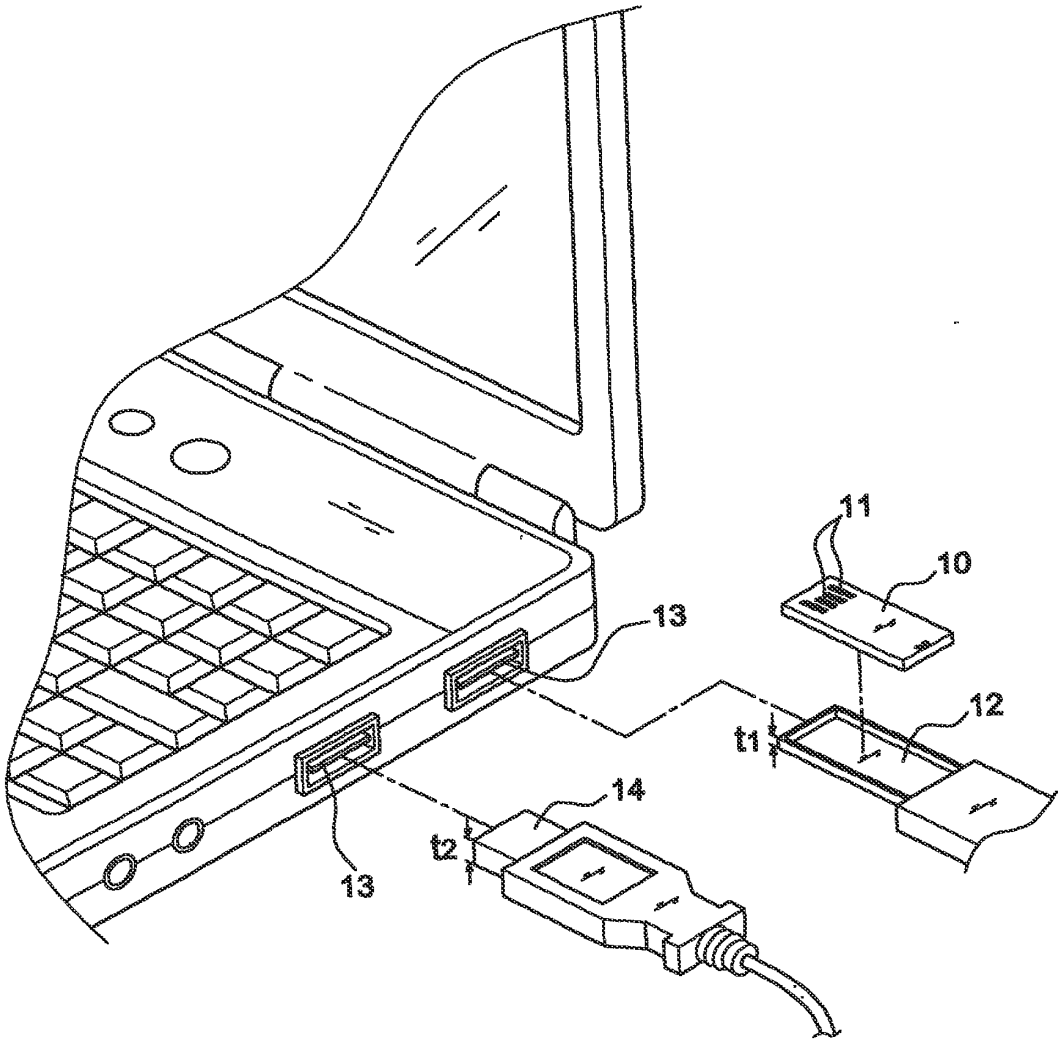


图 1

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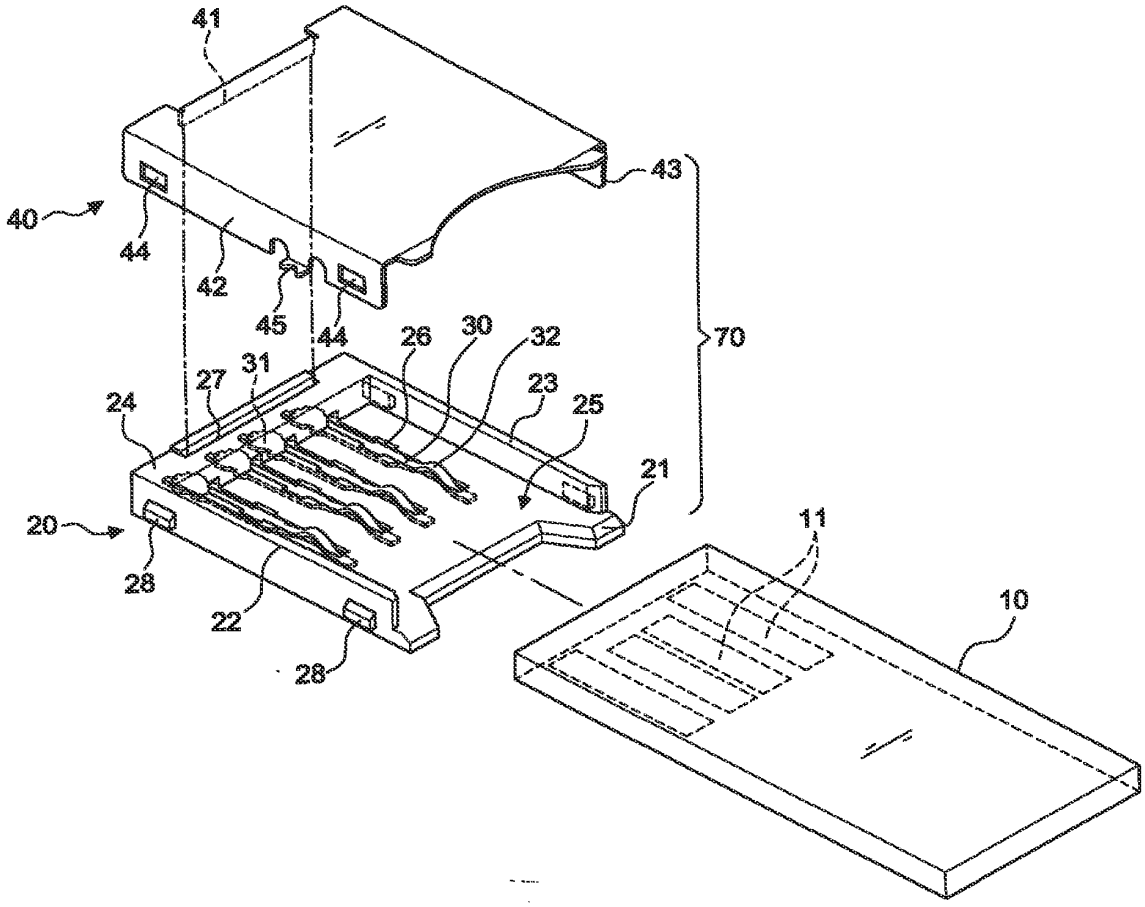


图 2

Samsung, EX1002, p. 2525

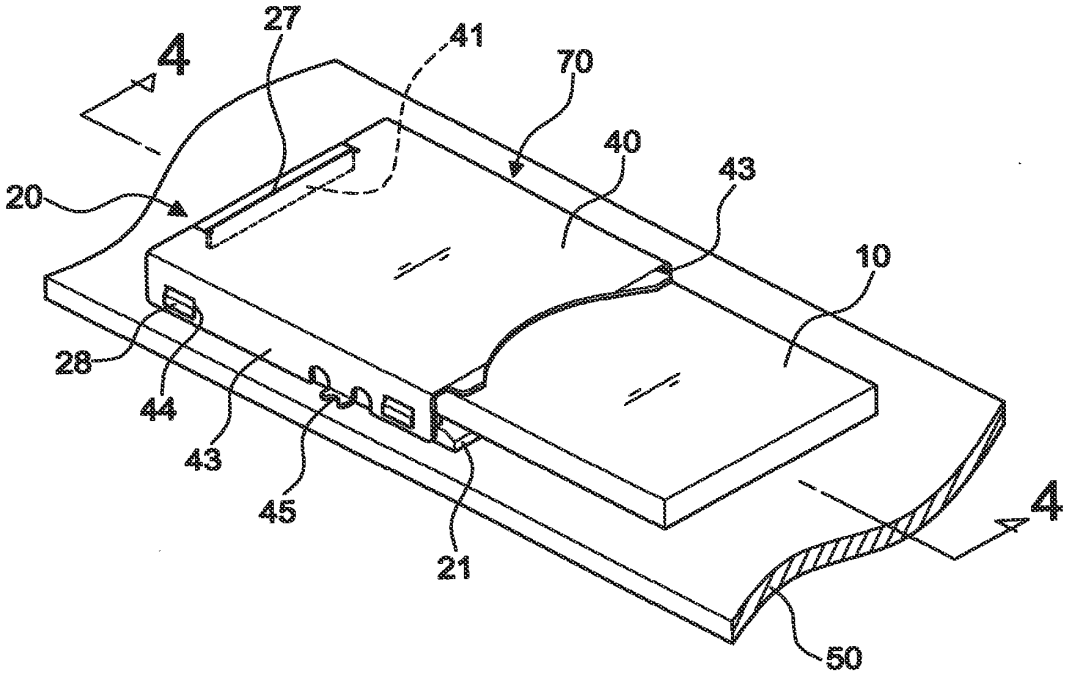


图 3

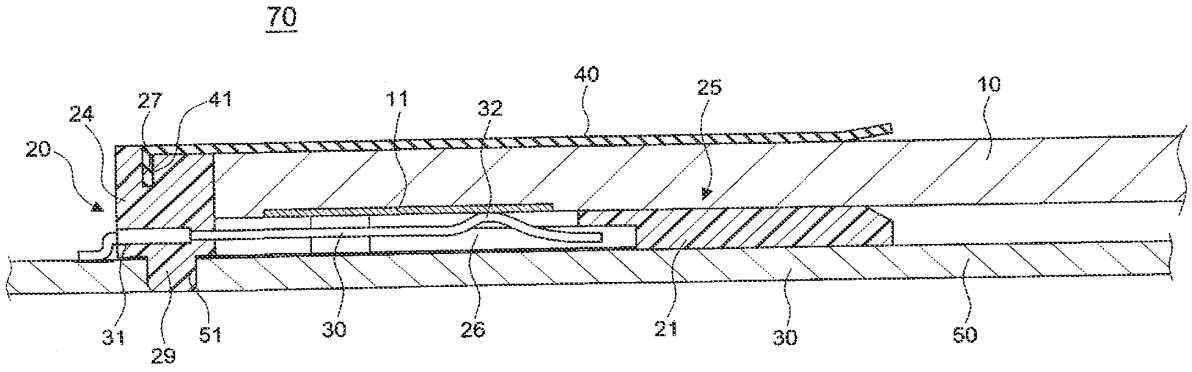


图 4

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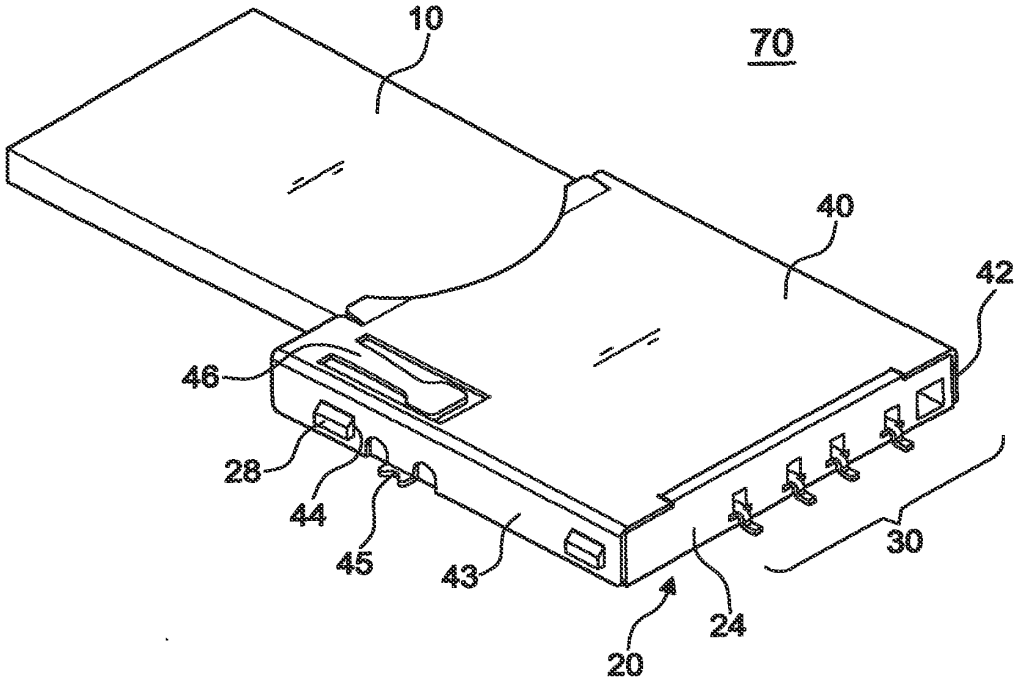


图 5

Samsung, EX1002, p. 2527

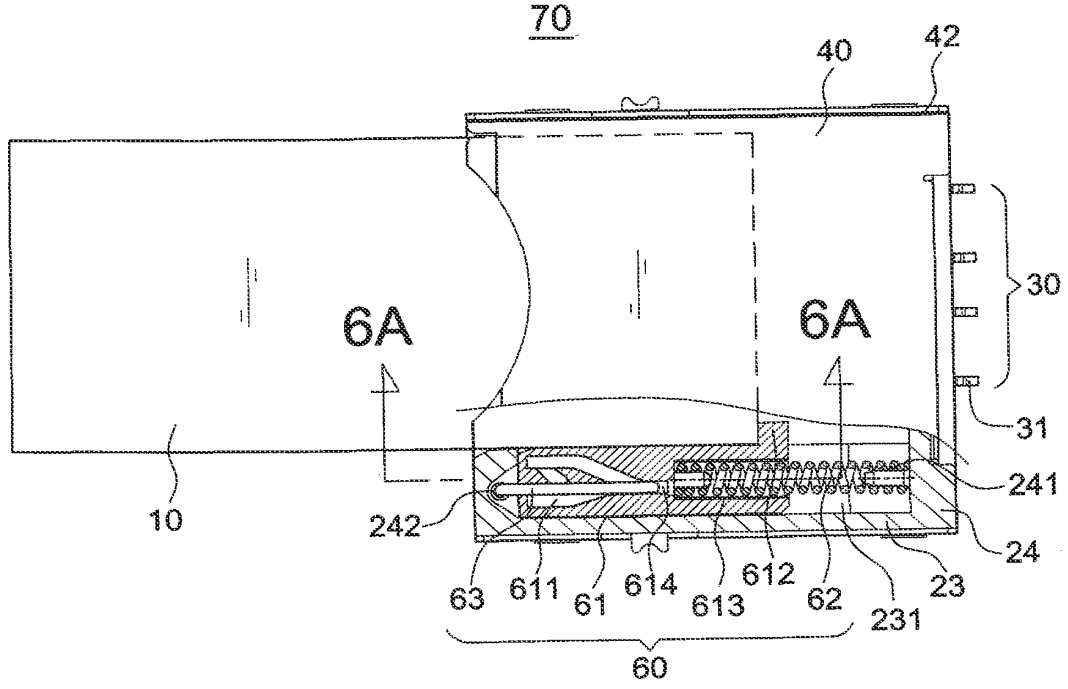


图 6

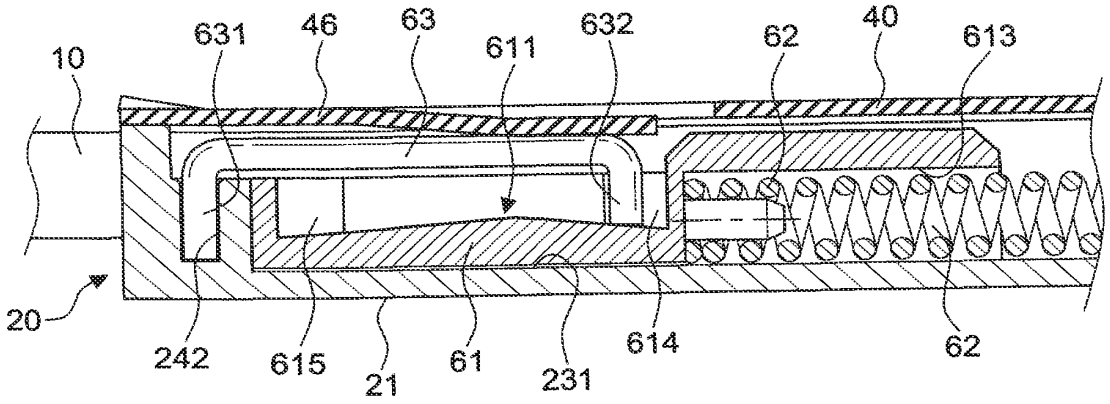


图 6A

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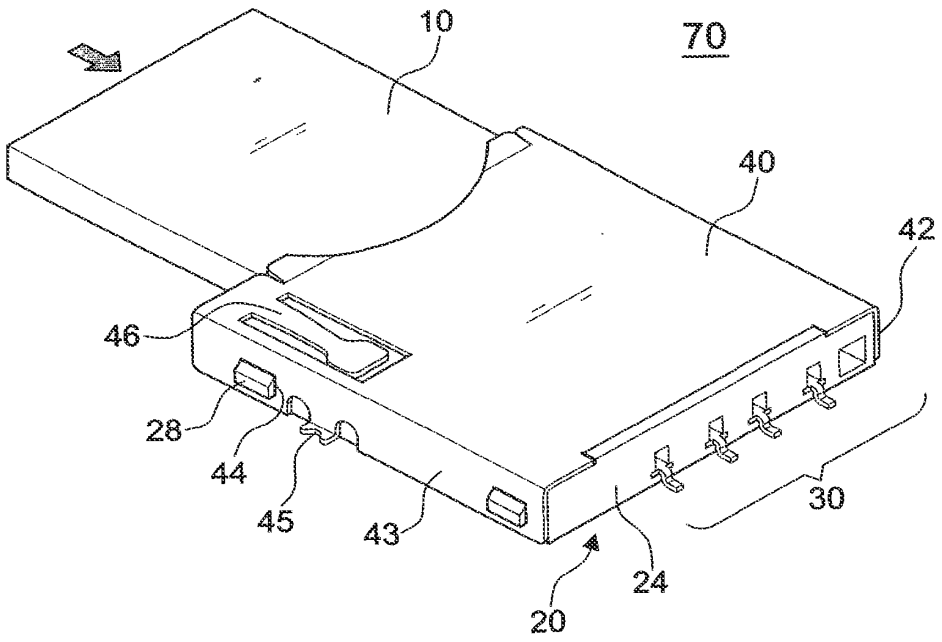


图 7

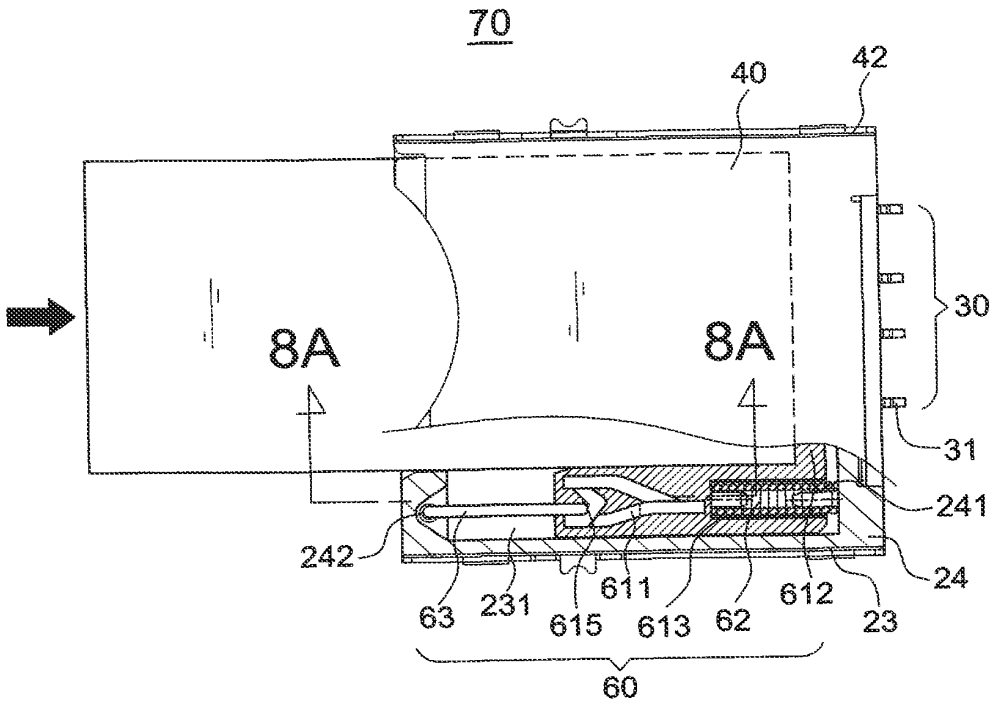


图 8

Samsung, EX1002, p. 2529

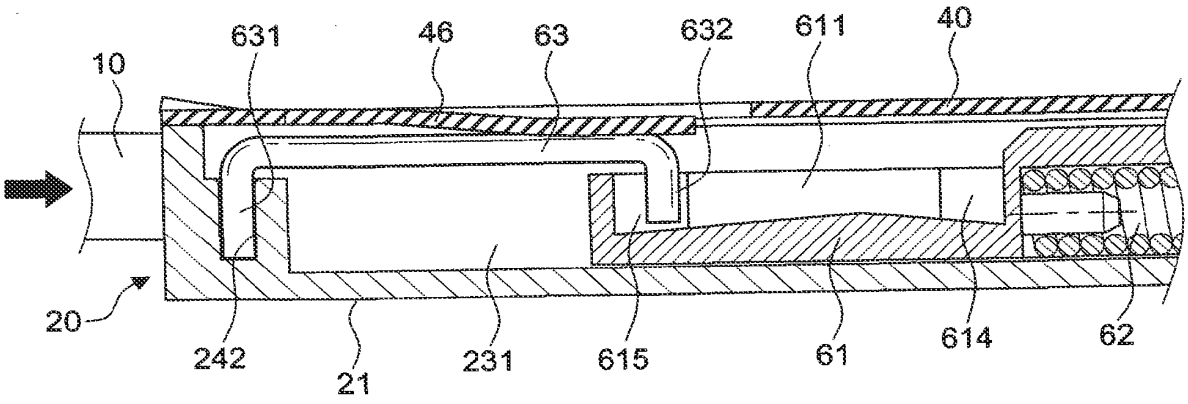


图 8A

Samsung, EX1002, p. 2530

Espacenet

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Electric connector and terminal structure thereof

Inventor(s): ZHOUXIAN CAI ± (CAI ZHOUXIAN)

Applicant(s): ZHOUXIAN CAI ± (CAI ZHOUXIAN)

Classification: **- international:** ***H01R13/02; H01R13/42; H01R13/516; H01R43/16***
- cooperative:

Application number: CN200920291404U 20091214

Priority number(s): CN200920146791U 20090602 ; CN200920146790U 20090602 ; CN20092007459U 20090306 ; CN20092008311U 20090326 ; CN200920177768U 20090910 ; CN200920152427U 20090605 ; CN200920291404U 20091214 ; CN200920156921U 20090609 ; CN20092003111U 20090112 ; CN20092008968U 20090327 ; CN20092008967U 20090327

Also published as: CN102025052 (A)

Abstract of CN201663252 (U)

An electric connector comprises a plastic base body that is internally provided with at least one row of terminal slots; and at least one row of terminals that are arranged in at least one row of terminal slots of the plastic base body, wherein each terminal is provided with a springing part, a fixing part and a pin part from one end to the other end; the springing part is provided with a connection point; the fixing part is fixed with the terminal slot; and the pin part extends out of the plastic base body. When an electronic element is inserted, the electronic element can be connected with the connection point and springs the springing part; the one row of terminals are one of two rows of terminals formed by half tearing and stamping of one metal sheet; each terminal in the two rows of terminals is provided with a half tearing punching part for mutual seamless butt; and when the one row of terminals are unfolded as a plane, one terminal is reversed and when the reverse surface is connected between two adjacent terminals, the half tearing punching part of the terminal is seamlessly jointed with the half tearing punching parts of two adjacent terminals.

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200920146791.3 2009.06.02 CN
200920146790.9 2009.06.02 CN
200920152427.8 2009.06.05 CN
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H01R 43/16(2006.01)

(ESM)同样的发明创造已同日申请发明专利

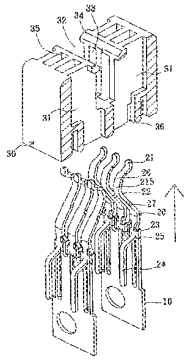
权利要求书 5 页 说明书 12 页 附图 34 页

(54)实用新型名称

电连接器及其端子构造

(57)摘要

一种电连接器，其包括有：一塑胶座体，其内设有至少一排端子槽；至少一排端子，其设于该塑胶座体的至少一排端子槽，每一端子由一端至另一端设有一弹动部、一固定部、及一接脚部，该弹动部设有一接点，该固定部与端子槽固定，该接脚部伸出该塑胶座体外，当一电子元件插入时可与该接点连接并使该弹动部弹动；该至少一排端子为一金属片对撕冲压所形成的二排端子的其中一排，该二排端子的每一端子具有一对撕冲切部位相互无缝对接，该一排端子展开成平面时，其中一端子反向且反面接合于二相邻端子之间时，该一端子的对撕冲切部位与二相邻端子的对撕冲切部位无缝接合。



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1. 一种电连接器，包括有：

一塑胶座体，其内设有至少一排端子槽；

至少一排端子，其设于该塑胶座体的至少一排端子槽，每一端子由一端至另一端设有一弹动部、一固定部、及一接脚部，该弹动部设有一接点，该固定部与端子槽固定，该接脚部伸出该塑胶座体外，当一电子元件插入时能够与该接点连接并使该弹动部弹动；

其特征在于：该至少一排端子为一金属片对撕冲压所形成的二排端子的其中一排，该二排端子的每一端子具有一对撕冲切部位相互无缝对接，该一排端子展开成平面时，其中一端子反向且反面接合于二相邻端子之间时，该一端子的对撕冲切部位与二相邻端子的对撕冲切部位无缝接合。

2. 如权利要求 1 所述的电连接器，其特征在于：该至少一排端子的对撕冲切部位为弹动部及固定部，该弹动部和固定部间设有一延伸部，该固定部宽度较该延伸部宽度和该弹动部宽度为宽，该弹动部设有第一、二端，该延伸部设有第一、二端，该固定部设有第一、二端，该弹动部的第一端为端子的尾端，该弹动部的第二端连该接延伸部第一端，该延伸部第二端连接该固定部的第一端，该固定部的第二端连接该接脚部；该两相邻端子的弹动部由第一端至第二端依序的间距等于该固定部由第二端至第一端依序的宽度，该一排端子展开成平面时，其中一端子的固定部的形状能够反向且反面接合于两相邻端子的弹动部间隔区域。

3. 如权利要求 2 所述的电连接器，其特征在于：该延伸部亦为对撕冲切部位，该两相邻端子的延伸部由第一端至第二端依序的间距等于该延伸部由第二端至第一端依序的宽度，该延伸部宽度较该弹动部宽度为宽，该一排端子展开成平面时，该延伸部的形状能够反向且反面无缝隙接合于两相邻端子的延伸部间隔区域。

4. 如权利要求 3 所述的电连接器，其特征在于：该延伸部设成相同长度的延伸部第一段和延伸部第二段，延伸部第二段宽度较延伸部第一段宽度为宽，该两相邻端子的延伸部第一段的间距等于该延伸部第二段宽度，延伸部第一段宽度 + 延伸部第二段宽度 = 弹动部宽度 + 固定部宽度。

5. 如权利要求 2 所述的电连接器，其特征在于：该固定部设成不同宽度的固定部第一段和固定部第二段，固定部第二段宽度较固定部第一段宽度为宽，该弹动部设成不同宽度的弹动部第一段和弹动部第二段，弹动部第二段宽度较弹动部第一段宽度为宽，该弹动部第二段长度和固定部第一段长度相同，该两相邻端子的弹动部第一段间距等于该固定部第二段宽度，该两相邻端子的弹动部第二段间距等于该固定部第一段宽度，弹动部第一段宽度 + 固定部第二段宽度 = 弹动部第二段宽度 + 固定部第一段宽度。

6. 如权利要求 1 所述的电连接器，其特征在于：该塑胶座体设有一连接槽，该端子槽在该连接槽的插入口设有一抵靠面，该端子的弹动部弹性抵靠于该抵靠面。

7. 如权利要求 2 所述的电连接器，其特征在于：该固定部设有宽度更为凸出的倒刺，该弹动部设有宽度更小的凹部，该倒刺能够无缝隙接合该凹部。

8. 如权利要求 2 所述的电连接器，其特征在于：该一排端子展开成平面时，该其中一端子的固定部的形状反向且反面接合于两相邻端子的弹动部间隔区域时无缝隙靠合该两相邻端子的弹动部。

9. 如权利要求 3 所述的电连接器，其特征在于：该每一端子的延伸部由第一端至第二

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端呈凸凹间隔形状。

10. 如权利要求 1 所述的电连接器，其特征在于：该至少一排端子槽为二排呈一间距并相面对，该两排端子槽之间形成一连接槽，该塑胶座体呈纵长条形状，该连接槽亦呈纵长条形状，该两排端子槽呈上下方向延伸，该端子的弹动部可侧向弹动。

11. 如权利要求 1 所述的电连接器，其特征在于：该至少一排端子槽为二排呈一间距并相面对，该两排端子槽之间形成一连接槽，该两排端子槽呈前后方向延伸，该端子的弹动部可上下弹动。

12. 如权利要求 11 所述的电连接器，其特征在于：还设有一金属外壳包覆该塑胶座体。

13. 如权利要求 1 所述的电连接器，其特征在于：该至少一排端子槽为一排，该端子槽呈前后方向延伸，且还设有一金属上盖盖合于该塑胶座体上方。

14. 如权利要求 1 所述的电连接器，其特征在于：该至少一排端子的对撕冲切部位为弹动部，该固定部宽度较该弹动部宽度为宽，该弹动部设有第一、二端，该弹动部的第一端为端子的尾端，该弹动部的第二端连该于固定部；该两相邻端子的弹动部由第一端至第二端依序的间距等于该弹动部由第二端至第一端依序的宽度，该一排端子展开成平面时，其中一端子的弹动部的形状能够反向且反面接合于两相邻端子的弹动部间隔区域。

15. 如权利要求 14 所述的电连接器，其特征在于：该一排端子展开成平面时，其中一端子的弹动部的形状能够反向且反面无缝隙接合于两相邻端子的弹动部间隔区域。

16. 如权利要求 1 所述的电连接器，其特征在于：该一排端子展开成平面时，其中一端子反向且反面接合于二相邻端子之间时，该一端子的对撕冲切部位的切断面与二相邻端子的对撕冲切部位的切断面无缝接合。

17. 如权利要求 1 所述的电连接器，其特征在于：该塑胶座体间隔排列设有多排端子槽，该端子槽设有与前、后排端子槽相隔的第一壁及第二壁；该至少一排端子的对撕冲切部位为接脚部及固定部，该同一排相邻端子的接脚部间距等于该固定部的宽度，且其中一端子的固定部的形状能够反向且反面接合于二相邻端子的接脚部间隔区域。

18. 如权利要求 17 所述的电连接器，其特征在于：该一排端子的其中一端子的固定部的形状能够反向且反面无缝隙接合于二相邻端子的接脚部间隔区域。

19. 如权利要求 17 所述的电连接器，其特征在于：该端子的弹动部接近末端设有该接点，该接点为端子的最高点，当该接点受力时弹动部能够上下弹动，该端子的弹动部延伸逾过该第一壁至前排的端子槽上方。

20. 如权利要求 17 所述的电连接器，其特征在于：该端子的弹动部是连接于该固定部上端中间，该固定部上端的两侧各设有一连接凸部。

21. 如权利要求 17 所述的电连接器，其特征在于：该端子的固定部上端一侧设有一连接凸部，该弹动部是连接于该连接凸部一侧且转折一夹角。

22. 如权利要求 1 所述的电连接器，其特征在于：该金属片对撕冲压所形成的二排端子为相同构造。

23. 如权利要求 1 所述的电连接器，其特征在于：该至少一排端子的对撕冲切部位为固定部，该固定部设有第一、二端，第一端连接弹动部，第二端连接接脚部，一排端子中二相邻端子的固定部由第一端至第二端依序的间距等于其中一端子的固定部由第二端至第一端依序的宽度，该一排端子展开成平面时，其中一端子反向且反面接合于二相邻端子之间时，

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该一端子的固定部与二相邻端子的固定部无缝接合。

24. 如权利要求 23 所述的电连接器，其特征在于：该塑胶座体还设有至少一排连接槽，每一端子槽与一连接槽相通，其一端设有一凸部，该凸部设有至少一排插孔对应该至少一排连接槽，另外还设有一金属套壳套合于塑胶座体一端，其包覆该凸部的周边且让凸部的插孔露出。

25. 如权利要求 23 所述的电连接器，其特征在于：该固定部由第一端至第二端等宽，该固定部弯折成二垂直板面，纵向板面向下延伸并连接该接脚部。

26. 如权利要求 24 所述的电连接器，其特征在于：该至少一排端子的弹动部、固定部与接脚部皆呈纵向延伸，该塑胶座体的凸部朝上。

27. 一排端子构造，其为一金属片对撕冲压所形成二排端子的其中一排端子，包括有：

一料带；及

多个端子，呈间隔排列连接于该料带，每一端子由一端至另一端设有一弹动部、一固定部、及一接脚部，该固定部的宽度较该弹动部为宽，该弹动部设有一接点且可弹动；

其特征在于：该至少一排端子为一金属片对撕冲压所形成的二排端子的其中一排，该二排端子的每一端子具有一对撕冲切部位相互无缝对接，该一排端子展开成平面时，其中一端子反向且反面接合于二相邻端子之间时，该一端子的对撕冲切部位与二相邻端子的对撕冲切部位无缝接合。

28. 如权利要求 27 所述的一排端子构造，其特征在于：该每一端子的对撕冲切部位为弹动部及固定部，该弹动部和固定部间设有一延伸部，该固定部宽度较该延伸部宽度和该弹动部宽度为宽，该弹动部设有第一、二端，该延伸部设有第一、二端，该固定部设有第一、二端，该弹动部的第一端为端子的尾端，该弹动部的第二端连该接延伸部第一端，该延伸部第二端连接该固定部的第一端，该固定部的第二端连接该接脚部；该两相邻端子的弹动部由第一端至第二端依序的间距等于该固定部由第二端至第一端依序的宽度，该一排端子展开成平面时，其中一端子的固定部的形状能够反向且反面接合于两相邻端子的弹动部间隔区域。

29. 如权利要求 28 所述的一排端子构造，其特征在于：该延伸部亦为对撕冲切部位，该两相邻端子的延伸部由第一端至第二端依序的间距等于该延伸部由第二端至第一端依序的宽度，该延伸部宽度较该弹动部宽度为宽，该一排端子展开成平面时，该延伸部的形状能够反向且反面无缝隙接合于两相邻端子的延伸部间隔区域。

30. 如权利要求 28 所述的一排端子构造，其特征在于：该固定部设成不同宽度的固定部第一段和固定部第二段，固定部第二段宽度较固定部第一段宽度为宽，该弹动部设成不同宽度的弹动部第一段和弹动部第二段，弹动部第二段宽度较弹动部第一段宽度为宽，该两相邻端子的弹动部第一段间距等于该固定部第二段宽度，该两相邻端子的弹动部第二段间距等于该固定部第一段宽度，弹动部第一段宽度 + 固定部第二段宽度 = 弹动部第二段宽度 + 固定部第一段宽度。

31. 如权利要求 28 所述的一排端子构造，其特征在于：该一排端子展开成平面时，该其中一端子的固定部的形状反向且反面接合于两相邻端子的弹动部间隔区域时无缝隙靠合该两相邻端子的弹动部。

32. 如权利要求 27 所述的一排端子构造，其特征在于：该至少一排端子的对撕冲切部

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位为弹动部，该固定部宽度较该弹动部宽度为宽，该弹动部设有第一、二端，该弹动部的第一端为端子的尾端，该弹动部的第二端连该于固定部；该两相邻端子的弹动部由第一端至第二端依序的间距等于该弹动部由第二端至第一端依序的宽度，该一排端子展开成平面时，其中一端子的弹动部的形状可反向且反面接合于两相邻端子的弹动部间隔区域。

33. 如权利要求 32 所述的一排端子构造，其特征在于：该一排端子展开成平面时，其中一端子的弹动部的形状能够反向且反面无缝隙接合于两相邻端子的弹动部间隔区域。

34. 如权利要求 27 所述的一排端子构造，其特征在于：该一排端子展开成平面时，其中一端子反向且反面接合于二相邻端子之间时，该一端子的对撕冲切部位的切断面与二相邻端子的对撕冲切部位的切断面无缝接合。

35. 如权利要求 27 所述的一排端子构造，其特征在于：该一排端子的对撕冲切部位为接脚部及固定部，相邻端子的接脚部间距等于该固定部的宽度，且其中一端子的固定部的形状能够反向且反面接合于二相邻端子的接脚部间隔区域。

36. 如权利要求 35 所述的一排端子构造，其特征在于：一端子的固定部的形状能够反向且反面无缝隙接合于二相邻端子的接脚部间隔区域。

37. 如权利要求 27 所述的一排端子构造，其特征在于：该金属片对撕冲压所形成的二排端子是为相同构造。

38. 如权利要求 27 所述的一排端子构造，其特征在于：该一排端子的对撕冲切部位为固定部，该固定部设有第一、二端，第一端连接弹动部，第二端连接接脚部，该一排端子中二相邻端子的固定部由第一端至第二端依序的间距等于其中一端子的固定部由第二端至第一端依序的宽度，该一排端子展开成平面时，其中一端子反向且反面接合于二相邻端子之间时，该一端子的固定部与二相邻端子的固定部无缝接合。

39. 如权利要求 27 所述的一排端子构造，其特征在于：该接脚部的两侧各无缝接合一连接片，该二连接片一端连接料带且另一端连接于固定部一端，该一排端子的对撕冲切部位为为弹动部、固定部和接脚部两侧的连接片，该一排端子展开成平面时，其中一端子反向且反面接合于二相邻端子之间时，该一端子的弹动部及固定部和二相邻端子的接脚部两侧的连接片无缝接合。

40. 二排端子构造，其为一金属片对撕冲压而形成，其特征在于：包括有：

一第一排端子，设有一料带及多个呈间隔排列连接于该料带的端子，每一端子由一端至另一端设有一弹动部、一固定部、及一接脚部，该固定部的宽度较该弹动部为宽，该弹动部设有一接点且可弹动，该每一端子设有一对撕冲切部位；

一第二排端子，设有一料带及多个呈间隔排列连接于该料带的端子，每一端子由一端至另一端设有一弹动部、一固定部、及一接脚部，该固定部的宽度较该弹动部为宽，该弹动部设有一接点且可弹动，该每一端子设有一对撕冲切部位；

该第一、二排端子是呈反向对接，该第一、二排端子展开成平面时，该第一排端子的各端子的对撕冲切部位无缝接合于该第二排端子的两相邻端子的对撕冲切部位的间隔区域。

41. 如权利要求 40 所述的二排端子构造，其特征在于：该第一、二排端子的对撕冲切部位为弹动部及固定部，该弹动部和固定部间设有一延伸部，该固定部宽度较该延伸部宽度和该弹动部宽度为宽，该弹动部设有第一、二端，该延伸部设有第一、二端，该固定部设有第一、二端，该弹动部的第一端为端子的尾端，该弹动部的第二端连该接延伸部第一端，该延

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伸部第二端连接该固定部的第一端，该固定部的第二端连接该接脚部；该第一排端子的固定部的形状接合于第二排端子的两相邻端子的弹动部间隔区域。

42. 如权利要求 40 所述的二排端子构造，其特征在于：该第一、二排端子的对撕冲切部位为弹动部，该固定部宽度较该弹动部宽度为宽，该弹动部设有第一、二端，该弹动部的第一端为端子的尾端，该弹动部的第二端连该于固定部，该两相邻端子的弹动部由第一端至第二端依序的间距等于该弹动部由第二端至第一端依序的宽度；该第一排端子的各端子的弹动部接合于该第二排端子的两相邻端子的弹动部的间隔区域。

43. 如权利要求 40 所述的二排端子构造，其特征在于：该第一、二排端子的对撕冲切部位为固定部及接脚部，该两相邻端子的接脚部间距等于该固定部的宽度；该第一排端子的各端子的固定部接合于该第二排端子的两相邻端子的接脚部的间隔区域，该第一排端子的各端子的接脚部接合于该第二排端子的两相邻端子的固定部的间隔区域。

44. 如权利要求 40 所述的二排端子构造，其特征在于：该第一、二排端子的对撕冲切部位为固定部，该固定部设有第一、二端，第一端连接弹动部，第二端连接接脚部，该第一、二排端子中二相邻端子的固定部由第一端至第二端依序的间距等于其中一端子的固定部由第二端至第一端依序的宽度；该第一排端子的各端子的固定部接合于该第二排端子的两相邻端子的固定部的间隔区域。

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电连接器及其端子构造

【技术领域】

[0001] 本实用新型是有关于一种电连接器，特别是关于一种端子在冲压制造非常节省材料的电连接器。

[0002] 【背景技术】

[0003] 电连接器的端子在制造上是以金属片冲压，冲压完成的端子是依电连接器的端子间距而间隔排列连接于一料带上，如此整排的端子可一次组装在电连接器的塑胶座体上。

[0004] 上述整排连续排列端子在冲压制造上，两相邻端子的间隔区域则是金属片打掉材料而形成，故此部份则成废料，因此，若要节省端子冲压上的成本则需减少废料形成。

[0005] 【实用新型内容】

[0006] 本实用新型的主要目的在于提供一种电连接器及其端子构造，其端子冲压制造上，是采二排端子对撕冲压，达到省料效果。

[0007] 本实用新型的另一主要目的在于提供一种电连接器，其端子冲压制造上，是采二排端子对撕冲压，达到省料效果。

[0008] 为达上述目的，本实用新型电连接器包括有：一塑胶座体，其内设有至少一排端子槽；至少一排端子，其设于该塑胶座体的至少一排端子槽，每一端子由一端至另一端设有一弹动部、一固定部、及一接脚部，该弹动部设有一接点，该固定部与端子槽固定，该接脚部伸出该塑胶座体外，当 一电子元件插入时可与该接点连接并使该弹动部弹动；其特征在于该至少一排端子是为一金属片对撕冲压所形成的二排端子的其中一排，该二排端子的每一端子具有一对撕冲切部位相互无缝对接，该一排端子展开成平面时，其中一端子反向且反面接合于二相邻端子之间时，该一端子的对撕冲切部位与二相邻端子的对撕冲切部位无缝接合。

[0009] 本实用新型还提供一种一排端子构造，其为一金属片对撕冲压所形成二排端子的其中一排端子，包括有：

[0010] 一料带；及

[0011] 多个端子，呈间隔排列连接于该料带，每一端子由一端至另一端设有一弹动部、一固定部、及一接脚部，该固定部的宽度较该弹动部为宽，该弹动部设有一接点且可弹动；

[0012] 其特征在于：该至少一排端子为一金属片对撕冲压所形成的二排端子的其中一排，该二排端子的每一端子具有一对撕冲切部位相互无缝对接，该一排端子展开成平面时，其中一端子反向且反面接合于二相邻端子之间时，该一端子的对撕冲切部位与二相邻端子的对撕冲切部位无缝接合。

[0013] 本实用新型还提供一种二排端子构造，其为一金属片对撕冲压而形成，其特征在于：包括有：

[0014] 一第一排端子，设有一料带及多个呈间隔排列连接于该料带的端子，每一端子由一端至另一端设有一弹动部、一固定部、及一接脚部，该固定部的宽度较该弹动部为宽，该弹动部设有一接点且可弹动，该每一端子设有一对撕冲切部位；

[0015] 一第二排端子，设有一料带及多个呈间隔排列连接于该料带的端子，每一端子由

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一端至另一端设有一弹动部、一固定部、及一接脚部，该固定部的宽度较该弹动部为宽，该弹动部设有一接点且可弹动，该每一端子设有一对撕冲切部位；

[0016] 该第一、二排端子是呈反向对接，该第一、二排端子展开成平面时，该第一排端子的各端子的对撕冲切部位无缝接合于该第二排端子的两相邻端子的对撕冲切部位的间隔区域。

[0017] 借由以上构造，在端子冲压制造上，二排端子可对撕冲压，达到省料效果。

[0018] 本实用新型的上述及其他目的、优点和特色由以下较佳实施例的详细说明中并参考图式当可更加明白，其中：

【附图说明】

[0019] 图 1 是本实用新型第一实施例的立体分解图。

[0020] 图 2 是本实用新型第一实施例的一排端子展开平面图。

[0021] 图 3 是本实用新型第一实施例的立体组合图。

[0022] 图 4 是本实用新型第一实施例的组合剖面图。

[0023] 图 5 是本实用新型第一实施例的端子冲压制造流程示意图。

[0024] 图 6 是本实用新型第一实施例的端子冲压制造示意图。

[0025] 图 7 是本实用新型第一实施例的二排端子的延伸部的切断面示意图。

[0026] 图 8 是本实用新型第一实施例的第一排端子的其中一端子成反面反向接合于两端子之间的切断面接合状态示意图。

[0027] 图 9 是本实用新型第一实施例的第一排端子的其中一端子成正面反向接合于两端子之间的切断面接合状态示意图。

[0028] 图 10 是本实用新型第二实施例的立体组合图。

[0029] 图 11 是本实用新型第三实施例的端子立体图。

[0030] 图 12 是本实用新型第三实施例的端子展开平面图。

[0031] 图 13 是本实用新型第三实施例的端子冲压制造流程示意图。

[0032] 图 14 是本实用新型第四实施例的端子展开平面图。

[0033] 图 15 是本实用新型第五实施例的剖面侧视图。

[0034] 图 16 是本实用新型第五实施例的剖面立体图。

[0035] 图 17 是本实用新型第五实施例的端子冲压制造流程示意图。

[0036] 图 18 是本实用新型第六实施例的正面立体图。

[0037] 图 19 是本实用新型第六实施例的一排端子立体图。

[0038] 图 20 是本实用新型第六实施例的反面立体图。

[0039] 图 21 是本实用新型第七实施例的立体分解图。

[0040] 图 22 是本实用新型第七实施例的一排端子展开平面图。

[0041] 图 23 是本实用新型第七实施例的立体组合图。

[0042] 图 24 是本实用新型第七实施例的组合剖面图。

[0043] 图 25 是本实用新型第七实施例的端子冲压制造流程示意图。

[0044] 图 26 是本实用新型第八实施例的端子展开平面图。

[0045] 图 27 是本实用新型第九实施例的剖面侧视图。

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[0046] 图 28 是本实用新型第九实施例的剖面立体图。

[0047] 图 29 是本实用新型第九实施例的端子冲压制造流程示意图。

[0048] 图 30 是本实用新型第十实施例的正面立体图。

[0049] 图 31 是本实用新型第十实施例的一排端子立体图。

[0050] 图 32 是本实用新型第十实施例的反面立体图。

[0051] 图 33 是本实用新型第十一实施例的立体分解图。

[0052] 图 34 是本实用新型第十一实施例的端子与塑胶座体立体分解图。

[0053] 图 35 是本实用新型第十一实施例的剖面图。

[0054] 图 36 是本实用新型第十一实施例的使用状态立体图。

[0055] 图 37 是本实用新型第十一实施例的二排端子对接立体图。

[0056] 图 38 是本实用新型第十一实施例的二排端子对接的展开平面图。

[0057] 图 39 是本实用新型第十二实施例的二排端子立体分解图。

[0058] 图 40 是本实用新型第十二实施例的二排端子对接立体图。

[0059] 图 41 是本实用新型第十三实施例的二排端子立体分解图。

[0060] 图 42 是本实用新型第十三实施例的二排端子对接立体图。

[0061] 图 43 是本实用新型第十四实施例的剖面侧视图。

[0062] 图 44 是本实用新型第十四实施例的塑胶座体的后视图。

[0063] 图 45 是本实用新型第十四实施例的使用状态图。

[0064] 图 46 是本实用新型第十四实施例的端子冲压制造流程示意图。

[0065] 图 47 是本实用新型第十五实施例的端子冲压制造流程示意图。

[0066] 图 48 是本实用新型第十六实施例的端子冲压制造流程示意图。

[0067] 图 49 是本实用新型第十七实施例的立体分解图。

[0068] 图 50 是本实用新型第十七实施例的剖面侧视图。

[0069] 图 51 是本实用新型第十七实施例的端子冲压制造流程示意图。

[0070] 图 52 是本实用新型第十八实施例的端子冲压制造流程示意图。

[0071] 料带 10 端子 20 弹动部 21 延伸部 22 固定部 23 接脚部 24 切痕 25 延伸部第一段 26 延伸部第二段 27 固定部第一段 28 固定部第二段 29

[0072] 倒刺 210 弹动部第一段 211 弹动部第二段 212 凹部 213 接点 215 连接凸部 217 倒刺 218 凹部 219

[0073] 辅助力臂 220 第一端 221 第二端 222 连接片 225 间隙 226

[0074] 塑胶座体 30 端子槽 31 连接槽 32 开口 33 导入斜面 34 抵靠面 35 卡槽 36 后盖 38 抵缘 39 凸部 310 插孔 312 金属外壳 40 金属上盖 45 顶面 46 第一侧面 47 第一侧面 48

[0075] 塑胶内座 50 凸缘 51 放置区 52 端子槽 53

[0076] 第一壁 54 第二壁 55 锡球槽 56 锡球 57

[0077] 通道 58 金属上盖 60 顶面 61 侧面 62

[0078] 透空区 63 凸片 64 枢接部 65

[0079] 公接头 68 端子 69

[0080] 摇杆 70 第一杆 71 第二杆 72 凸杆 73

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[0081] 手把 74 上模 81 下模 82 冲孔 83 光滑面 86 毛边 87 金属外座 90 底面 91 侧面 92

[0082] 透空区 93 第一枢接部 94 第二枢接部 95。

[0083] 第一排端子 1 第二排端子 2

【具体实施方式】

[0084] 请参阅图 1、图 2、图 3 及图 4，本实施例包括有：一塑胶座体 30 及二排端子 20，其中：

[0085] 该塑胶座体 30 呈纵长条形状，其设有二排间隔排列的端子槽 31，该两排端子槽 31 之间形成一纵长条形状的连接槽 32，该端子槽 31 设有一开口 33 与该连接槽 32 相通，该连接槽 32 的开口朝上且上端设有导入斜面 34，该端子槽 31 在开口 33 上端设有一抵靠面 35 且下段设有一卡槽 36。

[0086] 该二排端子 20 设于该塑胶座体 30 的二排端子槽 31，每一排端子 20 是连接一料带 10，其为一金属片对撕冲压所形成相同二排端子的其中一排端子，该一排端子 20 组装于一排端子槽 31 后再将该料带 10 折断分离，该端子 20 由一端至另一端设有一弹动部 21、一延伸部 22、一固定部 23 及一接脚部 24；该弹动部 21 设有第一、二端，该延伸部 22 设有第一、二端，该固定部 23 设有第一、二端，该弹动部 21 的第一端为端子的尾端，该弹动部的第二端连该接延伸部 22 第一端，该延伸部 22 第二端连接该固定部 23 的第一端，该固定部 23 的第二端连接该接脚 24 及该料带 10 且该处设有易于折断的切痕 25，该固定部 23 宽度较该延伸部 22 宽度为宽借以与端子槽 31 的卡槽 36 卡定，该固定部 23 由第一端至第二端设成不同宽度的固定部第一段 28 和固定部第二段 29，固定部第二段宽度 A 较固定部第一段宽度 B 为宽且两者间设有宽度更为凸出的倒刺 210；该延伸部 22 宽度较该弹动部 21 宽度为宽，该延伸部 22 为一弯折的弹臂且由第一端至第二端设成等长的延伸部第一段 26 及延伸部第二段 27，延伸部第二段宽度 C 较延伸部第一段宽度 D 为宽，该延伸部第一段 26 设有一凸出的接点 215，该接点 215 由开口 33 伸出至该连接槽 32；该弹动部 21 尾端弹性抵靠该抵靠面 35，该弹动部 21 由第一端至第二端设成不同宽度的弹动部第一段 211 和弹动部第二段 212，弹动部第二段宽度 E 较弹动部第一段宽度 F 为宽且两者间设有宽度更小的凹部 213，该接脚部 24 伸出该塑胶座体 30 下端。

[0087] 本实施例的特点在于该每一排端子是为一金属片对撕冲压所形成相同二排端子的其中一排，该二排端子的每一端子具有一对撕冲切部位相互无缝对接，该一排端子展开成平面时，其中一端子反向且反面接合于二相邻端子之间时，该一端子的对撕冲切部位与二相邻端子的对撕冲切部位无缝接合，本实施例的对撕冲切部位为弹动部 21、延伸部 22 及固定部 23。

[0088] 该两相邻端子的弹动部 21 由第一端至第二端依序的间距等于该固定部 23 由第二端至第一端依序的宽度，且该两相邻端子的延伸部由第一端至第二端依序的间距等于该延伸部由第二端至第一端依序的宽度，该一排端子展开成平面时，该其中一端子的固定部 23 的形状可反向且反面无缝隙接合于两相邻端子的弹动部 21 间隔区域，该延伸部 22 的形状可反向且反面无缝隙接合于两相邻端子的延伸部 22 间隔区域，亦即两相邻端子的延伸部 22 间隔区域等于该延伸部 22 的面积。

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[0089] 该两相邻端子的弹动部第一段的间距 X 等于该固定部第二段宽度 A，该 两相邻端子的弹动部第二段的间距 Y 等于该固定部第一段宽度 B，该两相邻端子的延伸部第一段的间距 Z 等于该延伸部第二段宽度 C，该延伸部第一段 26 的长度和该延伸部第二段 27 的长度相同，该弹动部第二段 212 的长度和固定部第一段 28 的长度相同，弹动部第一段宽度 F+固定部第二段宽度 A ＝延伸部第一段宽度 D+ 延伸部第二段宽度 C ＝弹动部第二段宽度 E+固定部第一段宽度 B ；该一排端子展开成平面时，该固定部 23 的形状可无缝隙接合于两相邻端子的弹动部 21 间隔区域，即该固定部第一段 28 无缝隙靠合该两相邻端子的弹动部第二段 212，该固定部第二段 29 无缝隙靠合该两相邻端子的弹动部第一段 211，该倒刺 210 可无缝隙接合该两相邻端子的凹部 213，另外，该两相邻端子的延伸部 22 间隔区域等于该延伸部 22 的面积。

[0090] 借由以上构造，端子在冲压制造上如图 5 所示，二排间隔排列相连接的端子可由一片金属片完全对接排列冲压，即第一排端子 1 的各端子 20 的固定部 23 恰可对接于第二排端子 2 的两相邻端子 20 的弹动部 21 之间，第一排端子 1 的各端子 20 的延伸部第二段 27 恰可对接于第二排端子 2 的两相邻端子 20 的延伸部第一段 26 之间，如此一金属片先完全无缝隙对撕成二排端子，再拉开后弯折弹动部 21、延伸部 22 及接脚部 24。

[0091] 上述端子在制造上，二排端子对接冲压时除了相连的料带 10 外完全无废料形成，明显可节省材料，降低制造成本。

[0092] 请参阅图 6 及图 7，本实用新型以一金属片对撕冲压成二排相同端子时，由于模具的上模 81 的宽度 s 必然较下模 82 的冲孔 83 的宽度 b 为小，由于第一排端子 1 的端子的弹动部 21 与第二排端子 2 的端子的固定部 23 无缝对撕，故冲压后第一排端子 1 的端子的弹动部 21 的切断面的上段形成光滑面 86 而下段形成毛边 87，然而第二排端子 2 的端子的固定部 23 的切断面则是下段形成光滑面 86 而上段形成毛边 87，光滑面 86 的宽度 b 较毛边 87 的宽度 s 稍大，第二排端子 2 的端子的固定部 23 接合于第一排端子 2 的端子的弹动部 21 的间隔区域时，两者接合处的切断面相互为毛边 87 接合光滑面 86，故可成密合连接。

[0093] 如此冲压后第一排端子 1 的端子的弹动部 21 上段宽度与第二排端子 2 的端子的固定部 23 下段宽度均为 b，而第一排端子 1 的端子的弹动部 21 下段宽度与第二排端子 2 的端子的弹动部上段宽度均为 s，当第一排端子 1 的 端子 20 成反面时固定部的切断面即与第二排端子 2 的端子 20 的固定部的切断面相同。

[0094] 请参阅图 8，第一排端子 1 其中一端子成反面反向接合于两端子之间时其固定部 23’ 的切断面与该两相邻端子的弹动部 21 的切断面是相互为毛边 87 接合光滑面 86，故可成密合连接。

[0095] 请参阅图 9，第一排端子 1 其中一端子成同面反向接合于两端子之间时其固定部的切断面与该两相邻端子 20 的弹动部的切断面是相互为光滑面 86 接合光滑面 86，故无法密合连接。

[0096] 请参阅图 10，为本实用新型第二实施例，其大致与第一实施例相同，其差异在于该端子 20 的延伸部第一段 26 的板面刺破冲压出一凸出的接点 215。

[0097] 请参阅图 11 及图 12，为本实用新型第三实施例，其大致与第一实施例相同，其差异在于该端子 20 的延伸部 22 只有一个延伸部宽度 H，该两相邻端子的延伸部的间距 W 等于该延伸部宽度 H，该弹动部第二段 212 的长度和固定部第一段 28 的长度相同，弹动部第一段

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宽度 F+ 固定部第二段宽度 A ＝ 2 倍延伸部宽度 H ＝弹动部第二段宽度 E+ 固定部第一段宽度 B。

[0098] 本实施例端子在冲压制造上如图 13 所示，二排间隔排列相连接的端子可由一片金属片完全对接排列冲压，即第一排端子 1 的各端子 20 的固定部第二段 29 恰可对接于第二排端子 2 的两相邻端子 20 的弹动部第一段 211 之间，第一排端子 1 的各端子 20 的固定部第一段 28 恰可对接于第二排端子 2 的两相邻端子 20 的弹动部第二段 212 之间，第一排端子 1 的各端子 20 的延伸部 22 恰可对接于第二排端子 2 的两相邻端子 20 的延伸部 22 之间，如此一金属片先完全无缝隙对撕成二排端子，再拉开后弯折弹动部 21、延伸部 22 及接脚部 24。

[0099] 请参阅图 14，为本实用新型第四实施例，其大致与第一实施例相同，其差异在于该端子 20 的固定部 23 皆等宽只有一个宽度，而该弹动部 21 亦等宽只有一个宽度，而该延伸部 22 宽度由上而下渐宽，该两相邻端子的弹动部的间距 P 等于该固定部宽度 Q，该端子 20 展开成平面时，该两相邻端子的延伸部 22 间隔区域等于该延伸部 22 的面积；借由以上构造，二排间隔排列相连接的端子可由一片金属片完全对接排列冲压。

[0100] 请参阅图 15 及图 16，为本实用新型第五实施例，其是为一讯号线的 接头，其包括有：一塑胶座体 30、二排端子 20、及一金属外壳 40，其中：

[0101] 该塑胶座体 30 设有二排间隔排列的端子槽 31，该两排端子槽 31 呈一上一下排列并相面对，两排端子槽 31 之间形成一连接槽 32，该端子槽 31 呈前后方向延伸且与该连接槽 32 相通，该连接槽 32 的前端为插入口且设有导入斜面 34，该端子槽 31 后端设有一卡槽 36 且前端设有一抵靠面 35。

[0102] 该二排端子 20 设于该塑胶座体 30 的二排端子槽 31，该端子 20 由一端至另一端设有一弹动部 21、一延伸部 22、一固定部 23 及一接脚部 24，本实施例的端子 20 的构造大致与第一实施例相同，该延伸部 22 设有第一、二端，该延伸部 22 设有第一、二端，该固定部 23 设有第一、二端，该弹动部 21 的第一端为端子的尾端，该弹动部 21 的第二端连该接延伸部 22 第一端，该延伸部 22 第二端连接该固定部 23 的第一端，该固定部 23 的第二端连接该接脚 24 及该料带 10 且该处设有易于折断的切痕 25，该固定部 23 宽度较该延伸部 22 宽度为宽借以与端子槽 31 的卡槽 36 卡定，该弹动部 21 弹性抵靠该塑胶座体的抵靠面 35，本实施例与第一实施例的差异在于本实施例的端子 20 是呈横向延伸，该延伸部 22 由第一端至第二端呈同一宽度，该延伸部 22 横向延伸呈一弯折的弹臂且可上下弹动，其接近末端设有一凸出的接点 215，该接点 215 伸出端子槽 31 至该连接槽 32。

[0103] 该金属外壳 40 包覆于该塑胶座体 30 外。

[0104] 请参阅图 17，是本实施例的冲压制造流程示意图，本实施例的端子 20 的构造大致与第一实施例相同，同样是该两相邻端子的弹动部 21 由第一端至第二端依序的间距等于该固定部 23 由第二端至第一端依序的宽度，且该两相邻端子的延伸部由第一端至第二端依序的间距等于该延伸部由第二端至第一端依序的宽度，该一排端子展开成平面时，其中一端子的固定部 23 的形状可反向且反面无缝隙接合于两相邻端子的弹动部 21 间隔区域，且该端子的延伸部 22 的形状可反向且反面无缝隙接合于两相邻端子的延伸部 22 间隔区域。

[0105] 借由以上构造，端子在冲压制造上，二排间隔排列相连接的端子可由一片金属片

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对接排列冲压，由于第一排端子 1 的各端子 20 的延伸部 22 及固定部 23 分别无缝隙对接于第二排端子 2 的两相邻端子 20 的延伸部 22 及弹动部 21 之间，如此该金属片先对切成第一、二排端子 1、2，再拉开后弯折延伸部 22。

[0106] 请参阅图 18、图 19 及图 20，是为本实用新型第六实施例，其是为一 Express card 连接器，其包括有：一塑胶座体 30、一排端子 20、及一金属上盖 45，其中：

[0107] 该塑胶座体 30 设有一排间隔排列的端子槽 31 及一连接槽 32，该端子槽 31 呈前后方向延伸且与该连接槽 32 相通，该端子槽 31 前端亦有抵靠面 35 且后端设有卡槽。

[0108] 该一排端子 20 设于该塑胶座体 30 的一排端子槽 31，该端子 20 由一端至另一端设有一弹动部 21、延伸部 22、一固定部 23 及一接脚部 24，该端子 20 构造大致与第五实施例相同，延伸部 22 亦为上下弹动型态，其差异在于本实施例的接脚部 24 是往下弯折后再形成一水平接脚。

[0109] 该金属上盖 45 盖合于该塑胶座体 30 上方，其设有一顶面 46 及相对的第一、二侧面 47、48。

[0110] 本实施例的端子 20 的构造大致与第五实施例相同，同样是两相邻端子的弹动部 21 由第一端至第二端依序的间距等于该固定部 23 由第二端至第一端依序的宽度，且该两相邻端子的延伸部由第一端至第二端依序的间距等于该延伸部由第二端至第一端依序的宽度，该一排端子展开成平面时，其中一端子的固定部 23 的形状可反向且反面无缝隙接合于两相邻端子的弹动部 21 间隔区域，且该端子的延伸部 22 的形状可反向且反面无缝隙接合于两相邻端子的延伸部 22 间隔区域；借此，达到端子在冲压制造上节省材料。

[0111] 请参阅图 21、图 22、图 23 及图 24，是为本实用新型第七实施例，本实施例为一种记忆卡模组连接器，其包括有：一塑胶座体 30 及二排端子 20，其中：

[0112] 该塑胶座体 30 呈纵长条形状，其设有二排间隔排列的端子槽 31，该两排端子槽 31 呈一间距并相面对且之间形成一纵长条形状的连接槽 32，该端子槽 31 呈上下方向延伸且设有一开口 33 与该连接槽 32 相通，该连接槽 32 的开口朝上且上端设有导入斜面 34，该端子槽 31 下段设有一卡槽 36。

[0113] 该二排端子 20 设于该塑胶座体 30 的二排端子槽 31，每一排端子 20 是连接一料带 10，该一排端子 20 组装于一排端子槽 31 后再将该料带 10 折断分离，该端子 20 由一端至另一端设有一弹动部 21、一固定部 23 及一接脚部 24；该固定部 23 下端连接该料带 10 且该处设有易于折断的切痕 25，该固定部 23 的宽度较该弹动部 21 的宽度和接脚部 24 的宽度为宽，该固定部 23 设有宽度更为凸出的倒刺 210 借以与端子槽 31 的卡槽 36 卡定；该弹动部 21 为单一宽度，其设有第一、二端 221、222，第二端 222 与固定部连接，第一端 221 为开放端，该弹动部 21 上下延伸呈一弯折的弹臂且可侧向弹动，其接近末端设有一凸出的接点 215，该接点 215 由开口 33 伸出端子槽 31 至该连接槽 32，该接脚部 24 伸出该塑胶座体 30 下端。

[0114] 本实施例的特点在于该每一排端子是为一金属片对撕冲压所形成相同二排端子的其中一排，该二排端子的每一端子具有一对撕冲切部位相互无缝对接，该一排端子展开成平面时，其中一端子反向且反面接合于二相邻端子之间时，该一端子的对撕冲切部位与二相邻端子的对撕冲切部位无缝接合，本实施例的对撕冲切部位为弹动部 21。

[0115] 该同一排两相邻端子的弹动部 21 的间距 A 等于该弹动部 21 的宽度 B，即该一排端

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子展开成平面时，其中一端子的弹动部 21 的形状可反向且反面无缝隙接合于两相邻端子的弹动部 21 间隔区域。

[0116] 借由以上构造，端子在冲压制造上如图 25 所示，二排间隔排列相连接的端子可由一片金属片对接排列冲压，由于第一排端子 1 的各端子 20 的弹动部 21 无缝隙对接于第二排端子 2 的两相邻端子 20 的弹动部 21 之间，如此该金属片先对切成第一、二排端子 1、2，再拉开后弯折弹动部 21 及接脚部 24。

[0117] 上述端子在制造上，二排端子对接冲压时由于二排端子的延伸部是为无缝接合，而该弹动部 21 的长度占整体端子很大比率，故在制造上明显可节省材料，降低制造成本。

[0118] 二排端子的固定部 23 虽没有相互对接，由于固定部 23 宽度甚宽，所以打掉的废料亦很少了，如图 2 的斜线部份即为两相邻端子的固定部间隔所打掉的废料。

[0119] 请参阅图 26，是为本实用新型第八实施例，其大致与第七实施例相同，其差异在于本实施例的端子 20 的弹动部 21 由第一端 221 至第二端 222 渐宽，该同一排两相邻端子 20 的弹动部 21 由第一端 221 至第二端 222 依序的间距 C 等于该弹动部 21 由第二端 222 至第一端 221 依序的宽度 D，即该一排端子展开成平面时，其中一端子的弹动部 21 的形状可反向且反面无缝隙接合于两相邻端子的弹动部 21 间隔区域。

[0120] 请参阅图 27 及图 28，是为本实用新型第九实施例，其是为一讯号线的接头，其包括有：一塑胶座体 30、二排端子 20、及一金属外壳 40，其中：

[0121] 该塑胶座体 30 设有二排间隔排列的端子槽 31，该两排端子槽 31 呈一上一下排列并相面对，两排端子槽 31 之间形成一连接槽 32，该端子槽 31 呈前后方向延伸且与该连接槽 32 相通，该连接槽 32 的前端为插入口且设有导入斜面 34，该端子槽 31 后端设有一卡槽 36。

[0122] 该二排端子 20 设于该塑胶座体 30 的二排端子槽 31，该端子 20 由一端至另一端设有一弹动部 21、一固定部 23 及一接脚部 24，该固定部 23 的宽度较该弹动部 21 的宽度和接脚部 24 的宽度为宽借以与端子槽 31 的卡槽 36 卡定，该弹动部 21 横向延伸呈一弯折的弹臂且可上下弹动，其接近末端设有一凸出的接点 215，该接点 215 伸出端子槽 31 至该连接槽 32，该接脚部 24 伸出该塑胶座体 30 外。

[0123] 该金属外壳 40 包覆于该塑胶座体 30 外。

[0124] 请参阅图 29，是本实施例的冲压制造流程示意图，本实施例的端子 20 的构造大致与第七实施例相同，同样是同一排两相邻端子的弹动部 21 的间距 A 等于该弹动部 21 的宽度 B，即该一排端子展开成平面时，该弹动部 21 的形状可反向无缝隙接合于两相邻端子的弹动部 21 间隔区域，借由以上构造，端子在冲压制造上，二排间隔排列相连接的端子可由一片金属片对接排列冲压，由于第一排端子 1 的各端子 20 的弹动部 21 无缝隙对接于第二排端子 2 的两相邻端子 20 的弹动部 21 之间，如此该金属片先对切成第一、二排端子 1、2，再拉开后弯折弹动部 21。

[0125] 请参阅图 30、图 31 及图 32，是为本实用新型第十实施例，其是为一 Express card 连接器，其包括有：一塑胶座体 30、一排端子 20、及一金属上盖 45，其中：

[0126] 该塑胶座体 30 设有一排间隔排列的端子槽 31 及一连接槽 32，该端子槽 31 呈前后方向延伸且与该连接槽 32 相通。

[0127] 该一排端子 20 设于该塑胶座体 30 的一排端子槽 31，该端子 20 由一端至另一端设

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有一弹动部 21、一固定部 23 及一接脚部 24，该固定部 23 的宽度较该弹动部 21 的宽度和接脚部 24 的宽度为宽借以与端子槽 31 的卡槽卡定，该弹动部 21 横向延伸呈一弯折的弹臂且可上下弹动，其接近末端设有一凸出的接点 215，该接点 215 伸出端子槽 31 至该连接槽 32，该接脚部 24 伸出该塑胶座体 30 下端。

[0128] 该金属上盖 45 盖合于该塑胶座体 30 上方，其设有一顶面 46 及相对的第一、二侧面 47、48。

[0129] 本实施例的端子 20 的构造大致与第九实施例相同，同样是同一排两相邻端子的弹动部 21 的间距 A 等于该弹动部 21 的宽度 B，即该一排端子展开成平面时，其中一端子的弹动部 21 的形状可反向且反面无缝隙接合于两相邻端子的弹动部 21 间隔区域，借此，达到端子在冲压制造上节省材料。

[0130] 请参阅图 33、图 34、图 35 及图 36，是为本实用新型第十一实施例，其是为一晶片连接器，其包括有：一金属外座 90、一塑胶内座 50、一金属上盖 60、一摇杆 70、及多排端子 20，其中：

[0131] 该金属外座 90 设有一底面 91 及向上的两侧面 92，该底面 91 的中央形成一透空区 93，其前端两侧各设有一第一枢接部 94，而后端两侧各设有一第二枢接部 95。

[0132] 该塑胶内座 50 设于该金属外座 90 上，其上周缘设有向上的凸缘 51 而围成一放置一晶片的放置区 52，该放置区 52 间隔排列设有多排端子槽 53，该多排端子槽 53 对应该透空区 93，端子槽 53 设有与前、后排端子槽相隔的第一壁 54 及第二壁 55，端子槽 53 下方对应设有一锡球槽 56，该锡球槽 56 设有一锡球 57，该端子槽 53 与锡球槽 56 设有通道 58 相通。

[0133] 该金属上盖 60 是设有一顶面 61 及向下的两侧面 62，该顶面 61 中间设有一透空区 63，其前端设有一凸片 64，其后端两侧各设有一呈弯弧状的枢接部 65。

[0134] 该摇杆 70 设有相互呈垂直的第一杆 71 及第二杆 72，该第二杆 72 枢接于金属外座 90 前端的第一枢接部 94 且中段弯曲形成一凸杆 73，该第一杆 71 外端弯曲形成一手把 74，当第一杆 71 往后摇动时，该凸杆 73 可压制该金属上盖 60 的凸片 64 而使该金属上盖 60 压住该晶片 37。

[0135] 该多排端子 20 设于该塑胶座体 50 的多排端子槽 53，每一排端子 20 是连接一料带 10，该一排端子 20 组装于一排端子槽 53 后再将该料带 10 分离，该端子 20 由一端至另一端设有一弹动部 21、一固定部 23、及一接脚部 24，该固定部 23 较该弹动部 21 及接脚部 24 为宽借以定位于端子槽的第一壁 54，该固定部 23 下端连接该接脚部 24，固定部 23 上端中间连接该弹动部 21 且上端两侧各设有一连接凸部 217 与该料带 10 相连，该连接凸部 217 与该料带 10 相 连处设有切痕 25，借以易于折断而使端子 20 与料带 10 分离，该弹动部 21 为一弯折的弹臂，该弹动部 21 先延伸至第二壁 55 再回转向固定部 23 延伸并逾过该第一壁 54 至前排的端子槽 53 上方，该弹动部 21 接近末端设有一接点 28，该接点 28 为端子的最高点且凸出该端子槽 53 至该放置区 52，当该接点 28 受力时弹动部 21 可上下弹动，该接脚部 24 是由该通道 58 伸至该锡球槽 56，该接脚部 24 弯折挡扣该锡球 57 一侧。

[0136] 本实施例的特点在于该每一排端子是为一金属片对撕冲压所形成相同二排端子的其中一排，该二排端子的每一端子具有一对撕冲切部位相互无缝对接，该一排端子展开成平面时，其中一端子反向且反面接合于二相邻端子之间时，该一端子的对撕冲切部位与

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二相邻端子的对撕冲切部位无缝接合，本实施例的对撕冲切部位为固定部 23 和接脚部 24。

[0137] 该相邻端子 20 的接脚部间距 X 等于该固定部 23 宽度 Y，该一端子的固定部 23 的形状可反向且反面接合于二相邻端子的接脚部 24 间隔区域且无缝隙靠合该二相邻端子的接脚部 24。

[0138] 借由以上构造，由于相邻端子 20 的接脚部间距 X 等于该固定部 23 的宽度 Y，请参阅图 37 及图 38，在冲压制造上，二排间隔排列相连接的端子可对接排列由同一金属片冲压，即第一排端子 1 的各端子 20 的固定部 23 恰可对接于第二排端子 2 的相邻端子 20 的接脚部 24 间，如此一金属片冲压出二排端子，除了相连的料带外完全无废料形成，明显可节省材料，降低制造成本。

[0139] 请参阅图 39 及图 40，是为本实用新型第十二实施例，本实施例大致与第十一实施例相同，其差别在于本实施例端子 20 的弹动部 21 是连接于该固定部 23 上端一侧，该固定部 23 上端另一侧则设有一连接凸部 217 与该料带 10 相连。

[0140] 请参阅图 41 及图 42，是为本实用新型第十三实施例，本实施例大致与第十一实施例相同，其差别在于本实施例端子 20 的固定部 23 上端一侧设有一连接凸部 217 与该料带 10 相连，该弹动部 21 是连接于该连接凸部 217 一侧且转折与连接凸部 217 成 90 度夹角，另外，该端子 20 的固定部 23 设有宽度更为凸出的倒刺 218，该接脚部 23 设有宽度更小的凹部 219，该倒刺 218 可无缝隙接合该凹部 219。

[0141] 请参阅图 43 及图 44，是为本实用新型第十四实施例，其是为一 D-SUB 电连接器，其包括有：一塑胶座体 30、二排端子 20、及一金属外壳 40，其中：

[0142] 该塑胶座体 30 是为架高型式者，其内设有多个端子槽 31 及多个连接槽 32，该多数的端子槽 31 及多个连接槽 32 由上而下呈二排，其前端设有一凸部 310，该凸部 310 前端设有多个插孔 312 对应该多个连接槽 32，及设有凹陷的卡槽 36，另该每一端子槽 31 上端设有宽度较小的开口 33 与该连接槽 32 相通，使该开口的二侧形成抵缘 39 及设有凹陷的卡槽 36，另外，设有一后盖 38 盖于该塑胶座体 30 后方。

[0143] 该二排端子 20 对应组装于该塑胶座体的二排端子槽 31，该每一端子 20 由一端至另一端依序设有一弹动部 21、一固定部 23 及一接脚部 24，该弹动部 21 为单一力臂且板面呈水平并可弹动，该弹动部 21 接近末端的板面刺破冲压凸出一宽度较窄的接点 215，该弹动部 21 末端反折设有一与该接点 215 反向凸出的辅助力臂 220，该弹动部 21 弹性抵于该抵缘 39，该接点 215 凸出至该连接槽 32，该辅助力臂 220 抵于该端子槽 31 的一壁面，该固定部 23 设有第一、二端，第一端连接弹动部 21，第二端连接接脚部 24，

[0144] 该固定部 23 与该卡槽 36 卡定，该固定部 23 弯折成二垂直板面，纵向板面向下延伸并连接该接脚部 24，该接脚部 24 的板面弯折使截面呈 ㄇ 形状并伸出该塑胶座体。

[0145] 该金属外壳 40 套合于塑胶座体 30 前端，其包覆该凸部 310 的周边而使凸部前面的插孔 312 露出。

[0146] 请参阅图 45，借由以上构造，当公接头 68 插入时，公接头 68 的二排端子 69 插入该二排连接槽 32，该端子 69 挤压该接点 215，使该弹动部 21 向下弹动，同时该辅助力臂 220 亦被压缩，如此借由该弹动部 21 的弹性及辅助力臂 220 的弹性而能提供该公接头 68 的端子 69 与接点 215 良好的弹性接触。

[0147] 本实施例的特点在于该每一排端子 20 是为一金属片对撕冲压所形成相同二排端

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子的其中一排，该二排端子的每一端子 20 具有一对撕冲切部位相互无缝对接，该一排端子 20 展开成平面时，其中一端子 20 反向且反面接合于二相邻端子之间时，该一端子的对撕冲切部位与二相邻端子的对撕冲切部位无缝接合，本实施例的对撕冲切部位为固定部 23，一排端子中二相邻端子的固定部 23 由第一端至第二端依序的间距等于其中一端子的固定部 23 由第二端至第一端依序的宽度，本实施例的固定部 23 由第一端至第二端 为同一宽度，该一排端子 20 展开成平面时，其中一端子 20 反向且反面接合于二相邻端子之间时，该一端子的固定部 23 与二相邻端子的固定部 23 无缝接合。

[0148] 本实施例的端子 20 在冲压制造上如图 46 所示，二排间隔排列相连接的端子是由一片金属片对接排列冲压而成，由于第一排端子 1 的各端子 20 的固定部 23 无缝隙对接于第二排端子 2 的两相邻端子 20 的固定部 23 之间，如此该金属片先对撕成第一、二排端子 1、2，再拉开后弯折固定部 23。

[0149] 请参阅图 47，是为本实用新型第十五实施例，其大致与第十四实施例相同，其差异在于本实施例的塑胶座体较第十四实施例为低，故固定部 23 及接脚部 24 均较短，本实施例的对撕冲切部位亦为固定部 23，该固定部 23 为均一宽度，该一排端子 20 展开成平面时，其中一端子 20 反向且反面接合于二相邻端子之间时，该一端子的固定部 23 与二相邻端子的固定部 23 无缝接合。本实施例端子 20 在冲压制造上，二排间隔排列相连接的端子是由一片金属片对接排列冲压而成，由于第一排端子 1 的各端子 20 的固定部 23 无缝隙对接于第二排端子 2 的两相邻端子 20 的固定部 23 之间，如此该金属片先对撕成第一、二排端子 1、2，再拉开后弯折固定部 23。

[0150] 请参阅图 48，是为本实用新型第十六实施例，其大致与第十五实施例相同，本实施例的一排端子 20 是连接一料带 10，其为一金属片对撕冲压所形成相同二排端子的其中一排端子，每一端子 20 由一端至另一端设有一弹动部 21、一固定部 23、及一接脚部 24；该弹动部 21 的板面冲压凸出一接点 215，该接脚部 24 的两侧各无缝接合一连接片 225，该二连接片 225 是一端连接料带，另一端连接于固定部 23 一端，并设有折痕以方便折断。

[0151] 本实施例特点同样在于该每一排端子 20 是为一金属片对撕冲压所形成相同二排端子的其中一排，该二排端子的每一端子 20 具有一对撕冲切部位相互无缝对接，该一排端子 20 展开成平面时，其中一端子 20 反向且反面接合于二相邻端子之间时，该一端子的对撕冲切部位与二相邻端子的对撕冲切部位无缝接合，本实施例的对撕冲切部位为弹动部 21、固定部 23 和接脚部 24 两侧的连接片 225，该一排端子 20 展开成平面时，其中一端子 20 反向且反面接合于二相邻端子之间时，该一端子的弹动部 21 及固定部 23 和二相邻端子的接脚部 24 两侧的连接片 225 无缝接合。

[0152] 本实施例端子 20 在冲压制造上，二排间隔排列相连接的端子是由一片 金属片对接排列冲压而成，由于第一排端子 1 的各端子 20 的弹动部 21 和固定部 23 无缝隙对接于第二排端子 2 的两相邻端子 20 的接脚部 24 两侧的连接片 225，如此该金属片先对撕成第一、二排端子 1、2，再拉开后弯折固定部 23。

[0153] 请参阅图 49 及图 50，是为本实用新型第十七实施例，其是为一直立式 D-SUB 电连接器，其包括有：一塑胶座体 30、三排端子 20、及一金属外壳 40，其中：

[0154] 该塑胶座体 30 是直立式者，其内设有多个端子槽 31 及多个连接槽 32，该多数的端子槽 31 及多个连接槽 32 呈三排，其上端设有一凸部 310，该凸部 310 前端设有多个插孔

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312 对应该多个连接槽 32，该每一端子槽 31 如同第十四实施例设有宽度较小的开口 33 与该连接槽 32 相通，该开口的二侧形成抵缘 39。

[0155] 该三排端子 20 对应组装于该塑胶座体的三排端子槽 31，该每一端子 20 由一端至另一端依序设有一弹动部 21、一延伸部 22、一固定部 23 及一接脚部 24，该弹动部 21 为单一力臂且板面呈纵向并可弹动，该弹动部 21 接近末端的板面刺破冲压凸出一宽度较窄的接点 215，该弹动部 21 弹性抵于该抵缘 39，该接点 215 凸出至该连接槽 32，该固定部 23 及延伸部 22 与该端子槽 31 卡定，该接脚部 24 伸出该塑胶座体 30。

[0156] 该金属外壳 40 套合于塑胶座体 30 前端，其包覆该凸部 310 的周边而使凸部上面的插孔 312 露出。

[0157] 请参阅图 51，本实施例的一排端子是为一金属片对撕冲压所形成相同二排端子的其中一排端子，其包括有：一料带 10 及多个端子 20，其中：

[0158] 该料带 10，其上设有多个间隔排列的长形孔 11。

[0159] 该多个端子 20 呈间隔排列连接于该料带 10，该弹动部 21 设有第一、二端，该延伸部 22 设有第一、二端，该固定部 23 设有第一、二端，该弹动部 21 的第一端为端子的尾端，该弹动部 21 的第二端连该接延伸部 22 第一端，该延伸部 22 第二端连接该固定部 23 的第一端，该固定部 23 的第二端连接该接脚 24 及该料带 10，该固定部 23 宽度较弹动部 21 宽度为宽，本实施例的端子的弹动部 21 及固定部 23 由第一端至第二端呈同一宽度，而该延伸部 22 由第一端至第二端则呈凸凹间隔形状。

[0160] 本实施例的端子 20 的构造大致与第一实施例相同，同样是该两相邻端 子的弹动部 21 由第一端至第二端依序的间距等于该固定部 23 由第二端至第一端依序的宽度，且该两相邻端子的延伸部由第一端至第二端依序的间距等于该延伸部由第二端至第一端依序的宽度，该一排端子展开成平面时，该固定部 23 的形状可反向且反面无缝隙接合于两相邻端子的弹动部 21 间隔区域，该延伸部 22 的形状可反向无缝隙接合于两相邻端子的延伸部 22 间隔区域。

[0161] 借由以上构造，端子在冲压制造上，二排间隔排列相连接的端子可由一片金属片对接排列冲压，由于第一排端子 1 的各端子 20 的延伸部 22 及固定部 23 分别无缝隙对接于第二排端子 2 的两相邻端子 20 的延伸部 22 及弹动部 21 之间，如此该金属片先对撕成第一、二排端子 1、2，再拉开后弯折冲压该弹动部 21。

[0162] 请参阅图 52，是为本实用新型第十八实施例，本实施例的端子 20 的构造大致与第十七实施例相同，其差异仅在于本实施例的第一排端子 1 的端子 20 的延伸部 22 与第一排端子 2 的端子 20 的延伸部 22 对接时形成部份间隙 226。

[0163] 在较佳实施例的详细说明中所提出的具体的实施例仅为了易于说明本实用新型的技术内容，而并非将本实用新型狭义地限制于该实施例，在不超出本实用新型的精神及以下申请专利范围的情况，可作种种变化实施。

Samsung, EX1002, p. 2549

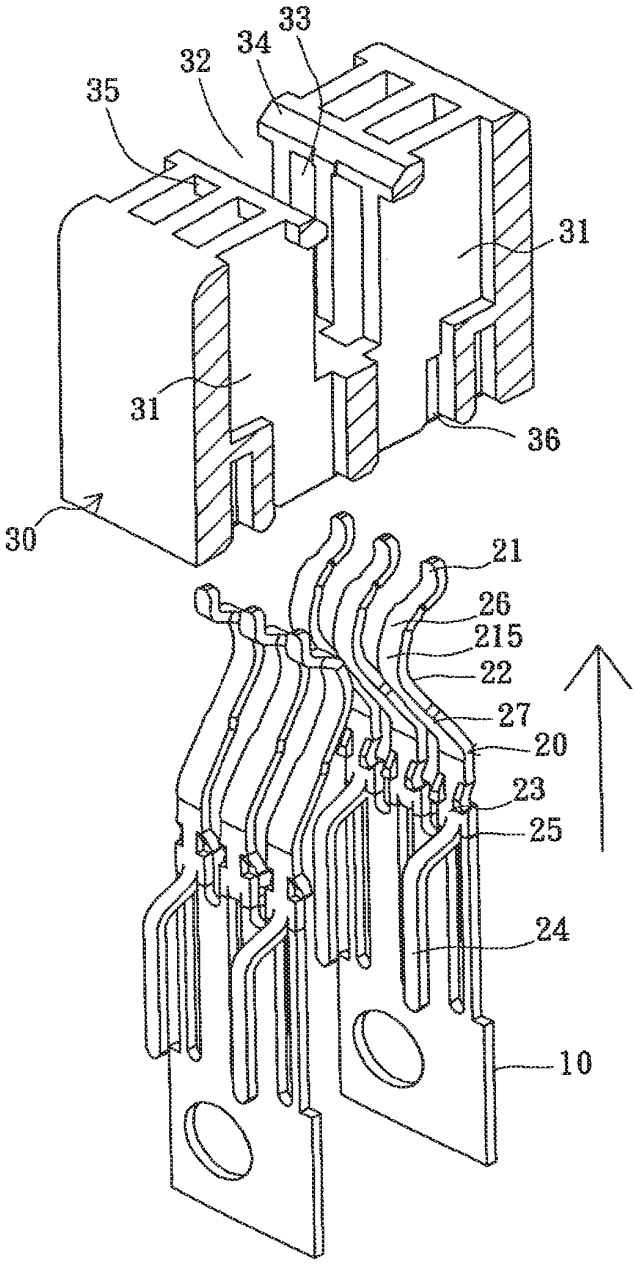


图 1

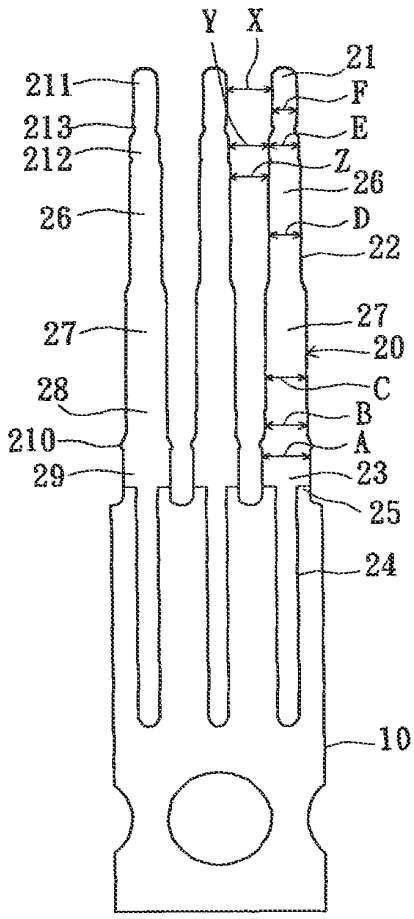


图 2

Samsung, EX1002, p. 2550

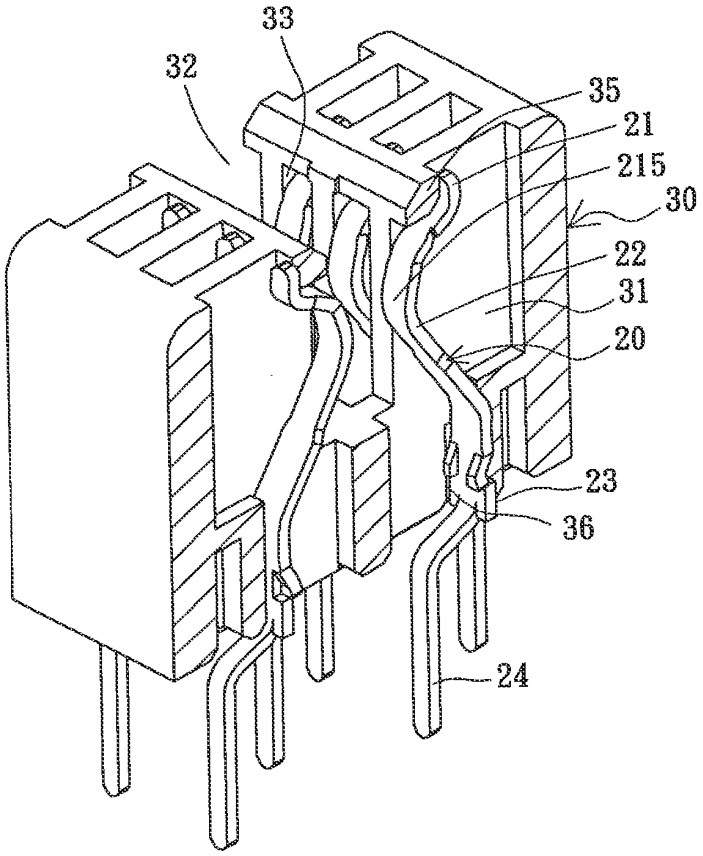


图 3

Samsung, EX1002, p. 2551

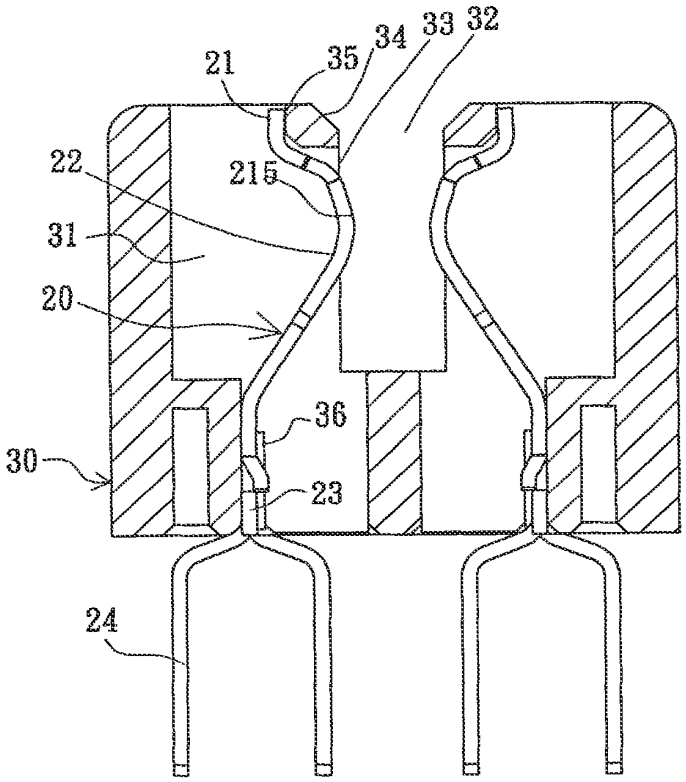


图 4

Samsung, EX1002, p. 2552

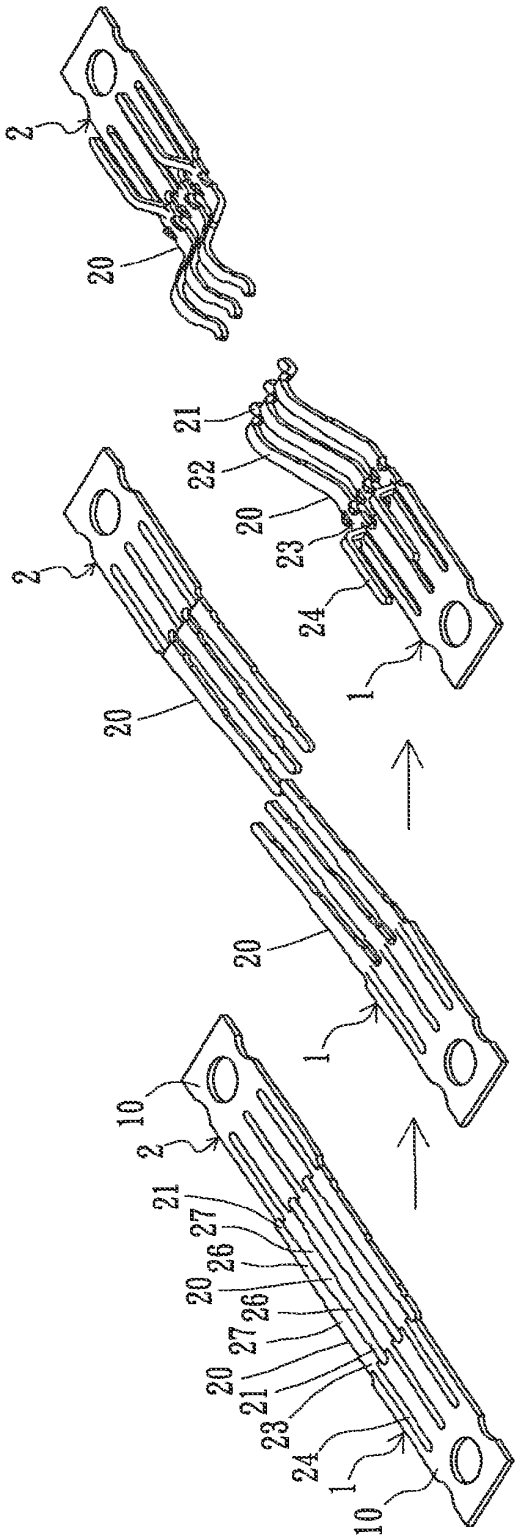


图 5

Samsung, EX1002, p. 2553

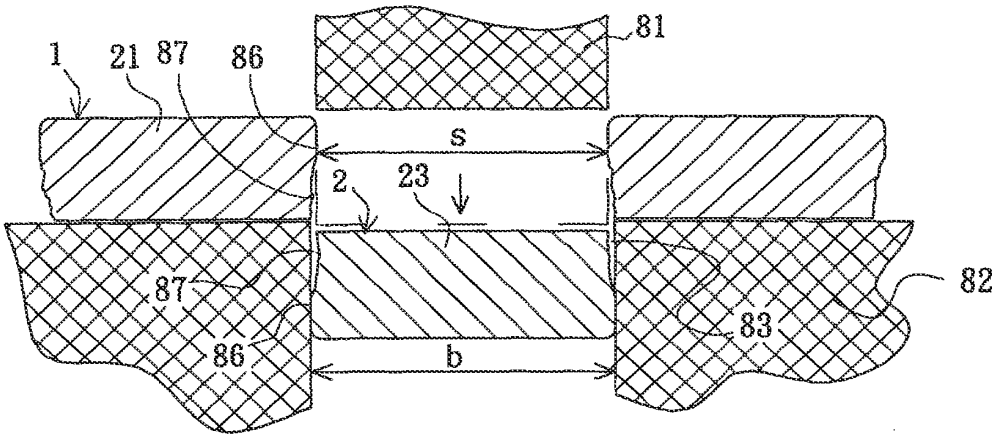


图 6

Samsung, EX1002, p. 2554

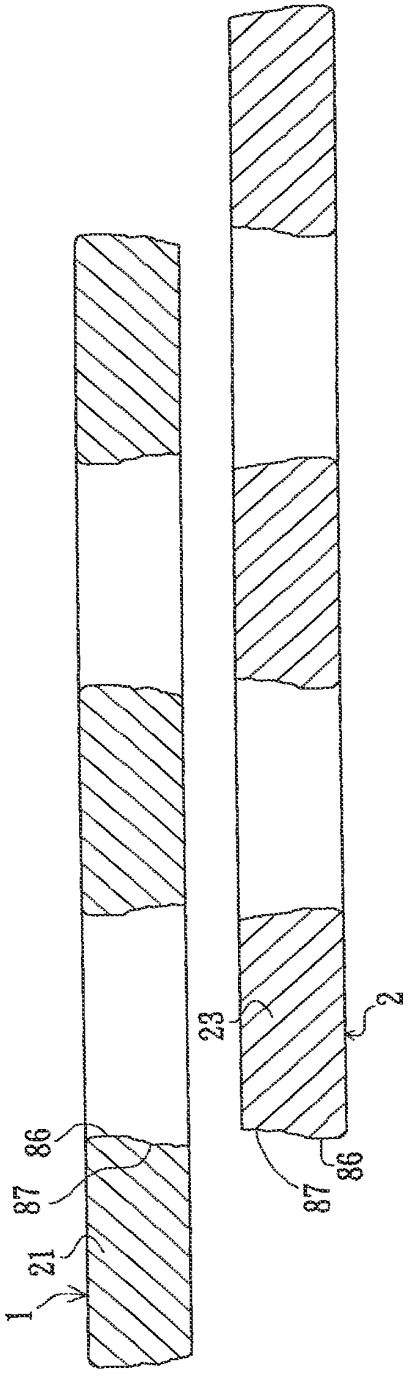


图 7

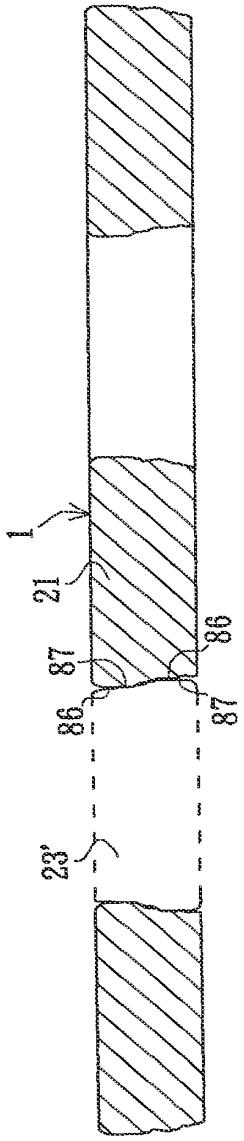


图 8

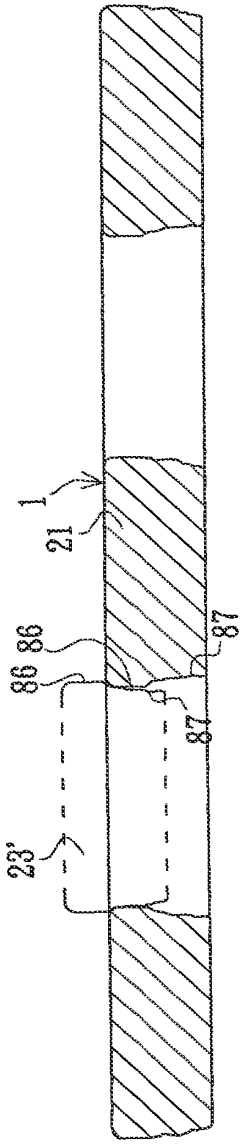


图 9

Samsung, EX1002, p. 2555

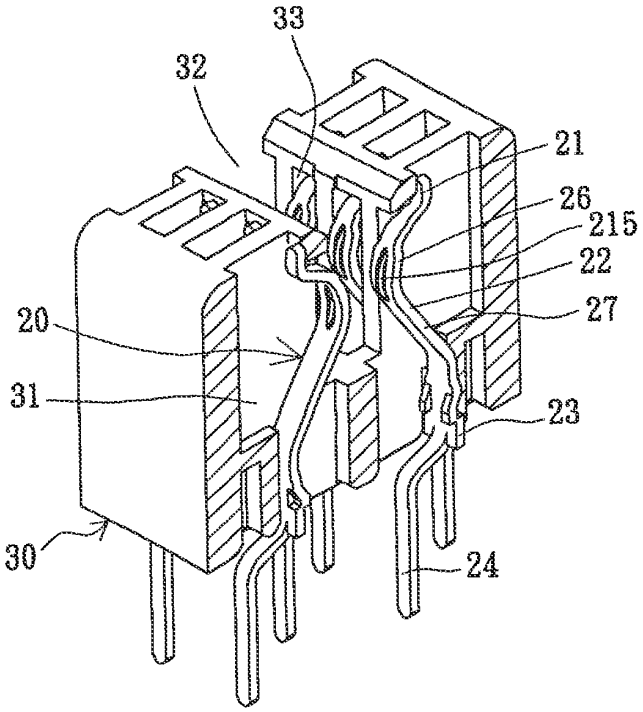


图 10

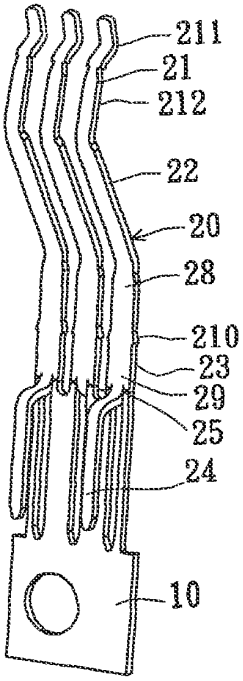


图 11

Samsung, EX1002, p. 2556

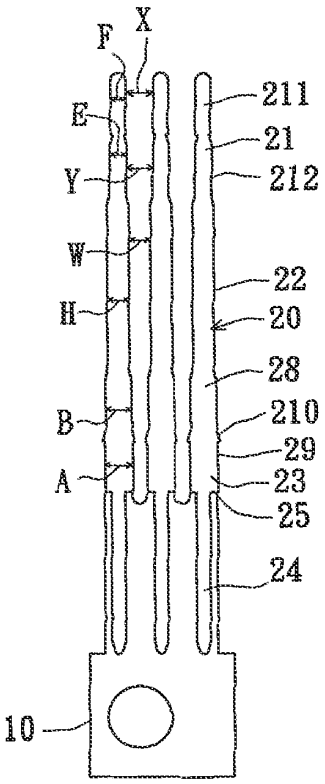


图 12

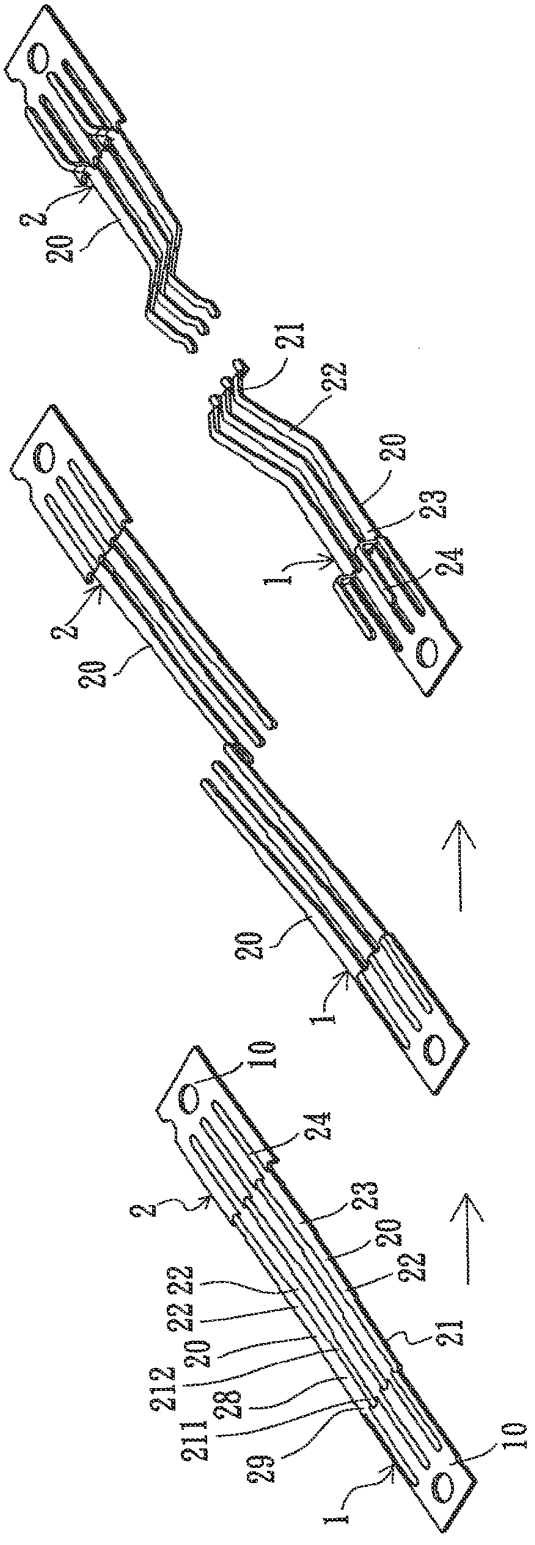


图 13

Samsung, EX1002, p. 2557

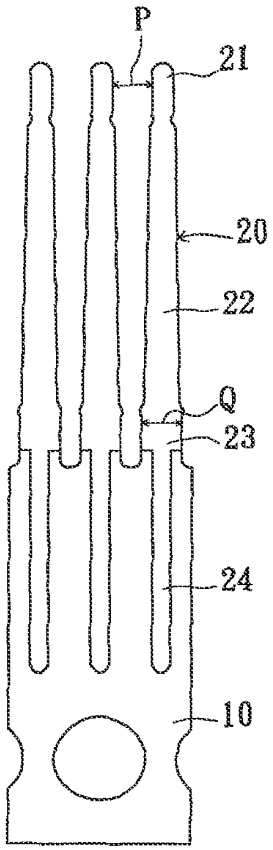


图 14

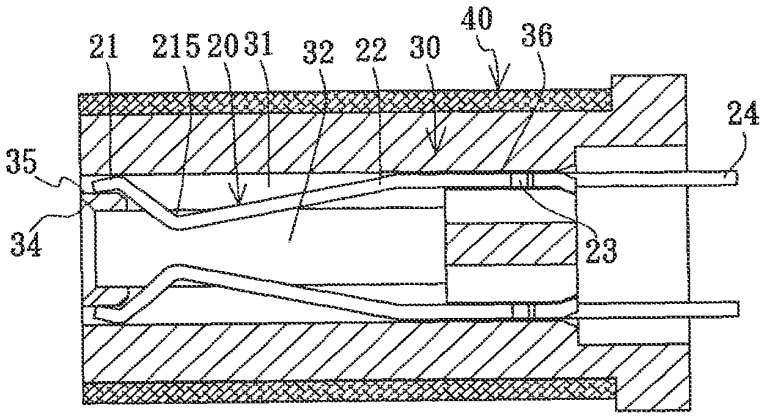


图 15

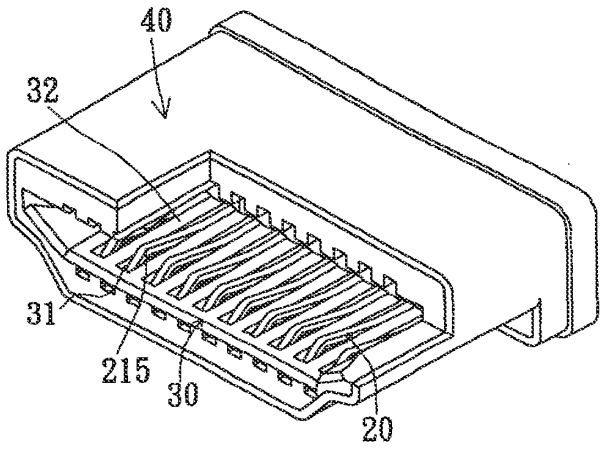


图 16

Samsung, EX1002, p. 2558

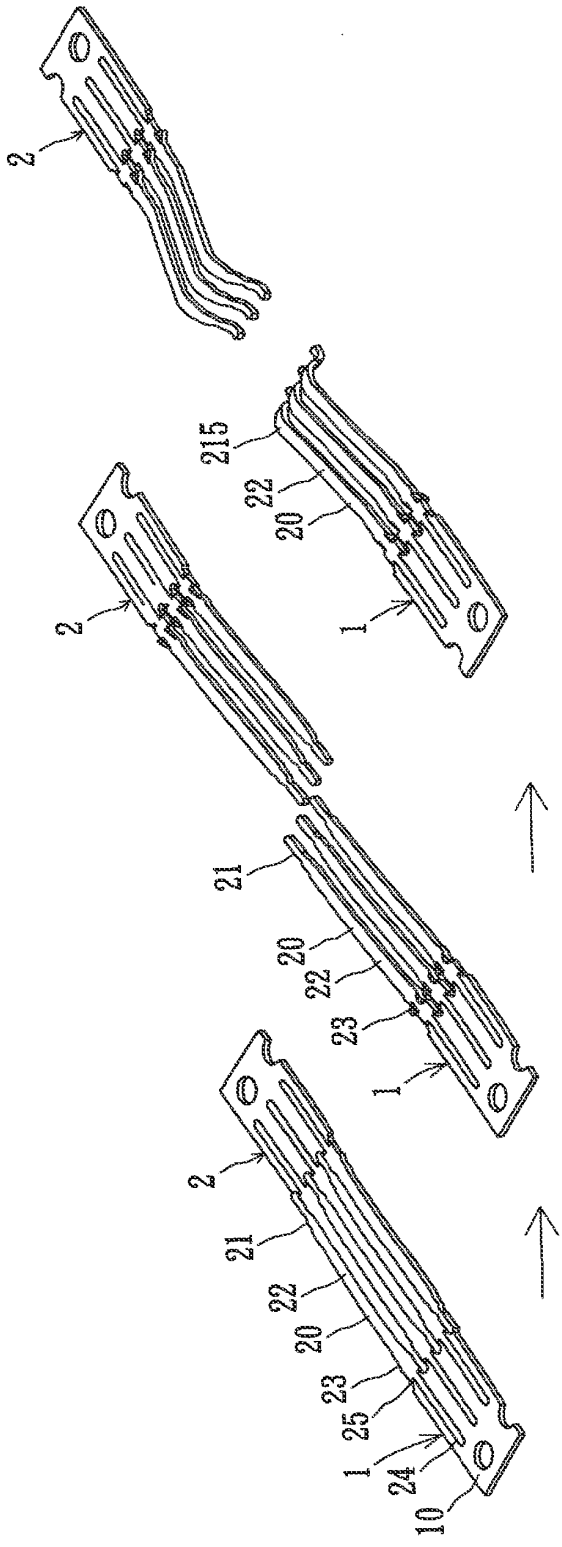


图 17

Samsung, EX1002, p. 2559

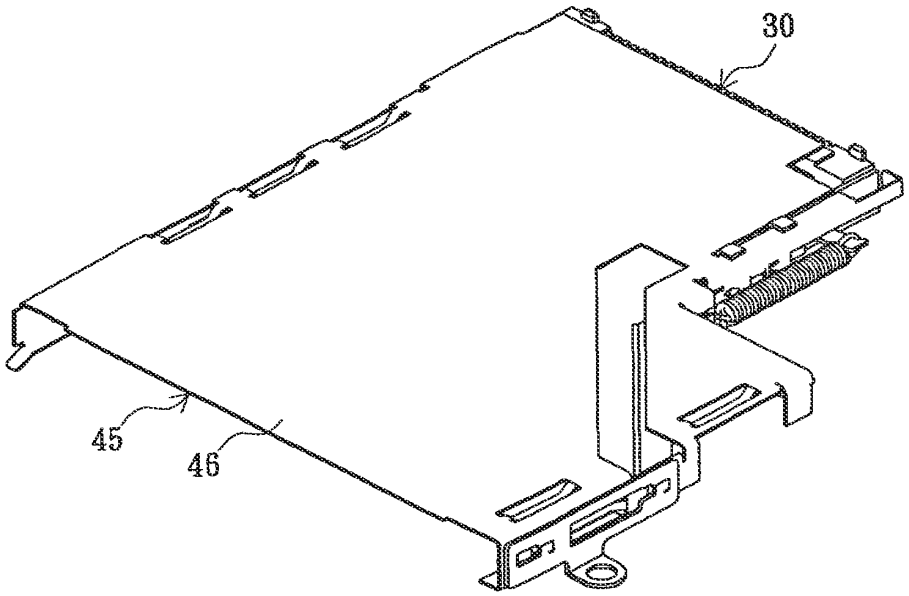


图 18

Samsung, EX1002, p. 2560

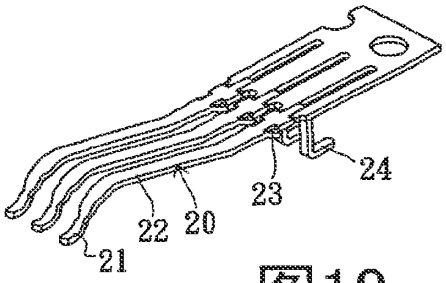
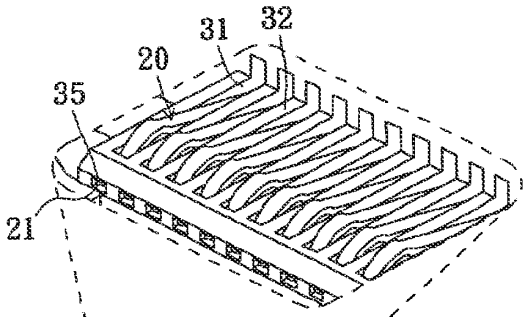


图19



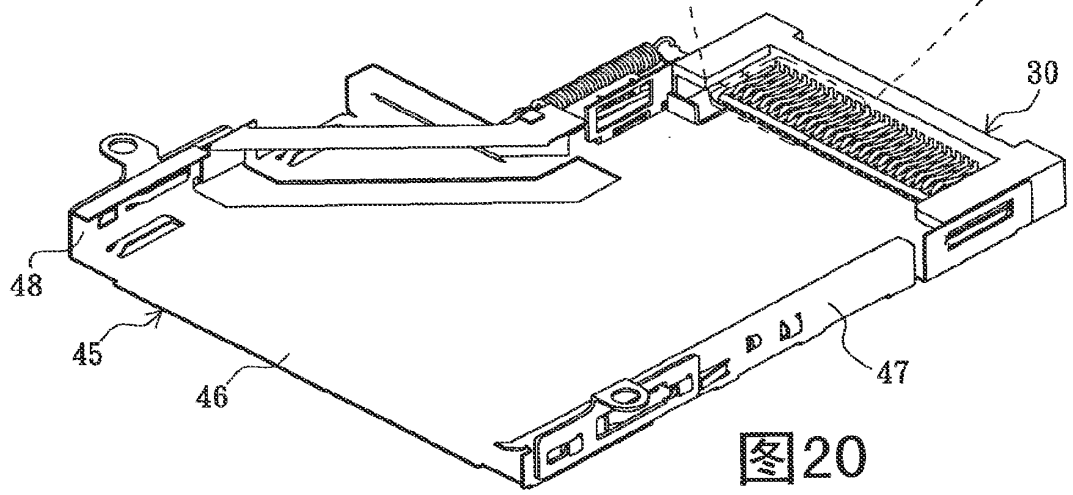


图20

Samsung, EX1002, p. 2561

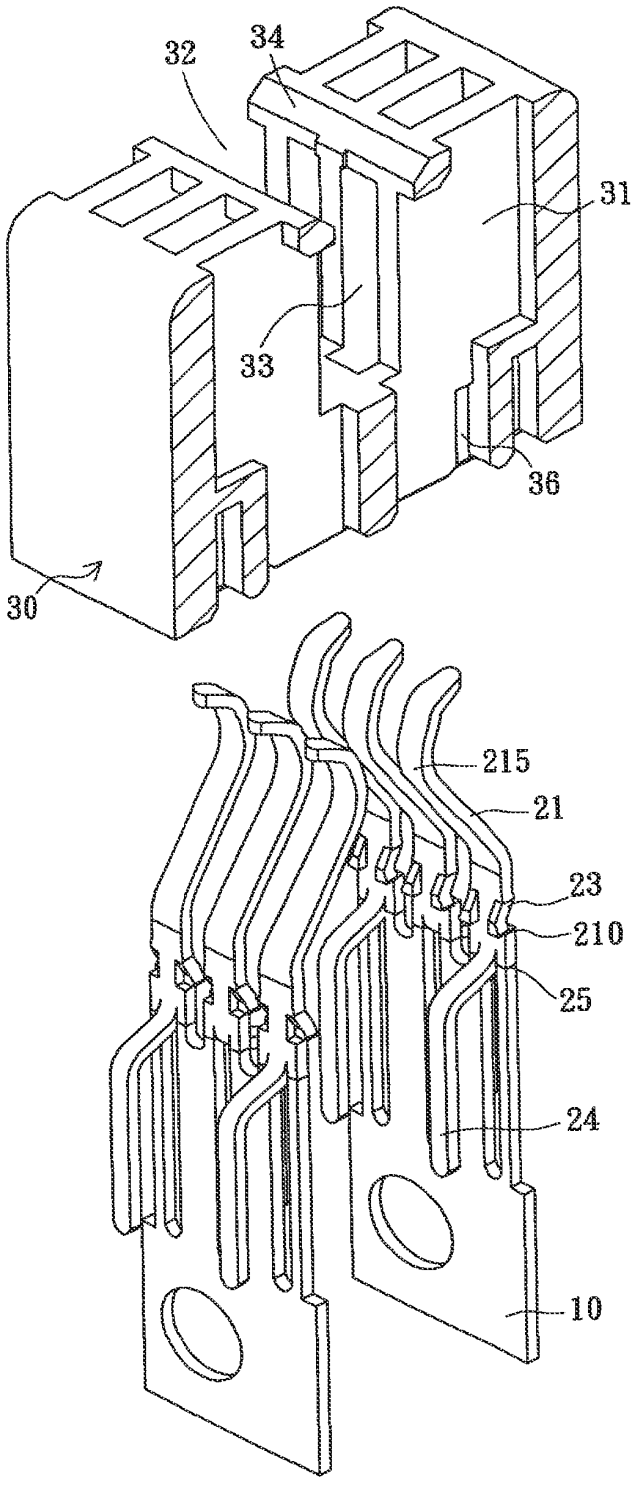


图 21

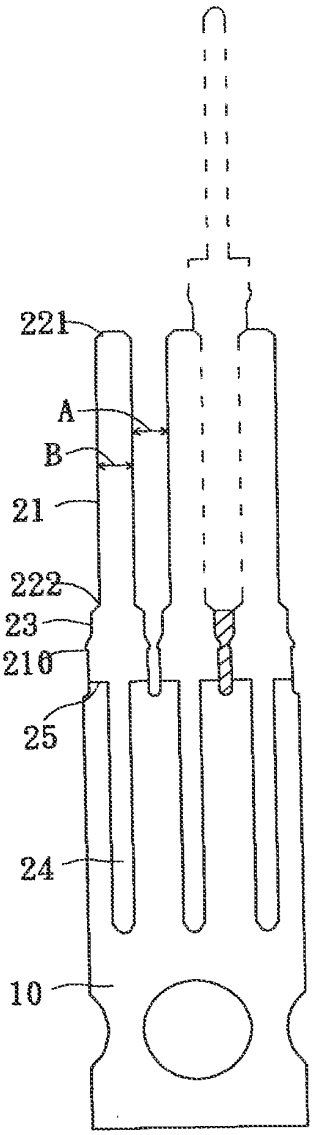


图 22

Samsung, EX1002, p. 2562

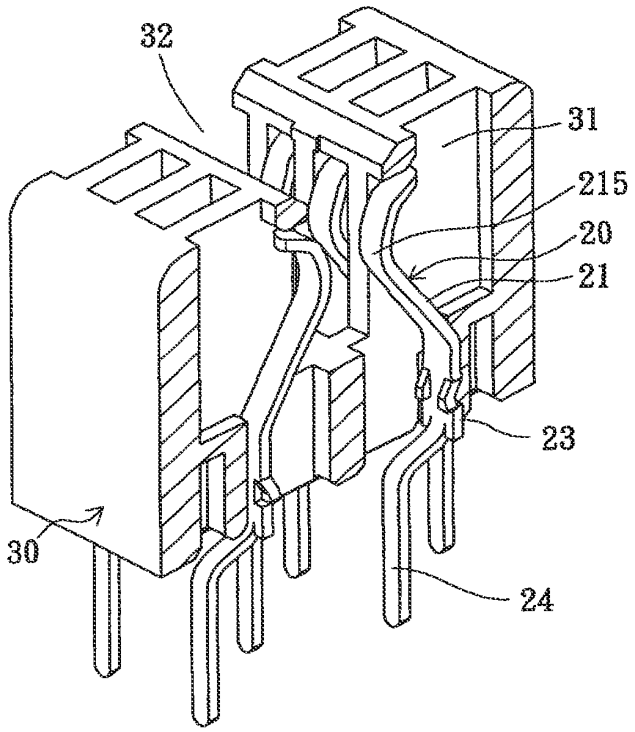


图 23

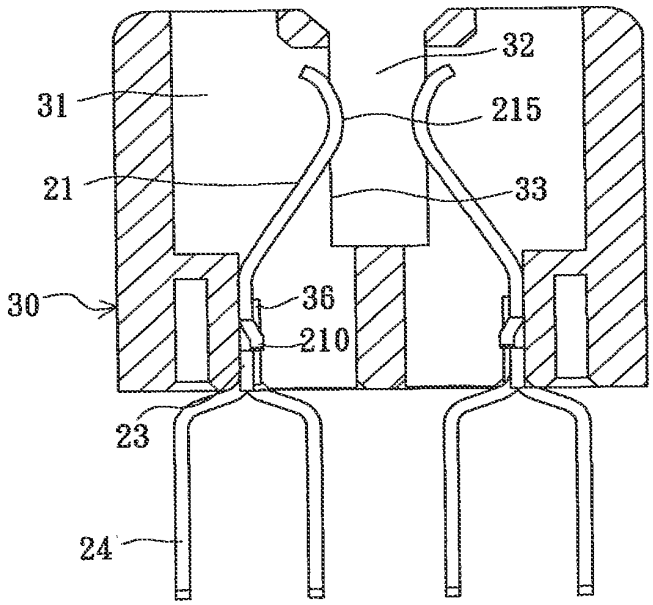


图 24

32

Samsung, EX1002, p. 2563

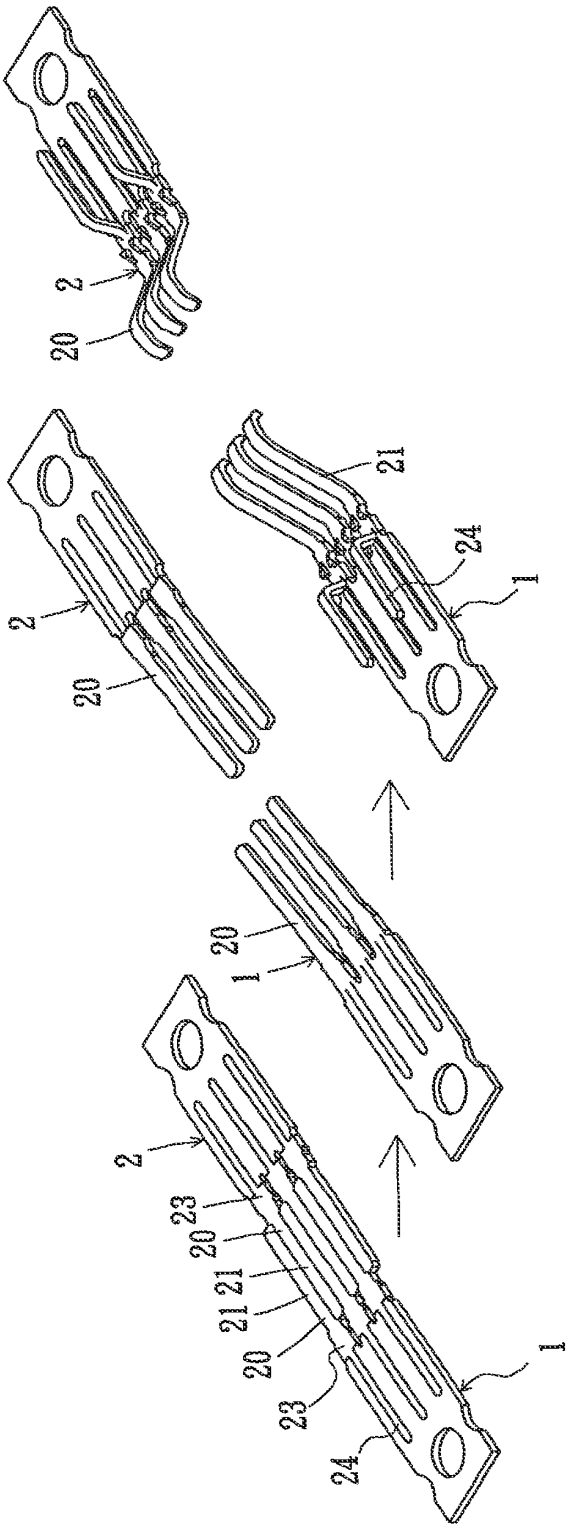


图 25

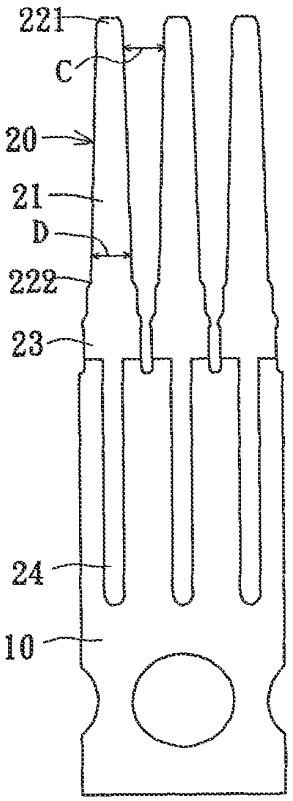


图 26

Samsung, EX1002, p. 2564

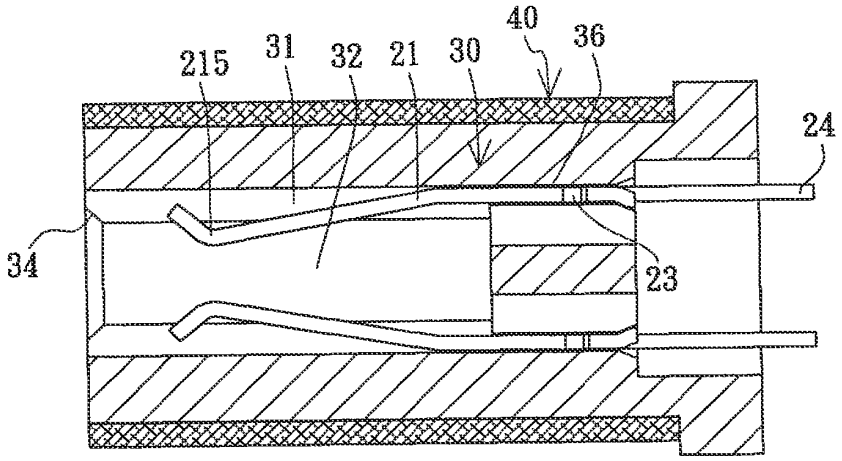


图 27

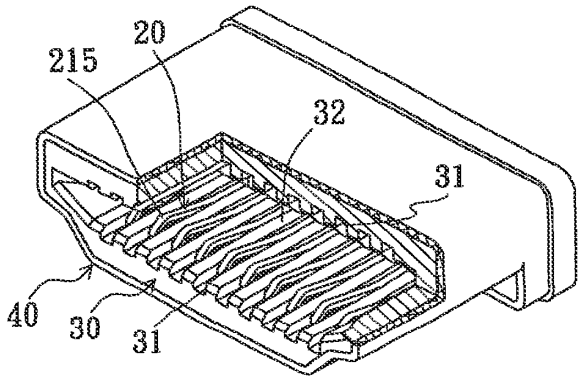


图 28

Samsung, EX1002, p. 2565

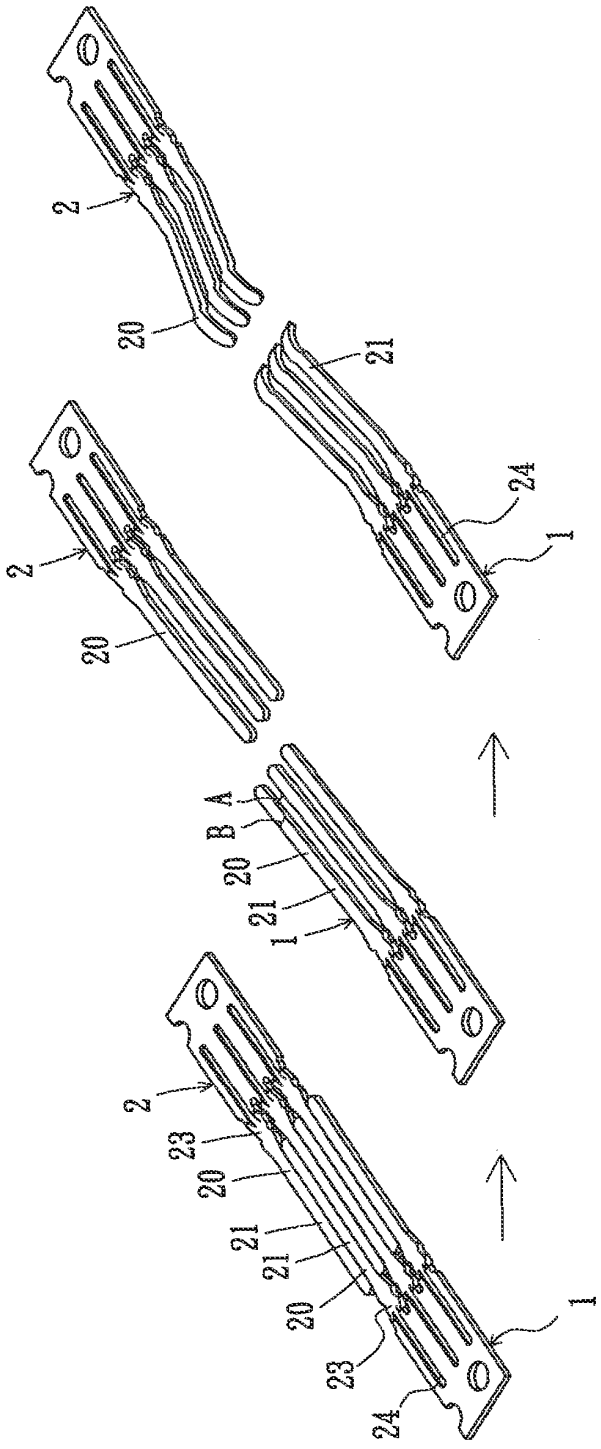


图 29

Samsung, EX1002, p. 2566

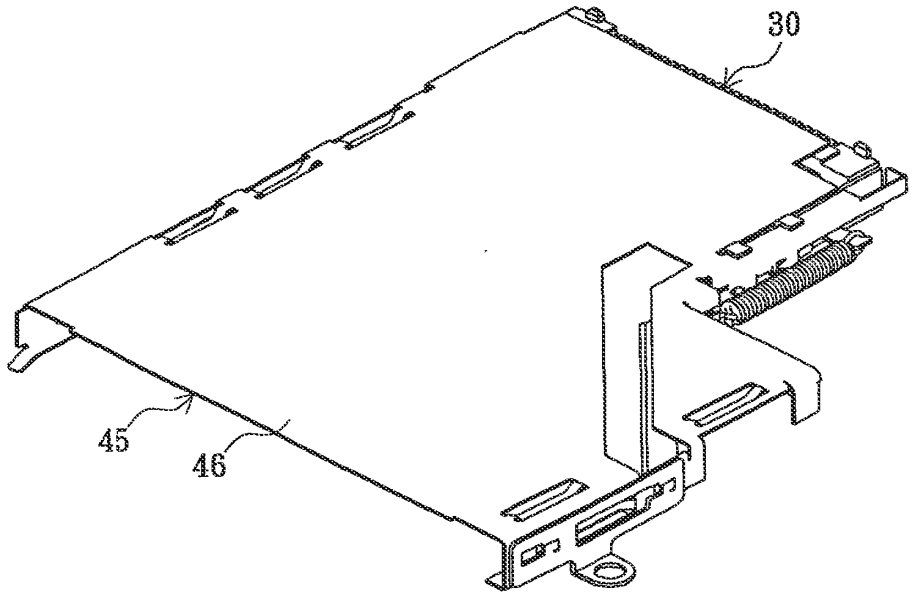


图 30

Samsung, EX1002, p. 2567

图31

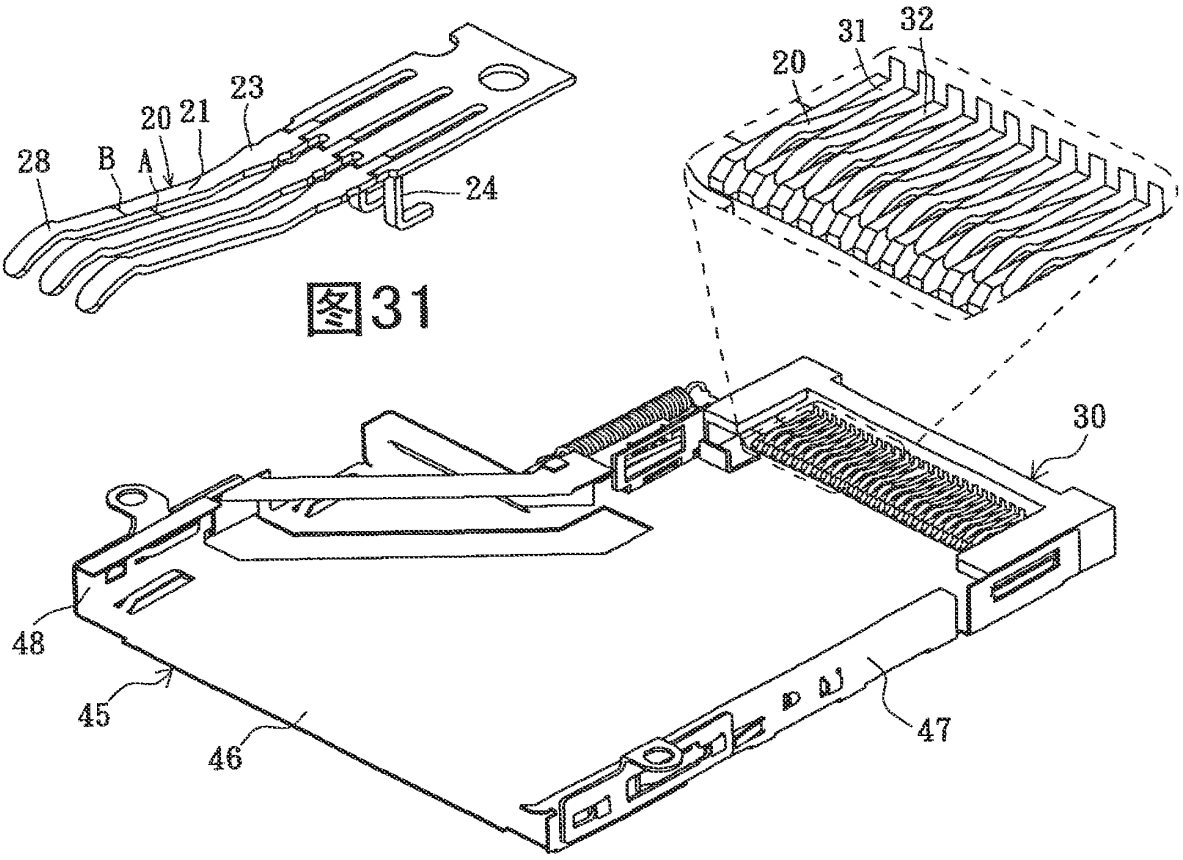


图 32

Samsung, EX1002, p. 2568

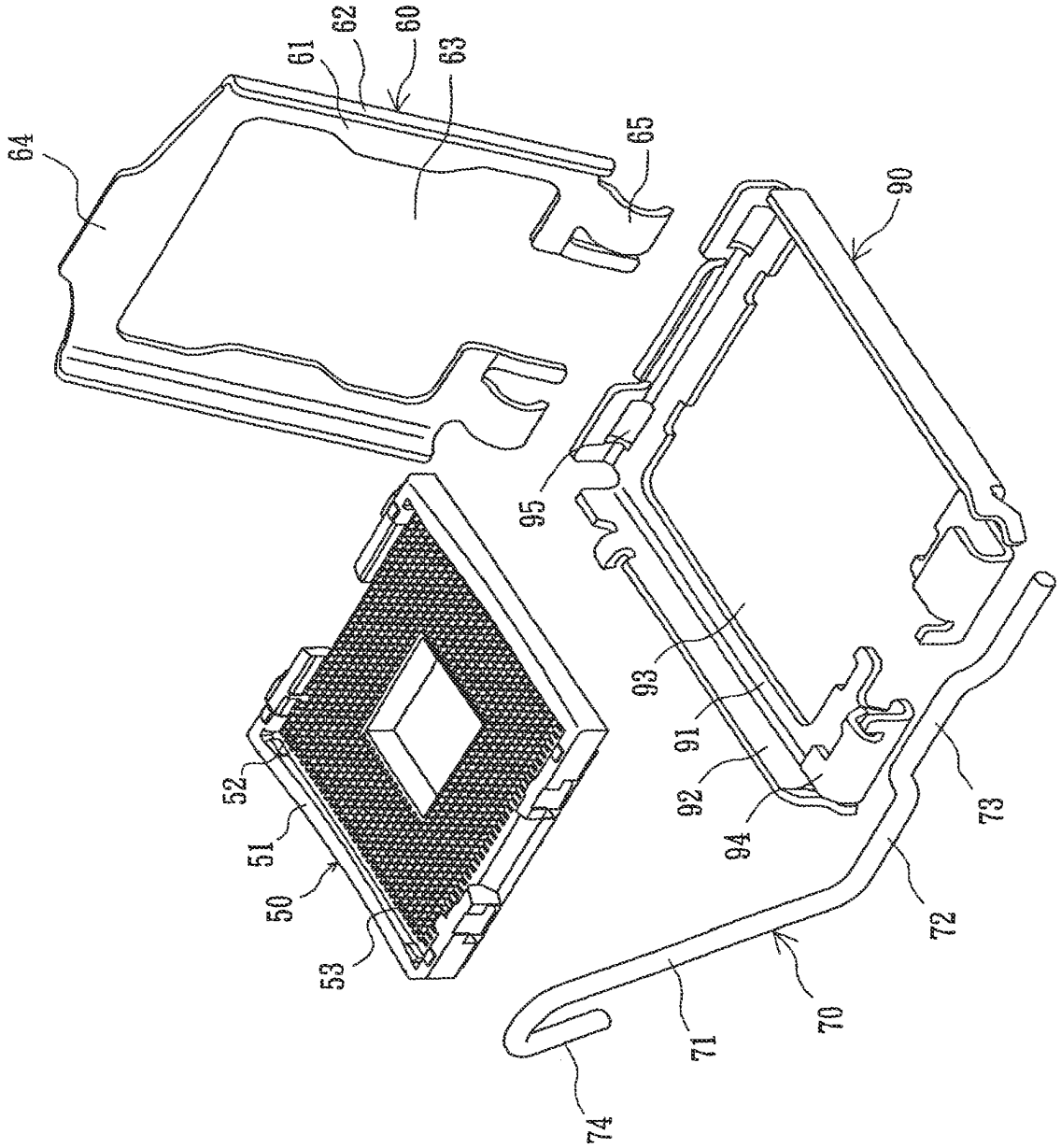


图 33

Samsung, EX1002, p. 2569

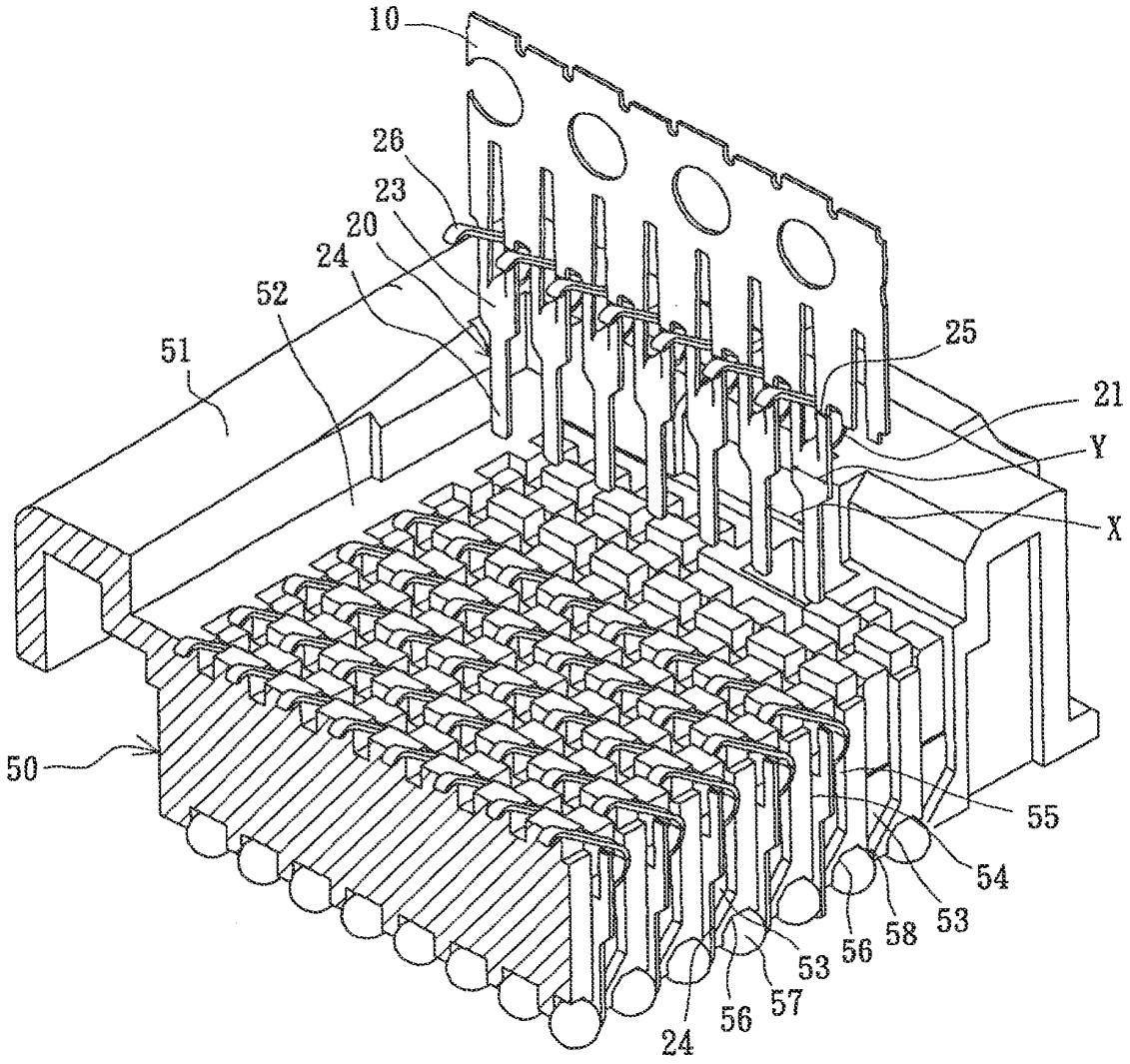


图 34

Samsung, EX1002, p. 2570

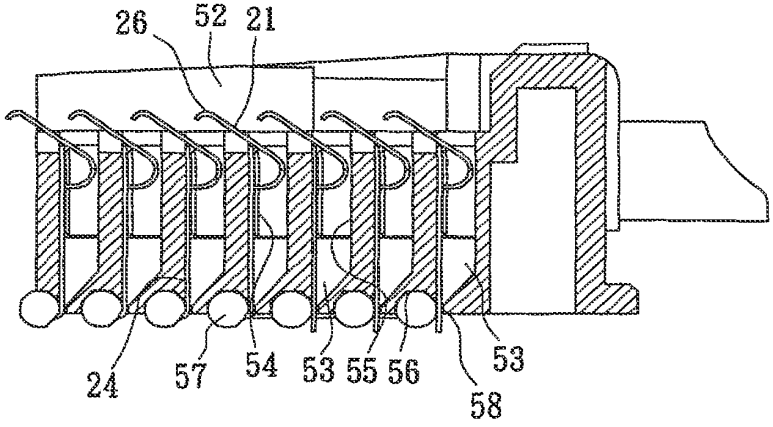


图 35

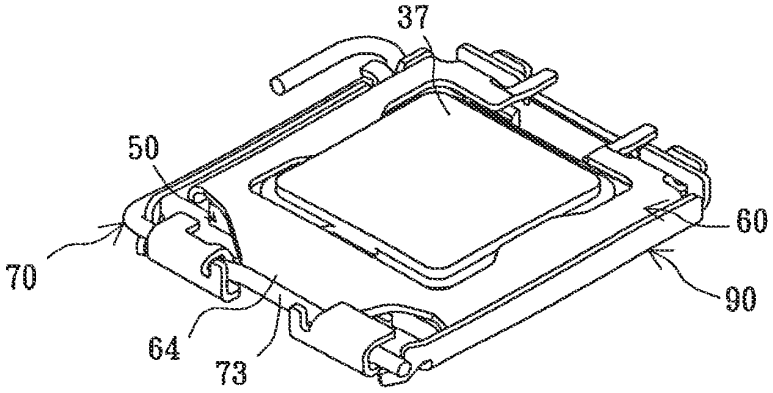


图 36

Samsung, EX1002, p. 2571

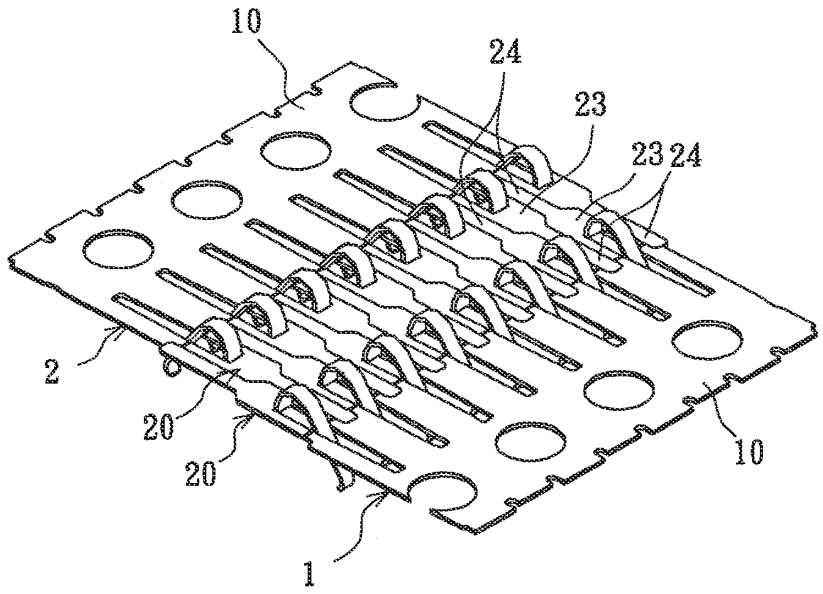


图 37

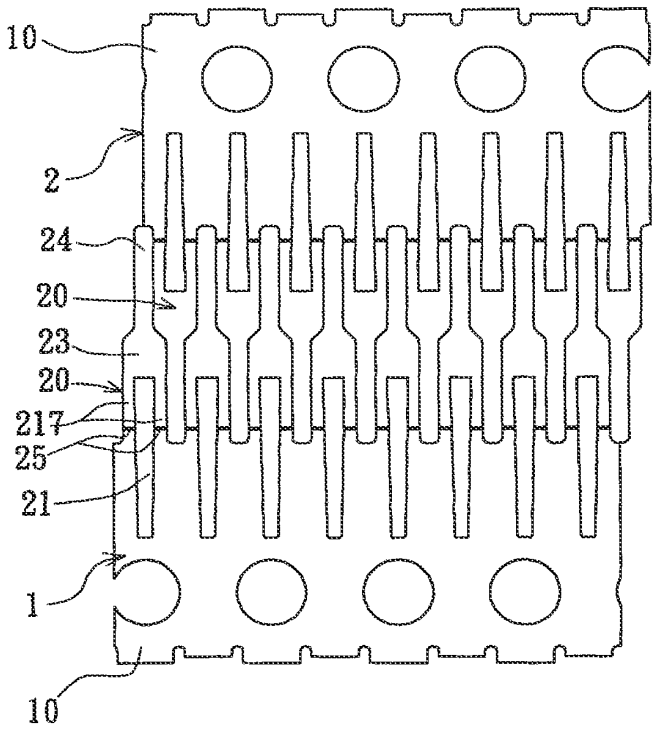


图 38

Samsung, EX1002, p. 2572

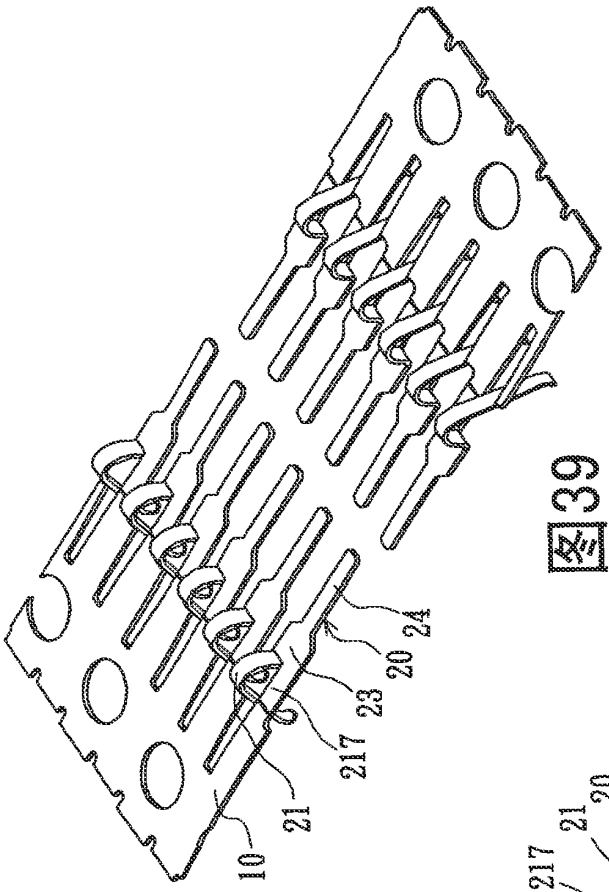


图39

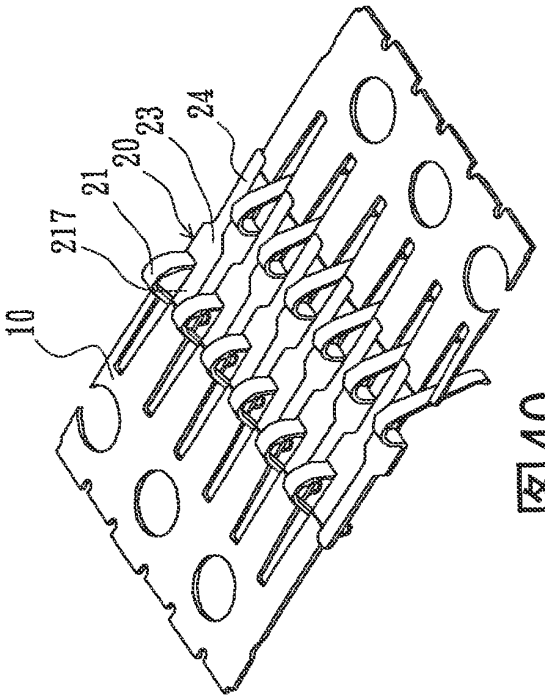


图40

Samsung, EX1002, p. 2573

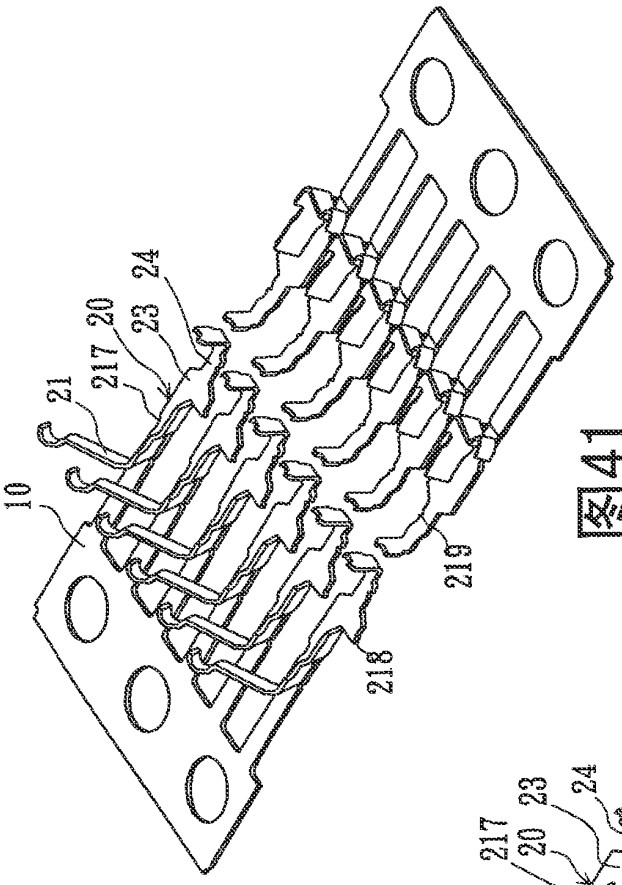


图41

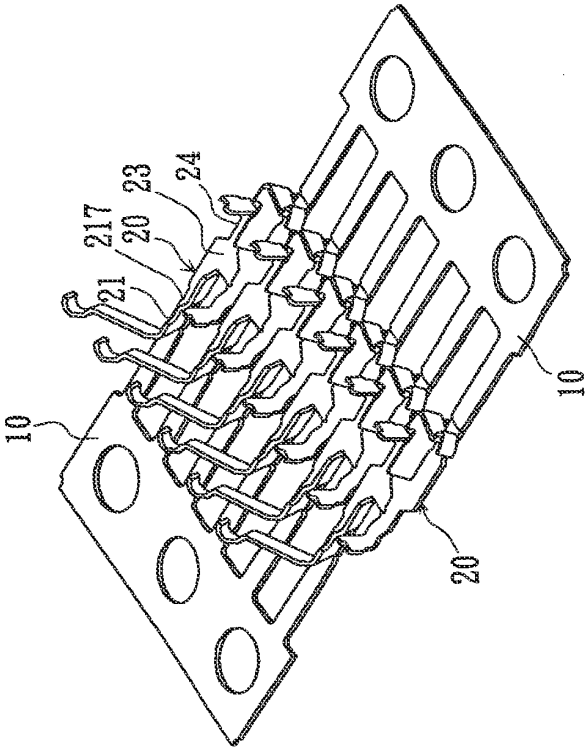


图42

Samsung, EX1002, p. 2574

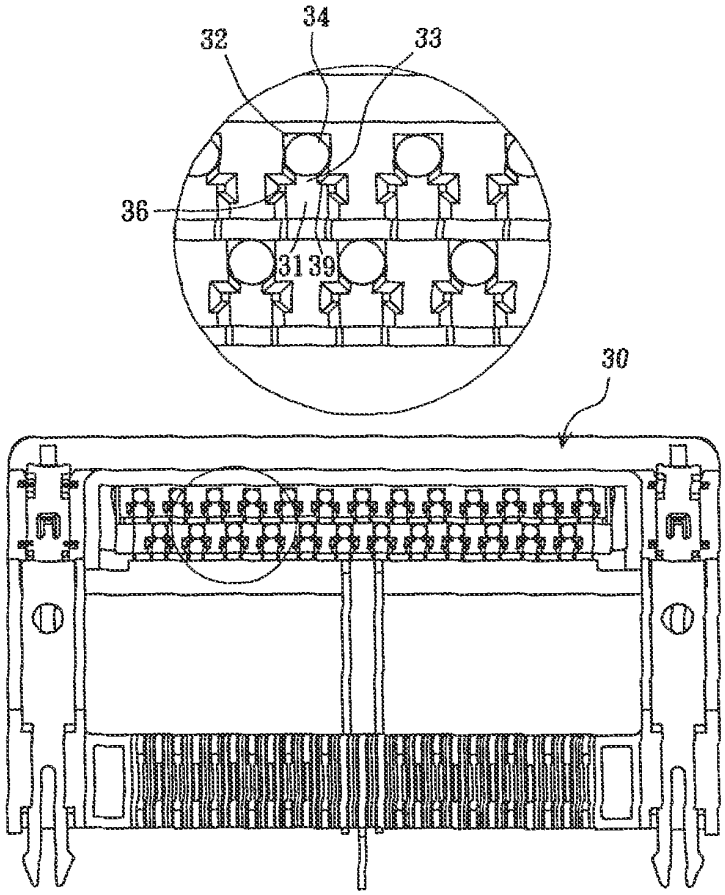


图 44

Samsung, EX1002, p. 2575

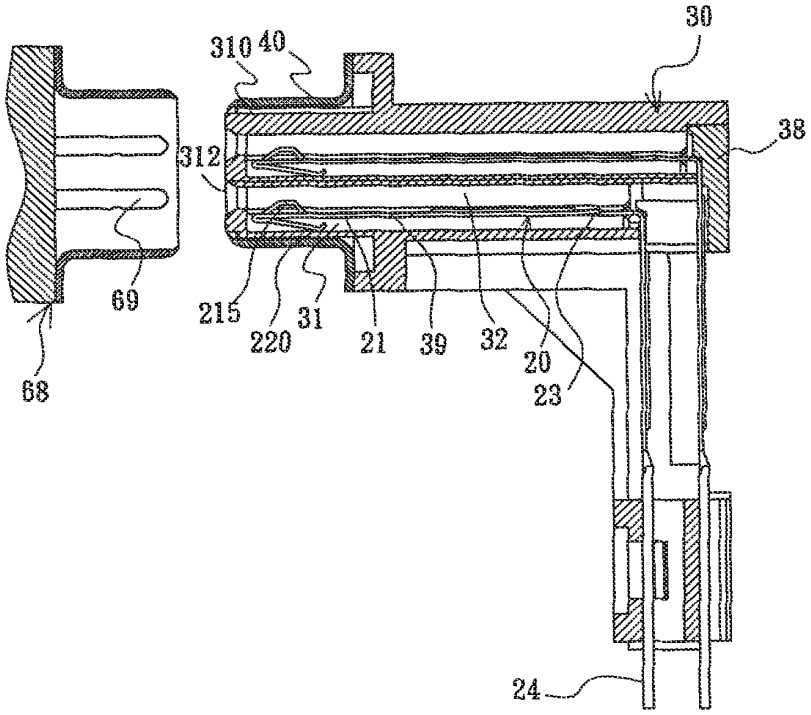


图 43

Samsung, EX1002, p. 2576

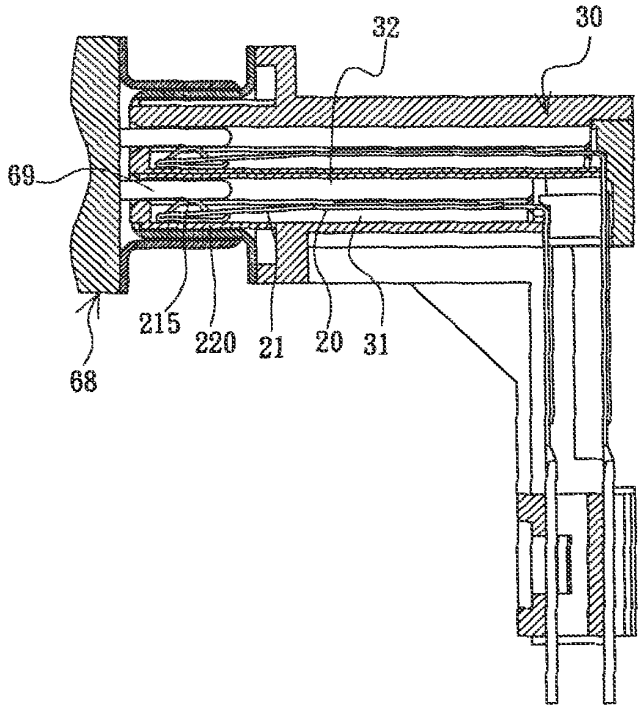


图 45

Samsung, EX1002, p. 2577

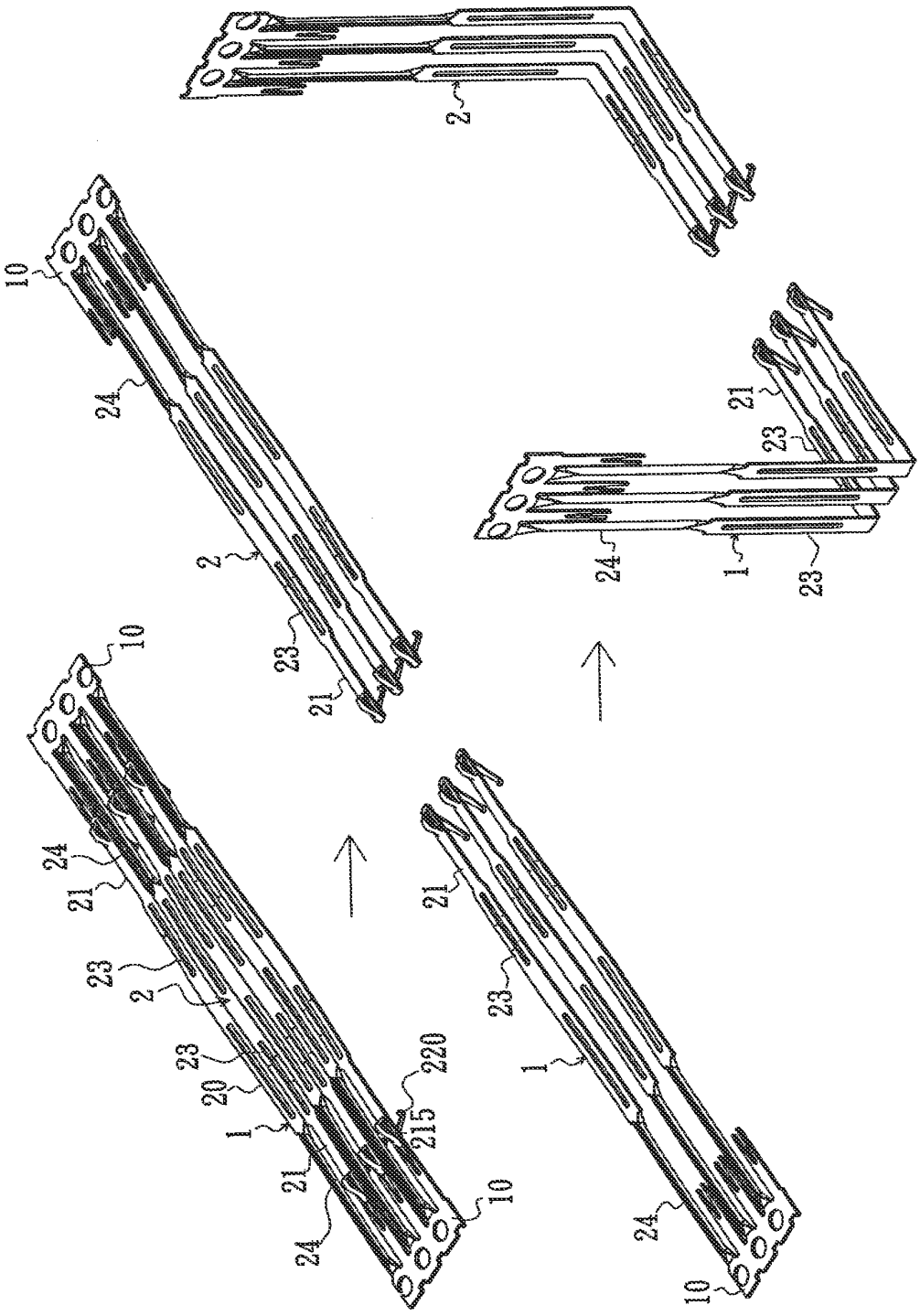


图 46

Samsung, EX1002, p. 2578

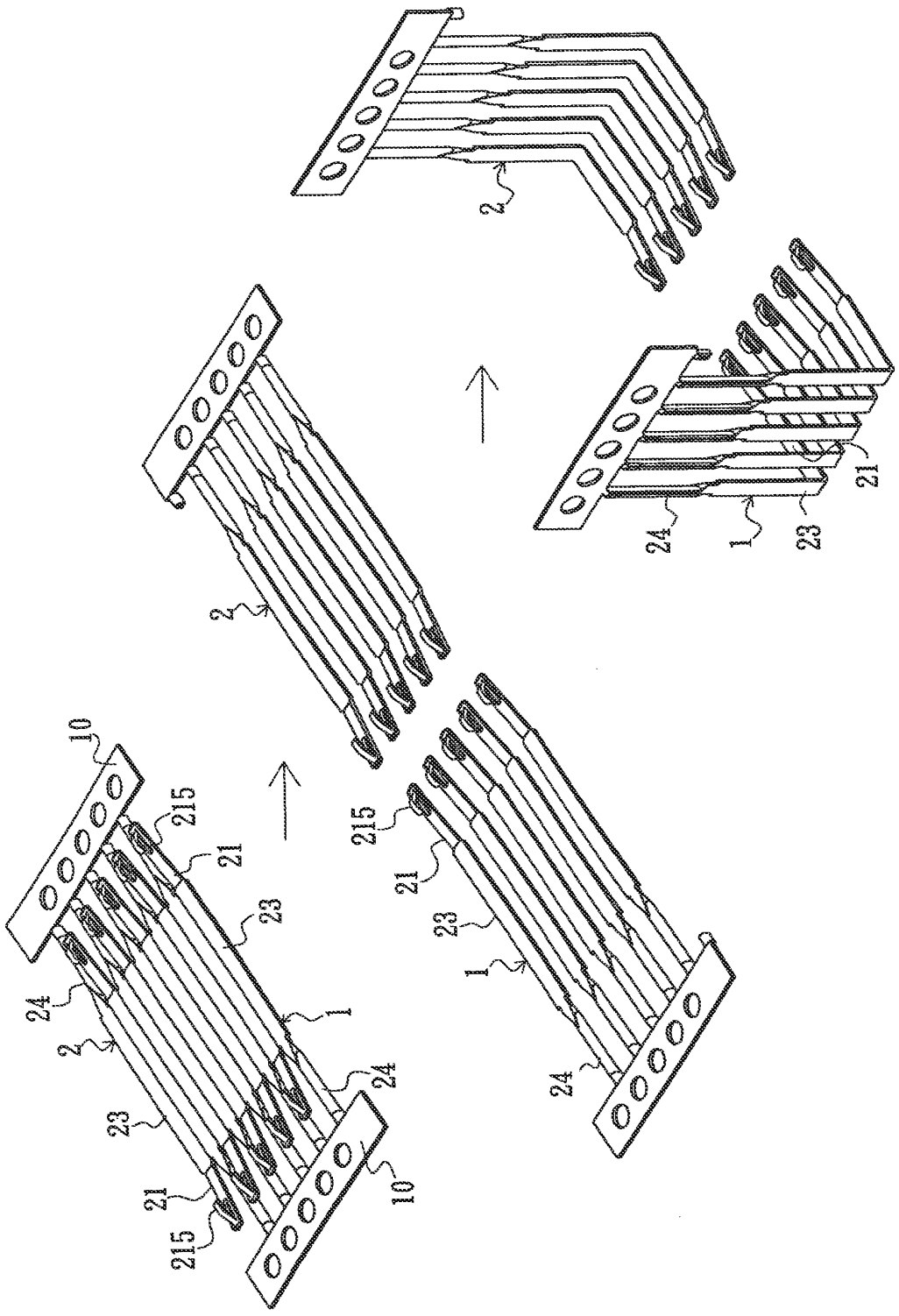


图 47

Samsung, EX1002, p. 2579

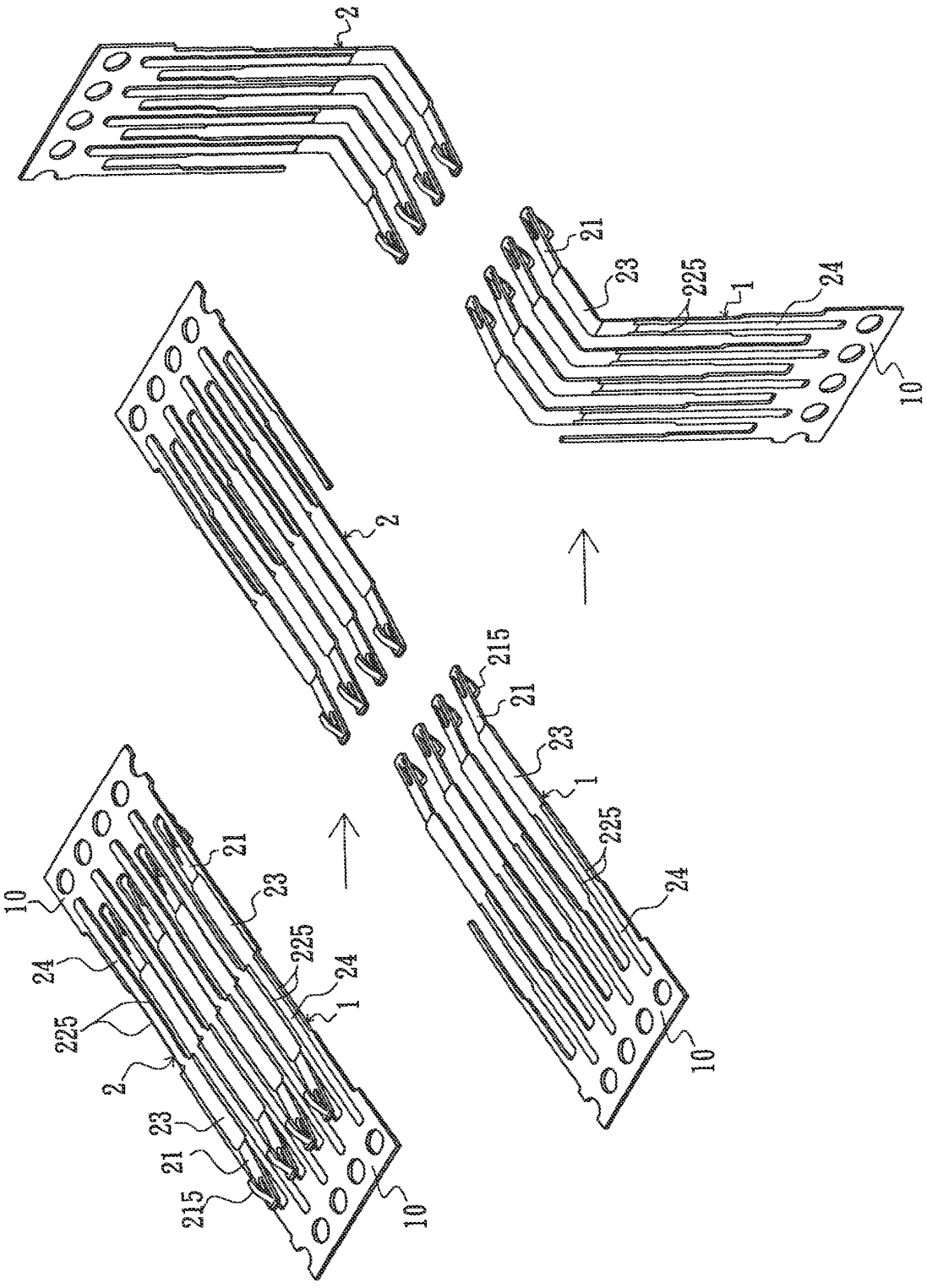


图 48

Samsung, EX1002, p. 2580

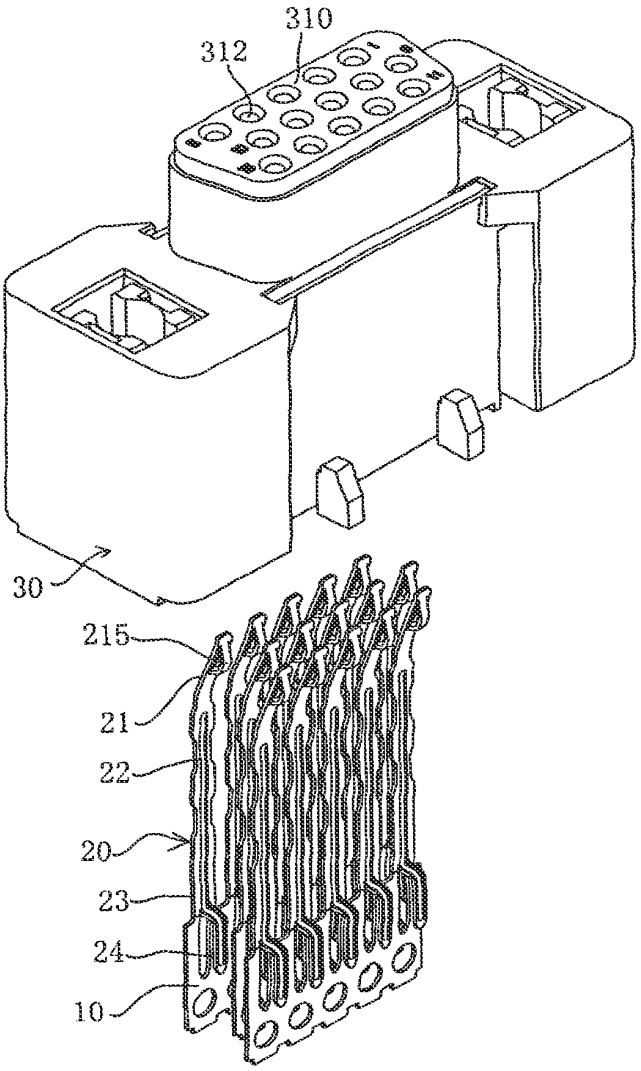


图 49

Samsung, EX1002, p. 2581

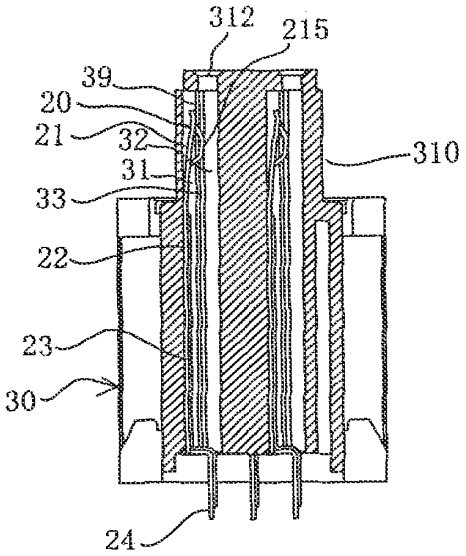


图 50

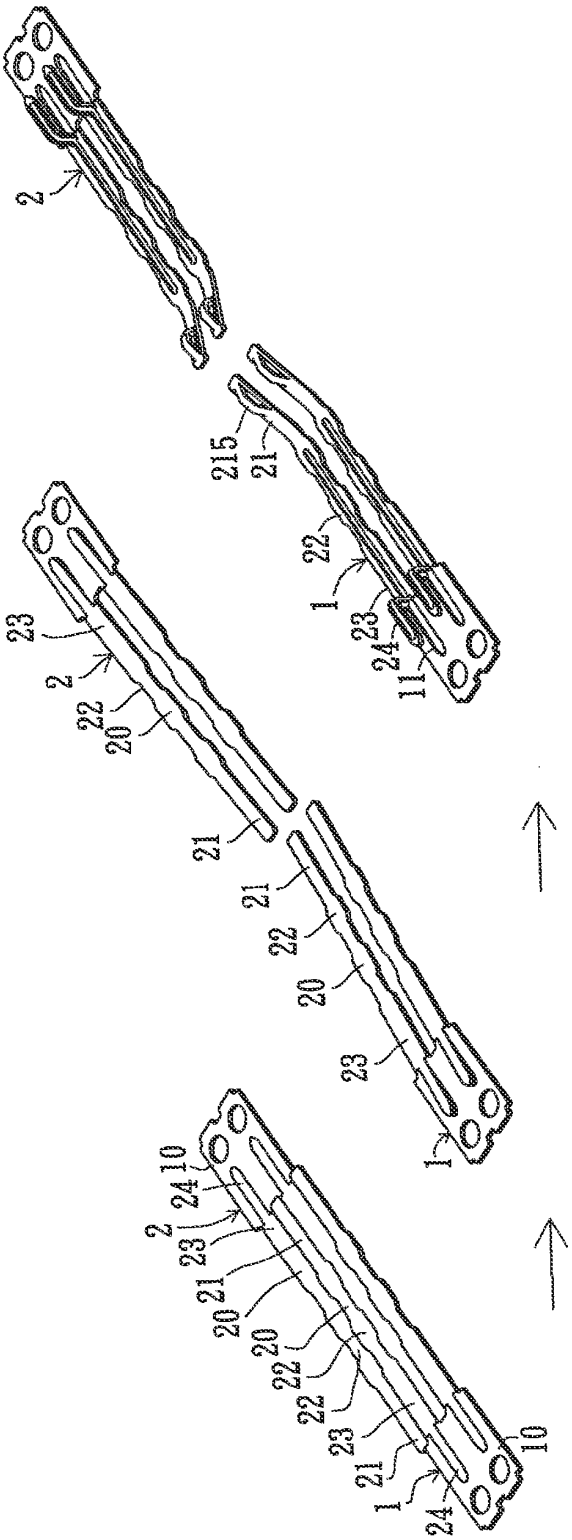


图 51

Samsung, EX1002, p. 2582

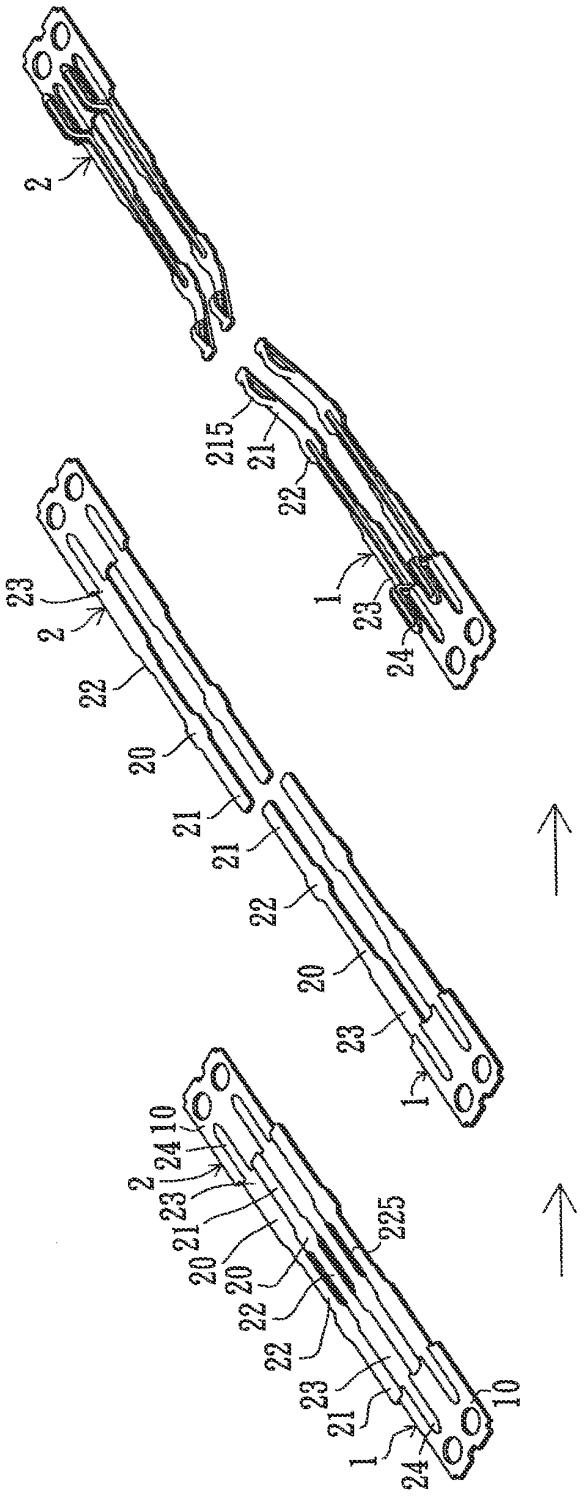


图 52

Samsung, EX1002, p. 2583

Espacenet

Bibliographic data: CN202121098 (U) — 2012-01-18

Electric connector

Inventor(s): ZHOUXIAN CAI ± (CAI ZHOUXIAN)

Applicant(s): ZHOUXIAN CAI ± (CAI ZHOUXIAN)

Classification: **- international:** ***H01R13/02; H01R13/502***
- cooperative:

Application number: CN201020693963U 20101231

Priority number(s): CN20102001939U 20100114 ; CN201020550094U 20100930 ; CN201020693963U 20101231

Abstract of CN202121098 (U)

The utility model relates to an electric connector which includes a plastic seat, a connecting groove, and at least one row of first connecting points. The front end of the plastic seat is provided with a forward protruding tongue piece. The connecting groove is arranged on the front end of the plastic seat and coats the tongue piece. A joint provided with at least one row of connecting points can be inserted and positioned in the connecting groove. The first connecting point is shown from one side of the tongue piece and is electrically connected with a pin. The pin reaches out of the plastic seat. The electric connector is characterized in that the tongue piece is provided with at least one reinforcing plate, so the strength of the tongue piece is enhanced by the reinforcing plate; the electric connector is provided with a spacing structure which is provided with elastic spacing members, the spacing members can limit the up and lower surfaces of the tongue piece and the up and lower surfaces of the joint.

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(12)实用新型专利

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代理人 蔡胜利

(51)Int.Cl.
H01R 13/02(2006.01)
H01R 13/502(2006.01)

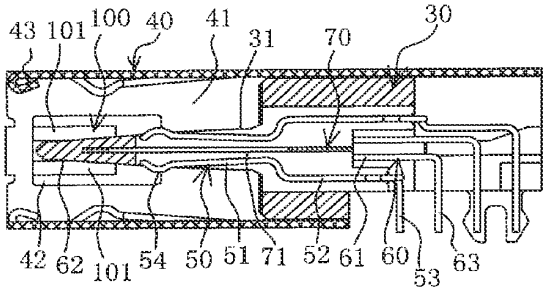
权利要求书 2 页 说明书 14 页 附图 31 页

(54)实用新型名称

电连接器

(57)摘要

一种电连接器，包括有：一塑胶座，其前端一体设有一向前凸出的舌片；一连接槽，其设于该塑胶座前端并将该舌片包覆于内，该连接槽可供一设有至少一排接点的接头插入定位；及至少一排第一接点，该第一接点露出该舌片一面且电连接一接脚，该接脚伸出该塑胶座外；其特征在于该舌片设有至少一补强板，藉由该补强板增强该舌片强度；其另一特征在于设有一限位构造，该限位构造设有可弹动的限位件限位该舌片的上、下面或该接头的上、下面。



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1. 一种电连接器，包括有：

一塑胶座；

一舌片，其凸出设于该塑胶座前端；

一连接槽，其设于该塑胶座前端并将该舌片包覆于内，该连接槽能够供一设有至少一排接点的接头插入定位；及

至少一排第一接点，该第一接点露出该舌片一面且电连接一接脚，该接脚伸出该塑胶座外；

其特征在于：设有一限位构造，该限位构造设有可弹动的限位件限位该舌片的上、下面或该接头的上、下面。

2. 如权利要求 1 所述的电连接器，其特征在于：该连接槽为一金属壳所形成，该金属壳定位于该塑胶座前端。

3. 如权利要求 1 或 2 所述的电连接器，其特征在于：该至少一排第一接点及接脚形成在至少一排第一端子，该第一端子设有一延伸部、一固定部及一该接脚，该固定部定位于该塑胶座内，该延伸部向该连接槽延伸且设有该第一接点。

4. 如权利要求 3 所述的电连接器，其特征在于：该第一端子的延伸部可弹动且该第一接点凸出该舌片一面。

5. 如权利要求 1 所述的电连接器，其特征在于：该至少一排第一接点为二排，该二排第一接点分别露出该舌片二面。

6. 如权利要求 1 所述的电连接器，其特征在于：还设有至少一排第二接点，该一排第二接点位于该一排第一接点的前方，该第二接点露出该舌片一面且电连接一接脚，该接脚伸出该塑胶座外。

7. 如权利要求 6 所述的电连接器，其特征在于：该至少一排第二接点及接脚形成于至少一排第二端子，该至少一排第二端子定位于该塑胶座内。

8. 如权利要求 1 所述的电连接器，其特征在于：该舌片与该塑胶座一体成型，该舌片设有至少一补强板，藉由该补强板增强该舌片强度。

9. 如权利要求 8 所述的电连接器，其特征在于：该补强板为一金属板。

10. 如权利要求 1 所述的电连接器，其特征在于：该连接槽为一金属壳所形成，该金属壳定位于该塑胶座前端，该限位构造的限位件为一体连接于该金属壳的弹片。

11. 如权利要求 10 所述的电连接器，其特征在于：该限位件是呈前后方向弯弧延伸，该限位件设有一凸部凸向连接槽。

12. 如权利要求 11 所述的电连接器，其特征在于：该限位件是连接于该金属壳前端再反折向后延伸。

13. 如权利要求 11 所述的电连接器，其特征在于：该限位件一体设有可侧向弹动的一第一力臂及一第二力臂，该第一力臂连接该金属壳，该第二力臂连接于第一力臂且设有该凸部。

14. 如权利要求 11 所述的电连接器，其特征在于：该凸部是自限位件的板面中间刺破凸出而成较窄板面，该接头为一板片型接头，该接头不具有套接空间套接该舌片，该接头能够接合于该舌片的上方或下方，该限位件能够夹紧该接头一侧，该凸部能够限位该接头设有接点的一面。

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15. 如权利要求 11 所述的电连接器，其特征在于：该接头为一板片型接头，该接头不具有套接空间套接该舌片，该接头能够接合于该舌片的上方或下方，该凸部能够限位该接头设有接点的一面。

16. 如权利要求 11 所述的电连接器，其特征在于：接头为一金属壳型接头，该接头具有金属外壳形成一套接空间，该套接空间套接该舌片，该限位件能够限位该接头的上面或下面。

17. 如权利要求 1 所述的电连接器，其特征在于：该限位构造还包括有弹性元件，该限位件藉由该弹性元件而保持限位舌片的上、下面，该限位件当受外力时能够位移脱离限位该舌片。

18. 如权利要求 8 所述的电连接器，其特征在于：该补强板至少一边设有弯折一角度的折边。

19. 如权利要求 8 所述的电连接器，其特征在于：该补强板的后段向下垂直弯折。

20. 如权利要求 9 所述的电连接器，其特征在于：该补强板设有向下凸出的接脚。

21. 如权利要求 9 所述的电连接器，其特征在于：该补强板的板面刺破向下垂直弯折至少一定位片与该塑胶座定位。

22. 如权利要求 8 所述的电连接器，其特征在于：该补强板呈水平定位于该舌片内。

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电连接器

【技术领域】

[0001] 本实用新型是有关于一种电连接器，特别是关于一种连接槽设有一舌片的电连接器。

【背景技术】

[0002] 现今电脑设备最普及的讯号传输规格莫过于通用串行总线 (UniversalSerial Bus，简称 USB)，以此规格制作的连接器插座及传输线可使外接于电脑的周边设备，如滑鼠、键盘等，即时为电脑所测得并立即使用。

[0003] 目前USB有2.0及3.0两种规格，接头有金属壳型及板片型二种，请参阅图1，为现有的金属壳型USB2.0接头90，其设有一塑胶座体91及一金属外壳92，该金属外壳92包覆该塑胶座体91，该金属外壳92和该塑胶座体91间形成一套接空间93，该塑胶座体91仅一面设有一排接点94露于该套接空间93，目前USB协会公定的规格为整体高度i为4.5mm，相对于该套接空间93的半体高度j为2.25mm，套接空间高度k为1.95mm。

[0004] 目前USB2.0插座是于其内的舌片一面设有一排接点，在使用上，USB2.0接头需插入方向正确才能使两者的接点对上电连接；为了确保USB接头插入时能电连接，两者在对接上具有防呆设计，如图1A所示，连接该金属壳型USB2.0接头90的手把96一面的标示97朝上时即为正向，此时接点94朝上，当正向插入时可插入电连接，如图1B所示，当USB接头反向插入时则无法插入，如此即可确保插入后具有电连接。使用者通常是随机插入，故插不进去的机率是1/2，故常常是插两次，造成使用上的不便。

[0005] 请参阅图2，为现有的USB2.0插座20，其包括有一塑胶座21、一金属外壳23及一排端子27，该塑胶座21前端一体设有呈水平延伸的舌片22，该金属外壳23定位于该塑胶座21前端而形成一连接槽24，该舌片22位于连接槽24偏下段，该一排端子27为4个固定于该塑胶座21并向前延伸排列于该舌片22上，其接近末端设有一凸出的接点28。

[0006] 该USB插座20为了配合接头设计防呆，连接槽高度o为5.12mm，舌片厚度p为1.84mm，舌片上方高度s为0.72mm，舌片下方高度q为2.56mm，如此该金属壳型USB2.0接头90必需如图1A所示接点93朝上正向插入，使套接空间93与舌片22套合定位，半体高度j(2.25mm)套入舌片下方高度q(2.56mm)，若USB接头90反向则无法插入。

[0007] 该舌片22偏向连接槽24上方除了可以防呆外亦可使舌片22较不会因外力而折损。

[0008] 上述金属壳型USB2.0接头90插入USB插座20主要是藉由该套接空间高度k为1.95mm与该舌片厚度p为1.84mm二者迫紧定位。

[0009] 请参阅图2A，为现有的USB3.0插座25，其构造及相关尺寸大致与USB2.0插座20相同，其差异在于该USB3.0插座25的舌片22较长且前段设有一排5个不弹动的第二接点29。

[0010] 金属壳型USB3.0接头的构造及相关尺寸与金属壳型USB2.0接头90大致相同，其差异在于该USB3.0多一排5个凸出于套接空间且会弹动的接点。

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[0011] 现有的USB插座不論2.0，或是3.0由于仅单面的接触型态，在使用上无法双向插接，然而，USB插座若要设计成双向插接，除了需舌片两面有端子的接点外，由于USB接头双向插入连接槽皆可定位，故舌片需设于连接槽的中间高度，如此舌片就较容易因外力而折损，故必需有特殊设置使舌片补强或受到保护以防止受到外力而折损。

[0012] 本实用新型申请人潜心研究双向插接的USB插座，终于提出创新构造达到舌片补强或受到保护以防止受到外力而折损。

【实用新型内容】

[0013] 本实用新型的主要目的在于提供一种电连接器，藉由舌片内设有一补强板达到增强该舌片强度，达到防止舌片受到外力而折损。

[0014] 本实用新型的另一主要目的在于提供一种电连接器，其设有一限位构造，藉由该限位构造限位该舌片的上、下面达到防止舌片受到外力而折损。

[0015] 为达上述目的，本实用新型电连接器包括有：一塑胶座，其前端一体设有一向前凸出的舌片；一连接槽，其设于该塑胶座前端并将该舌片包覆于内，该连接槽可供一设有至少一排接点的接头插入定位；及至少一排第一接点，该第一接点露出该舌片一面且电连接一接脚，该接脚伸出该塑胶 座外；其特征在于该舌片设有至少一补强板，藉由该补强板增强该舌片强度；其另一特征在于设有一限位构造，该限位构造设有可弹动的限位件限位该舌片的上、下面或该接头的上、下面。

[0016] 为了达到上述目的，本实用新型提供一种电连接器，包括有：

[0017] 一塑胶座，其前端一体设有一向前凸出的舌片；

[0018] 一连接槽，其设于该塑胶座前端并将该舌片包覆于内，该连接槽能够供一设有至少一排接点的接头插入定位；及

[0019] 至少一排第一接点，该第一接点露出该舌片一面且电连接一接脚，该接脚伸出该塑胶座外；

[0020] 其中，该舌片设有至少一补强板，藉由该补强板增强该舌片强度。

[0021] 本实用新型还提供一种电连接器，包括有：

[0022] 一塑胶座；

[0023] 一舌片，其凸出设于该塑胶座前端；

[0024] 一连接槽，其设于该塑胶座前端并将该舌片包覆于内，该连接槽能够供一设有至少一排接点的接头插入定位；及

[0025] 至少一排第一接点，该第一接点露出该舌片一面且电连接一接脚，该接脚伸出该塑胶座外；

[0026] 其中，设有一限位构造，该限位构造设有可弹动的限位件限位该舌片的上、下面或该接头的上、下面。

[0027] 如所述的电连接器，其中该连接槽为一金属壳所形成，该金属壳定位于该塑胶座前端。

[0028] 如所述的电连接器，其中该至少一排第一接点及接脚形成在至少一排第一端子，该第一端子设有一延伸部、一固定部及一该接脚，该固定部定位于该塑胶座内，该延伸部向该连接槽延伸且设有该第一接点。

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[0029] 如所述的电连接器，其中该第一端子的延伸部可弹动且该第一接点凸出该舌片一面。

[0030] 如所述的电连接器，其中该至少一排第一接点为二排，该二排第一接点分别露出该舌片二面。

[0031] 如所述的电连接器，其中更设有至少一排第二接点，该一排第二接点位于该一排第一接点的前方，该第二接点露出该舌片一面且电连接一接脚，该接脚伸出该塑胶座外。

[0032] 如所述的电连接器，其中该至少一排第二接点及接脚形成于至少一排第二端子，该至少一排第二端子定位于该塑胶座内。

[0033] 如所述的电连接器，其中还设有一限位构造，该限位构造设有可弹动的限位件限位该舌片的上、下面或该接头的上、下面。

[0034] 如所述的电连接器，其中该舌片与该塑胶座一体成型，该舌片设有至少一补强板，藉由该补强板增强该舌片强度。

[0035] 如所述的电连接器，其中该补强板为一金属板。

[0036] 如所述的电连接器，其中该连接槽为一金属壳所形成，该金属壳定位于该塑胶座前端，该限位构造的限位件为一体连接于该金属壳的弹片。

[0037] 如所述的电连接器，其中该限位件是呈前后方向弯弧延伸，该限位件设有一凸部凸向连接槽。

[0038] 如所述的电连接器，其中该限位件是连接于该金属壳前端再反折向后延伸。

[0039] 如所述的电连接器，其中该限位件一体设有可侧向弹动的一第一力臂及一第二力臂，该第一力臂连接该金属壳，该第二力臂连接于第一力臂且设有该凸部。

[0040] 如所述的电连接器，其中该凸部是自限位件的板面中间刺破凸出而成较窄板面，该接头为一板片型接头，该接头不具有套接空间套接该舌片，该接头可接合于该舌片的上方或下方，该限位件可夹紧该接头一侧，该凸部可限位该接头设有接点的一面。

[0041] 如所述的电连接器，其中该接头为一板片型接头，该接头不具有套接空间套接该舌片，该接头可接合于该舌片的上方或下方，该凸部可限位该接头设有接点的一面。

[0042] 如所述的电连接器，其中接头为一金属壳型接头，该接头具有金属外壳形成一套接空间，该套接空间套接该舌片，该限位件可限位该接头的上面或下面。

[0043] 如所述的电连接器，其中该限位构造更包括有弹性元件，该限位件藉由该弹性元件而保持限位舌片的上、下面，该限位件当受外力时可位移脱离限位该舌片。

[0044] 如所述的电连接器，其中该补强板至少一边设有弯折一角度的折边。

[0045] 如所述的电连接器，其中该补强板的后段向下垂直弯折。

[0046] 如所述的电连接器，其中该补强板设有向下凸出的接脚。

[0047] 如所述的电连接器，其中该补强板的板面刺破向下垂直弯折至少一定位片与该塑胶座定位。

[0048] 如所述的电连接器，其中该补强板呈水平定位于该舌片内。

[0049] 本实用新型本实用新型的上述及其他目的、优点和特色由以下较佳实施例的详细说明中并参考图式当可更加明白。

[0050] 【附图说明】

[0051] 图 1 是现有的 USB2.0 接头的前视剖面图。

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[0052] 图 1A 是现有的 USB2.0 接头正插下倾的立体图。

[0053] 图 1B 是现有的 USB2.0 接头反插上倾的立体图。

[0054] 图 2 是现有 USB2.0 插座侧视剖面图。

[0055] 图 2A 是现有 USB3.0 插座侧视剖面图。

[0056] 图 3 是本实用新型第一实施例的立体分解图。

[0057] 图 4 是本实用新型第一实施例的立体组合图。

[0058] 图 5 是本实用新型第一实施例的侧视剖面图。

[0059] 图 6 是本实用新型第一实施例的补强板的立体图。

[0060] 图 7 是本实用新型第一实施例的使用状态图。

[0061] 图 7A 是本实用新型第一实施例的使用状态图。

[0062] 图 8 是本实用新型第二实施例的补强板的立体图。

[0063] 图 9 是本实用新型第三实施例的补强板的立体图。

[0064] 图 10 是本实用新型第四实施例的补强板和塑胶座的立体分解图。

[0065] 图 11 是本实用新型第五实施例的侧视剖面图。

[0066] 图 12 是本实用新型第五实施例的使用状态图。

[0067] 图 12A 是本实用新型第五实施例的使用状态图。

[0068] 图 13 是本实用新型第六实施例的立体分解图。

[0069] 图 14 是本实用新型第六实施例的侧视剖面图。

[0070] 图 15 是本实用新型第七实施例的侧视剖面图。

[0071] 图 16 是本实用新型第八实施例的侧视剖面图。

[0072] 图 17 是本实用新型第九实施例的侧视剖面图。

[0073] 图 18 是本实用新型第十实施例的侧视剖面图。

[0074] 图 19 是本实用新型第十实施例的使用状态图。

[0075] 图 20 是本实用新型第十实施例的使用状态图。

[0076] 图 21 是本实用新型第十一实施例的立体分解图。

[0077] 图 22 是本实用新型第十一实施例的立体组合图。

[0078] 图 23 是本实用新型第十一实施例的限位构造的立体分解图。

[0079] 图 24 是本实用新型第十二实施例的立体分解图。

[0080] 图 25 是本实用新型第十二实施例的侧视剖面图。

[0081] 图 26 是本实用新型第十二实施例的第一端子立体图。

[0082] 图 27 是本实用新型第十二实施例的第一端子立体图。

[0083] 图 28 是本实用新型第十三实施例的侧视剖面图。

[0084] 图 29 是本实用新型第十四实施例的侧视剖面图。

[0085] 图 30 是本实用新型第十五实施例的补强板和塑胶座的立体分解图。

[0086] 图 31 是本实用新型第十五实施例的补强板的立体图。

[0087] 图 32 是本实用新型第十六实施例的立体分解图。

[0088] 图 33 是本实用新型第十六实施例的立体组合图。

[0089] 图 34 是本实用新型第十六实施例的前视图。

[0090] 图 35 是本实用新型第十六实施例的使用状态立体图。

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[0091] 图 36 是本实用新型第十六实施例的使用状态立体图。

[0092] 图 37 是本实用新型第十六实施例的使用状态立体图。

[0093] 图 38 是本实用新型第十六实施例的使用状态立体图。

[0094] 图 39 是本实用新型第十七实施例的立体图。

[0095] 图 40 是本实用新型第十七实施例的使用状态立体图。

[0096] 图 41 是本实用新型第十七实施例的使用状态立体图。

[0097] 图 42 是本实用新型第十八实施例的立体图。

[0098] 图 43 是本实用新型第十八实施例的使用状态立体图。

[0099] 图 44 是本实用新型第十八实施例的使用状态立体图。

[0100] 图 45 是本实用新型第十九实施例的立体图。

[0101] 图 46 是本实用新型第二十实施例的立体图。

[0102] 图 47 是本实用新型第二十一实施例的立体图。

[0103] 图 48 是本实用新型第二十二实施例的立体图。

[0104] 图 49 是本实用新型第二十三实施例的立体图。

[0105] 图 50 是本实用新型第二十三实施例的使用状态上视图。

[0106] 图 51 是本实用新型第二十三实施例的使用状态侧视剖面图。

[0107] 图 52 是本实用新型第二十四实施例的立体图。

[0108] 图 53 是本实用新型第二十四实施例的侧视剖面图。

[0109] 图 54 是本实用新型第二十五实施例的立体图。

[0110] 图 55 是本实用新型第二十六实施例的立体图。

[0111] 图 56 是本实用新型第二十七实施例的立体图。

[0112] 图 57 是本实用新型第二十七实施例的使用状态侧视剖面图。

[0113] 图 58 是本实用新型第二十七实施例的使用状态侧视剖面图。

[0114] 图 59 是本实用新型第二十八实施例的立体图。

[0115] 图 60 是本实用新型第二十九实施例的立体图。

[0116] 图 61 是本实用新型第二十九实施例的使用状态侧视剖面图。

[0117] 图 62 是本实用新型第二十九实施例的使用状态侧视剖面图。

[0118] 图 63 是本实用新型第三十实施例的立体图。

[0119] 图 64 是本实用新型第三十一实施例的立体图。

[0120] 图 65 是本实用新型第三十二实施例的立体图。

[0121] 图 66 是本实用新型第三十三实施例的立体图。

[0122] 图 67 是本实用新型第三十四实施例的前视图。

[0123] 图 68 是本实用新型第三十五实施例的前视图。

[0124] 图 68A 是本实用新型第三十五实施例的局部立体图。

[0125] 图 69 是本实用新型第三十六实施例的侧视剖面图。

[0126] 图 70 是本实用新型第三十六实施例的前视剖面图。

[0127] 图 71 是本实用新型第三十六实施例的上视剖面图。

[0128] 图 72 是本实用新型第三十六实施例的使用状态前视剖面图。

[0129] 图 73 是本实用新型第三十七实施例的侧视剖面图。

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[0130] 图 74 是本实用新型第三十八实施例的侧视剖面图。

[0131] 塑胶座 30 舌片 31 透空槽 32

[0132] 套合槽 33 凸片 34 套接孔 35

[0133] 上座 36 下座 37

[0134] 金属壳 40 连接槽 41 开口 42

[0135] 凸部 43 开孔 44 折叠板 45

[0136] 纵向缺口 46 侧板 49 上、下板 410 卡扣弹片

[0137] 413 凸肋 414 凹口 415 卡扣 417

[0138] 凸部 418

[0139] 第一端子 50 延伸部 51 固定部 52

[0140] 接脚 53 第一接点 54 导斜面 55

[0141] 侧边 56 连接凸部 58 第二端子 60 延伸部

[0142] 61 接脚 63 第二接点 62

[0143] 补强板 70 透孔 71 圆孔 72

[0144] 倒刺 73 折边 74 定位片 75

[0145] 后段 77 接脚 76 电路板 80

[0146] 第二接点 81 电路 82 接脚 83 透孔 84

[0147] 金属导电层 85 导电孔 86

[0148] 焊点 87 套接空间 93 内排接点 95

[0149] 外排接点 94 板片型接头 98

[0150] 金属壳型 USB2.0 接头 90 金属壳型 USB3.0 接头 99

[0151] 限位构造 100 限位件 101 一端 102

[0152] 另一端 103 弹性元件 105 枢轴 106

[0153] 套框 108 枢接孔 109 第二限位件 110

[0154] 凸点 112 限位板 113 导入斜角 114

[0155] 板片型接头 115 接点 116 第一力臂 117

[0156] 第二力臂 118 电路板 120

【具体实施方式】

[0157] 请参阅图 3、图 4、及图 5，为本实用新型第一实施例，其为一双向电连接的 USB3.0 插座，其可连接一 USB3.0 接头，其包括有：一塑胶座 30、一金属壳 40、二排第一端子 50、二排第二端子 60、一补强板 70 及一限位构造 100，其中：

[0158] 该塑胶座 30 前端一体成型设有一水平延伸的舌片 31，该舌片 31 前端厚度较薄而后端较厚，其由前而后渐厚而呈锥状，如此舌片 31 较为坚固而不易折断，该舌片 31 设有四个前后方向延伸的四个透空槽 32。

[0159] 该金属壳 40 内形成一连接槽 41，该金属壳 40 设于该塑胶座 10 前端 并将该舌片 31 包覆于内，该舌片 31 位于该连接槽 41 的中间高度，该金属壳 40 前端的顶面及底面皆设有凸向舌片 31 的凸部 43，该顶面的凸部 43 和底面的凸部 43 的垂直距离为插入口高度，故该插入口高度较插入口内的连接槽高度为小，使该接头插接时缩小间隙而能避免晃动，该

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凸部 43 为该金属壳 40 前端的顶面及底面向连接槽 41 内部反折而形成。

[0160] 该二排第一端子 50 各自为 4 个，该第一端子 50 设有一延伸部 51、一固定部 52 及一接脚 53，该固定部 52 定位于该塑胶座 30 内，该延伸部 51 向该连接槽 41 延伸且设有一凸出的第一接点 54 凸出该舌片 20 一面，该延伸部 51 可于舌片 31 的透空槽 32 上下弹动，该二排第一端子 50 的第一接点 54 分别凸出该舌片 31 两面。

[0161] 该二排第二端子 60 各自为 5 个，该塑胶座 30 射出成型时同时将该二排第二端子 60 埋入定位，该第二端子 60 设有一延伸部 61 及一接脚 63，该延伸部 61 向该连接槽 41 延伸且埋入定位于舌片，该延伸部 61 前端设有一第二接点 62 露出该舌片 20 前端一面，该延伸部 61 不可弹动，该二排第二接点 62 分别露出该舌片 31 两面且位于该二排第一接点 54 前方。

[0162] 请配合参阅图 6，该补强板 70 为一金属板，其上设有四个长形的透孔 71 及四个圆孔 72，该塑胶座 30 射出成型时同时将该补强板 70 埋入定位，该补强板 70 呈水平定位于该舌片 31 内，该四个透空 71 对应该舌片 31 的四个透空槽 32 及该二排第一端子 50 的第一接点 54，该四个圆孔 72 是藉以与该塑胶座 30 卡定。

[0163] 该限位构造 100 设有四个可弹动的限位件 101 限位该舌片 31 的上、下面，该限位件 101 为一体连接于该金属壳 40 二侧的弹片，金属壳 40 二侧前段各设有一开口 42，该限位件 101 是连接于该金属 40 前端二侧先向外反折再由该开口 42 伸入该连接槽 41 内并向后弯弧延伸，该限位件 101 设有一凸部 112 凸向连接槽，藉由该凸部 112 限位该舌片 31 的上面或下面。

[0164] 藉由以上构造，该舌片 31 内设有补强板 70 可增加强度，且该四个限位件 101 限位该舌片 31 的上、下面，如此可达到防止舌片 31 受到外力而折损。

[0165] 请参阅图 7，当金属壳型 USB3.0 接头 99 插入连接槽 41 时，该多个限位件 101 会往二侧弹开，由于舌片 31 呈锥状，该金属壳型 USB3.0 接头 99 是成倾斜定位且套接空间 93 套拉该舌片 31，金属壳型 USB3.0 接头 99 的内 排接点 95 与第二接点 62 电连接，外排接点 94 与第一接点 54 电连接，本实施例藉由该凸部 43 而使插入口高度减小，如此可使该金属壳型 USB3.0 接头 99 插接时在连接槽入口端的间隙减小而能避免晃动且具有稳固的定位。再者，由于连接槽入口高度减小，金属壳型 USB3.0 接头 99 往上扳动的空间缩小，故较不致造成舌片 31 的折损。

[0166] 请参阅图 7A，为一 USB3.0 随身碟插入连接槽 41 呈成倾斜定位状态，该 USB3.0 随身碟的插入端设有一板片型接头 98，该板片型接头 98 不具有套接空间套接该舌片，该板片型接头 98 接合于该舌片的下方，该舌片 31 下面的限位件 101 会往二侧弹开，然而舌片 31 上面的限位件 101 仍限位于该舌片 31 上方，故纵然使用不当将板片型接头 98 往上扳动也不致造成舌片 31 的折损。

[0167] 请参阅图 8，是本实用新型第二实施例，其大致与第一实施例相同，其差异在于本实施例的补强板 70 二侧设有垂直的折边 74 增加结构强度。

[0168] 请参阅图 9，是本实用新型第三实施例，其大致与第二实施例相同，其差异在于本实施例的补强板 70 的折边 74 设于后端。

[0169] 请参阅图 10，是本实用新型第四实施例，其大致与第一实施例相同，其差异在于本实施例的补强板 70 的二侧设有倒刺 73，该舌片 31 内设有一套合槽 33，该补强板 70 由塑胶

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座 30 后组入该套合槽 33 固定。

[0170] 请参阅图 11，是本实用新型第五实施例，其大致与第一实施例相同，其差异在于本实施例的金属壳 40 二侧各设有二圆弧形的开孔 44 对应于舌片 31 的上、下方，该限位构造 100 包括有二限位件 101 及二弹性元件 105，该二限位件 101 藉由该二弹性元件 105 而保持限位舌片 31 的上、下面，该限位件 101 呈一板体，其一端 102 枢接于金属壳 40 二侧，另一端 103 卡入该开孔 44，该二弹性元件 105 是由金属壳 40 刺破冲压出的弹片。

[0171] 请参阅图 12，当金属壳型 USB3.0 接头 99 插入连接槽 41 呈倾斜定位时，该二限位件 101 分别往上、下方向枢转，此时舌片 31 上方的限位件 101 弹性抵紧于金属壳型 USB3.0 接头 99 上，使金属壳型 USB3.0 接头 99 更加不会往上扳动。

[0172] 请参阅图 12A，当 USB3.0 随身碟的板片型接头 98 插入连接槽 41 的舌片 31 下面成倾斜定位时，该舌片 31 下面的限位件 101 会往下枢转避开，然而舌片 31 上面的限位件 101 仍限位于该舌片 31 上方，故纵然使用不当 将板片型接头 98 往上扳动也不致造成舌片 31 的折损。

[0173] 请参阅图 13 及图 14，为本实用新型第六实施例，其为一双向电连接的 USB3.0 插座，其可连接一 USB3.0 接头，其包括有：一塑胶座 30、一舌片 31、一金属壳 40、二排第一端子 50 及一限位构造 100，其中：

[0174] 该塑胶座 30 的前端一体设有一前向凸出的凸片 34，该凸片 34 内设有一横向的套接孔 35，该舌片 31 的后段为与塑胶座一体成型的凸片 34 而前段为一电路板 80，该凸片 34 较该电路板 80 为厚，该电路板 80 两面的前段间隔排列设有 5 个第二接点 81 且两面后段间隔排列设有 5 个焊点 87，每一第二接点 81 藉由一电路 82 连接至一焊点 87，每一焊点 87 焊接一接脚 83，另外该电路板上设有 4 个透孔 84，该电路板 80 由后组装入该塑胶座 30 固定，该电路板 80 前段穿过该凸片 34 的套接孔 35 凸出该凸片 34 前端而形成该舌片 31 前段。

[0175] 该金属壳 40、二排第一端子 50 及限位构造 100 与第一实施例大致相同，该第一端子 50 的前端对应该透孔 84。

[0176] 请参阅图 15，是本实用新型第七实施例，其大致与第六实施例相同，其差异在于本实施例的电路板 80 内设有一金属导电层 85 且藉由导电孔 86 导通电路板 80 二面部份属于接地作用的第二接点，以防止讯号干扰。

[0177] 请参阅图 16，是本实用新型第八实施例，其大致与第一实施例相同，其差异在于本实施例是为一双向电连接的 USB2.0 插座，其是连接一 USB2.0 接头，本实施仅设有二排第一端子 50 未设有二排第二端子 60，该舌片 31 内同样设有补强板 70。

[0178] 请参阅图 17，是本实用新型第九实施例，其大致与第八实施例相同，其差异在于本实施例为单向电连接的 USB2.0 插座，其仅设有一排第一端子 50，该舌片 31 内同样设有补强板 70。

[0179] 请参阅图 18，是本实用新型第十实施例，其大致与第一实施例相同，其差异在于本实施例的限位构造 100 包括有二限位件 101 及多个弹性元件 105，该二限位件 101 藉由该多个弹性元件 105 而保持限位舌片 31 的上、下面，该限位件 101 呈一抽屉状，其卡接于该塑胶座 30 并可于连接槽 41 内作滑动，该弹性元件 105 为一弹簧，其组装于该塑胶座 30，其一端弹性抵推该限位件 101，使二限位件 101 在常态限位于该舌片 31 二面。

[0180] 请参阅图 19，当金属壳型 USB3.0 接头 99 插入连接槽 41 呈倾斜定位时，该二限位

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件 101 皆往后缩入该塑胶座 30 内。

[0181] 请参阅图 20，当 USB3.0 随身碟的板片型接头 98 插入连接槽 41 的舌片 31 下面成倾斜定位时，该舌片 31 下面的限位件 101 往内缩入该塑胶座 30 内，然而舌片 31 上面的限位件 101 仍限位于该舌片 31 上方，故纵然使用不当将 USB3.0 随身碟的板片型接头 98 往上扳动也不致造成舌片 31 的折损。

[0182] 请参阅图 21、图 22 及图 23，是本实用新型第十一实施例，其大致与第六实施例相同，其差异在于本实施例的限位构造 100 包括有一套框 108、二限位件 101 及多个弹性元件 105，该二限位件 101 藉由该多个弹性元件 105 而保持限位舌片 31 的上、下面，该套框 108 设有枢接孔 109，该限位件 101 呈 ㄇ 形状，其二端各设有一枢轴 106 及一凸部 104，该二限位件 101 的枢轴 106 枢接于该套框 108 的枢接孔 109，该多个弹性元件 105 皆为扭力弹簧，其是使该该二限位件 101 在常态成直立状限位于舌片 31 的上、下面。

[0183] 藉由以上构造，当 USB3.0 接头插入连接槽 41 则推动该二限位件 101 枢转让开，当 USB3.0 接头拔出，该二限位件 101 则枢转回复成直立状限位于舌片 31 的上、下面。

[0184] 请参阅图 24、图 25、图 26 及图 27，为本实用新型第十二实施例，其为一双向电连接的 Micro USB 插座，其可连接一 Micro USB 接头，其包括有 ：一塑胶座 30、一金属壳 40 及二排第一端子 50，其中 ：

[0185] 该塑胶座是设有上座 36 及下座 37，该下座 37 前端一体成型设有一水平延伸的舌片 31。

[0186] 该金属壳 40 内形成一连接槽 41，该金属壳 40 设于该塑胶座 10 前端并将该舌片 31 包覆于内，该舌片 31 位于该连接槽 41 的中间高度。

[0187] 该二排第一端子 50 各自为 5 个，该塑胶座 30 的上、下座射出成型时同时将该二排第一端子 50 埋入定位，该第二端子 50 设有一延伸部 51 及一接脚 53，该延伸部 51 向该连接槽 41 延伸且埋入定位于该塑胶座 30，该延伸部 51 前端设有一第一接点 54 露出该舌片 20 前端一面，该延伸部 51 不可弹动，该二排第一接点 54 分别露出该舌片 31 两面，另外，该延伸部 51 一侧弯折设有垂直的侧边 56，该侧边 56 可作为舌片 31 的补强板，增强该舌片强度。

[0188] 本实施例塑胶座 30 分成上、下座可达到制造较容实施。

[0189] 请参阅图 28，是本实用新型第十三实施例，其大致与第十二实施例相 同，其差异在于本实施例的二排第一端子 50 的延伸部不设有垂直的侧边，而是塑胶座 30 埋入定位一补强板 70，该补强板 70 为一金属板且呈水平定位于该舌片 31 内。

[0190] 请参阅图 29，是本实用新型第十四实施例，其大致与第十二实施例相同，其差异在于本实施例的二排第一端子 50 的延伸部不设有垂直的侧边，而是塑胶座 30 埋入定位多个补强板 70，该多个补强板 70 为一金属板且间隔排列呈垂直定位于该舌片 31。

[0191] 请参阅图 30 及图 31，是本实用新型第十五实施例，其大致与第二实施例相同，其差异在于本实施例的补强板 70 加长，其中段二侧各刺破向下垂直弯折一定位片 75，其后段 77 向下垂直弯折且二侧各设有一凸出的接脚 76，另外，该折边 74 是外露于舌片 31 二侧。

[0192] 请参阅图 32、图 33 及图 34，是本实用新型第十六实施例，其为双向插接的 USB2.0 插座，其大致与第一实施例相同，同样设有一塑胶座体 30、一金属壳 40、一舌片 31、二排第一端子 50 及一限位构造 100，本实施例与第一实施例的差异在于 ；

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[0193] 该限位构造 100 设有四个可弹动的限位件 101 及四个可弹动的第二限位件 110，该限位件 101 限位该舌片 31 的上、下面，该四个限位件 101 及四个第二限位件 110 皆为一端连接于该金属壳 40 二侧板并向该连接槽 41 凸出且向后呈弧状延伸并可侧向弹动的弹片，该第二限位件 110 设于该限位件 101 外侧，每一限位件 101 及第二限位件 110 皆设有一凸点 112，当该限位件 101 及第二限位件 110 的凸点 112 受挤压即向外侧弹动。

[0194] 本实施例的第一端子 50 的延伸部 51 的第一接点 54 前设有板面较窄的导斜面 55，该二排第一端子的第一接点 54 上下对应，该二排第一端子 50 的弹臂的导斜面 55 左右错开且皆卡勾于舌片 31。

[0195] 请参阅图 36，USB2.0 随身碟的板片型接头 115 的接点 116 朝下插入舌片 31 上方时，舌片 31 上方二侧的限位件 101 及第二限位件 110 被顶开向外侧弹开，舌片下方二侧的限位件 101 因限位于舌片 31 下面，故当 USB2.0 随身碟的板片型接头 115 插入时施力不当向下转时，该限位件 101 因抵接于舌片 31 下面可防止舌片受向下力量而折断。

[0196] 此时该舌片上面的第一端子 50 的第一接点 54 与 USB2.0 随身碟的板片型接头 115 的接点 116 弹性接触并向下弹动时，由于该二排第一端子 50 的导斜 面 55 呈一左一右错开，故二排二排第一端子 50 的导斜面 55 不会相互碰触。

[0197] 请参阅图 35，当 USB2.0 随身碟的板片型接头 115 的接点 116 朝上插入舌片 31 下方时，舌片上方二侧的限位件 101 因限位于舌片 31 上面，故该舌片 31 同样受到保护，不致因 USB2.0 随身碟的板片型接头 115 插入时施力不当而折断。

[0198] 请参阅图 37，当金属壳型 USB2.0 接头 90 的接点朝上插入连接槽时，金属壳型 USB2.0 接头 90 洽塞满舌片 31 下方空间，然而在舌片上方空间则未塞满，此时舌片上方二侧的第二限位件 110 可限位在该金属壳型 USB2.0 接头 90 上，故可抵挡该金属壳型 USB2.0 接头 90 向上转，达到保护舌片 31 的效果。

[0199] 请参阅图 38，当该金属壳型 USB2.0 接头 90 的接点朝下插入连接槽时，金属壳型 USB2.0 接头 90 洽塞满舌片 31 上方空间，然而在舌片下方空间则未塞满，此时舌片下方二侧的第二限位件 110 可限位在该金属壳型 USB2.0 接头 90 下，故可抵挡该金属壳型 USB2.0 接头 90 向下转，达到保护舌片 50 的效果。

[0200] 本实施例的设计除了具有双面插接的效果外，更具有保护舌片及加大端子的接点面积的效果。

[0201] 请参阅图 39，是本发明第十七实施例，其大致与第十六实施例相同，本实施例与第十六实施例的差异在于该限位构造 100 仅设有四个可弹动的限位件 101，该四个限位件 101 完全相同于第十六实施例的四个第二限位件 110。

[0202] 请参阅图 40，当金属壳型 USB2.0 接头 90 的接点朝上插入连接槽时，此时舌片上方二侧的限位件 101 限位在该金属壳型 USB2.0 接头 90 上，请参阅图 41，当该金属壳型 USB2.0 接头 90 的接点朝下插入连接槽时，此时舌片下方二侧的限位件 101 限位在该金属壳型 USB2.0 接头 10 下。

[0203] 请参阅图 42，是本发明第十八实施例，其大致与第十六实施例相同，本实施例与第十六实施例的差异在于该限位构造 100 仅设有二个可弹动的限位件 101，该二个限位件 101 为自该金属壳 40 二侧中间高度刺破向该连接槽 41 凸出并向该连接槽 41 后端延伸且可侧向弹动的弹片，该二限位件 101 同样设有一凸部。

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[0204] 请参阅图 43，当 USB2.0 随身碟的板片型接头 115 的接点 116 朝上插入连接槽 41 的舌片 31 下方时，此时舌片二侧的限位件 101 限位在该 USB2.0 随身碟的板片型接头 115 上，如此即可防止该 USB2.0 随身碟向上转；请参阅图 44， 当 USB2.0 随身碟的板片型接头 115 的接点 22 朝下插入连接槽 41 的舌片 31 上方时，此时舌片二侧的限位件 101 限位在该 USB2.0 随身碟的板片型接头 115 下，如此即可防止该 USB2.0 随身碟向下转。

[0205] 请参阅图 45，是本发明第十九实施例，其大致与第十八实施例相同，本实施例与第十八实施例的差异在于该限位构造 100 除了设有二个限位件 101 外更设有四个可弹动的第二限位件 110，该四个第二限位件 110 完全相同于第十六实施例的四个第二限位件 110。

[0206] 请参阅图 46，是本发明第二十实施例，其大致与第十六实施例相同，其差异在于本实施例的限位件 101 一端及第二限位件 110 一端皆连接于该金属壳 40 二侧板面并向连接槽前端呈弧状延伸，每一弹片设有一凸点 112，当该凸点 112 受挤压即使弹片向外侧弹动。

[0207] 请参阅图 47，是本发明第二十一实施例，其大致与第十七实施例相同，其差异在于本实施例的限位件 101 一端连接于该金属壳 40 二侧板面并向连接槽前端呈弧状延伸。

[0208] 请参阅图 48，是本发明第二十二实施例，其大致与第十八实施例相同，其差异在于本实施例的限位件 101 一端连接于该金属壳 40 二侧板面并向连接槽前端呈弧状延伸。

[0209] 请参阅图 49，是本发明第二十三实施例，其大致与第十八实施例相同，本实施例与第十六实施例的差异在于该限位构造 100 的限位件 101 的板面宽度较大，该限位件 101 的板面中间向连接槽刺破一凸部 112，该限位件 101 一端是连接于金属壳 40 两侧板面并接近前端而另一端向连接槽后端延伸并呈开放，该金属壳 40 前端两侧设有向外的折叠板 45 且上、下端亦设有如同第一实施例的凸部 43 藉以缩小该连接槽 41 的插入口高度，该凸部 43 弯折的圆弧半径较第一实施例的凸部为小，藉由该折叠板 45 可使该限位件 101 的弹臂较长而有较佳弹性，且增加插入框口的强度。

[0210] 请参阅图 50 及图 51，当一 USB2.0 随身碟的板片型接头 115 的接点 116 朝上插入连接槽 41 的舌片 31 下方时，该二限位片 101 可弹性夹紧该板片型接头 115，而该凸部 112 可限位于该板片型接头 115 上方，防止该 USB2.0 随身碟向上转，造成舌片 31 的折断。

[0211] 另外，由于一般单向插接的 USB 插座的上、下板各设有二个卡扣弹片卡扣具有金属壳型接头，然而本实施例为双向插接的 USB 插座，故仅能单边的 二个卡扣弹片卡扣金属壳型接头，故双向插接的 USB 插座的卡扣弹片凸出的卡扣必需是较小圆弧半径（R 角）才能有较佳的卡扣效果而能满足拔出力标准需求。

[0212] 请参阅图 51，本实施例的卡扣弹片 413 的卡扣 417 是以挤压方式而成缩小 R 角。

[0213] 请参阅图 52 及图 53，是本发明第二十四实施例，其大致与第二十三实施例相同，本实施例与第二十三实施例的差异在于该金属壳 40 前端二侧不设折叠板，该金属壳 40 与该限位构造 100 的限位件 101 连接处的上、下端皆设有一纵向缺口 46，如此虽不设外折板面而使限位件 101 的弹臂较短，然而藉由该纵向缺口 46 可增加限位件 101 的弹性。

[0214] 另外，请参阅图 53，本实施例的卡扣弹片 413 的卡扣 417 是以挤压方式而成缩小 R 角。

[0215] 请参阅图 54，是本发明第二十五实施例，其大致与第十八实施例相同，本实施例与第十八实施例的差异在于该限位构造 100 的限位件 101 的一端是连接于金属壳 40 两侧前端而另一端反折向连接槽后端延伸并呈开放，另外该金属壳 40 前端的上、下端亦设有如同

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第二十三实施例的凸部 43。

[0216] 请参阅图 55，是本发明第二十六实施例，其大致与第二十五实施例相同，本实施例与第二十五实施例的差异在于该限位构造 100 的限位件 101 是由外穿过金属壳 40 至连接槽 41 内，另外，本实施例的卡扣弹片 413 的卡扣 417 的板面中间是以挤压方式形成一较小 R 角的凸部 418。

[0217] 请参阅图 56，是本发明第二十七实施例，其大致与第二十三实施例相同，本实施例与第二十三实施例的差异在于该限位构造 100 是设有四个可弹动的限位件 101，该限位件 101 为一体连接于该金属壳 40 二侧的弹片，该限位件 101 一端是连接于该金属壳 40 两侧板面另一端向连接槽前端延伸并呈开放，该四限位件 101 皆弯曲设有一凸出的凸部 112，该金属壳 40 两侧对称各连接二限位件 101，该金属壳 40 一侧的二限位件 101 分别位于该舌片前方的上、下方。

[0218] 请参阅图 57，当一 USB2.0 随身碟的板片型接头 115 的接点朝下插入连接槽 41 的舌片 31 上方时，位于舌片下方的二限位片 101 可限位于该 USB2.0 随身碟的板片型接头 115 下方，故可防止该 USB2.0 随身碟向下转，造成舌片 31 的折断。

[0219] 请参阅图 58，当一 USB2.0 随身碟的板片型接头 115 的接点朝上插入连接槽的舌片 31 下方时，位于舌片上方的二限位片 101 可限位于该 USB2.0 随身碟的板片型接头 115 上方，故可防止该 USB2.0 随身碟向上转，造成舌片 31 的折断。

[0220] 请参阅图 59，是本发明第二十八实施例，其大致与第六实施例相同，本实施例与第六实施例的差异在于该限位构造 100 的限位件 101 为双力臂，该限位件 101 一体设有一第一力臂 117 及一第二力臂 118，该第一力臂 117 向后延伸再连接该第二力臂 118 向前延伸，该第二力臂 118 弯曲设有一凸出的凸部 112，该限位件 101 藉由该凸部 112 限位于舌片 31 的上、下面且藉由双力臂达到较佳的弹性。

[0221] 请参阅图 60，是本发明第二十九实施例，其大致与第二十八实施例相同，本实施例与第一实施例的差异在于该限位构造 100 更设有四个第二限位件 110，该四个第二限位件 110 对称设于该金属壳 40 两侧且位于该四限位件 101 的后方，该金属壳 40 一侧的二第二限位件 110 分别位于该限位件 101 的上、下方，该第二限位件 110 一端连接于金属壳 40 而另一端向前弯弧延伸并呈开放。

[0222] 请参阅图 61，当该金属壳型 USB2.0 接头 90 的接点朝下插入连接槽 41 时，此时舌片 31 下方二侧的二第二限位件 110 限位在金属壳型该 USB2.0 接头 90 前端下，如此该金属壳型 USB2.0 接头 90 前端无法向下转，藉以确保舌片 31 不致折损。

[0223] 请参阅图 62，当该金属壳型 USB2.0 接头 90 的接点朝上插入连接槽 41 时，此时舌片 31 上方二侧的二第二限位件 110 限位在该金属壳型 USB2.0 接头 90 前端上，如此该金属壳型 USB2.0 接头 90 前端无法向上转，藉以确保舌片 31 不致折损。

[0224] 请参阅图 63，是本发明第三十实施例，其大致与第一实施例相同，本实施例与第一实施例的差异在于该限位构造 100 的构造是与第二十九实施例相同。

[0225] 请参阅图 64，是本发明第三十一实施例，其大致与第二十四实施例相同，本实施例与第二十四实施例的差异在于该限位构造 100 更设有四个第二限位件 110，该四个第二限位件 110 的构造是与第二十九实施例的四个第二限位件 110 相同。

[0226] 请参阅图 65，是本发明第三十二实施例，其大致与第二十四实施例相同，本实施例

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与第二十四实施例的差异在于该限位构造 100 的限位件 101 的凸部 112 是由一可弹动的第二力臂 118 弯曲凸出，如此使该限位件 101 成双力臂，增加弹性而不易疲乏；再者，该连接槽 41 的插入口四角落各设有一凸块 48，该凸块 48 是与该金属壳 40 的二侧板一体相连且与该凸部 43 等高，如此，藉由该凸块 48 及凸部 43 限位连接槽的插入口高度，当 USB 接头插入抵靠该凸块 48 及凸部 43 定位时，力量能由金属壳 40 的二侧板及上、下板承受；再者，该金属壳 40 的上、下板的卡扣弹片 413 设有凸肋 414 增加保持力。

[0227] 请参阅图 66，是本发明第三十三实施例，其大致与第三十二实施例相同，本实施例与第三十二实施例的差异在于该四凸部 43 是设于该连接槽 41 的插入口四角落。

[0228] 请参阅图 67，是本发明第三十四实施例，其大致与第三十二实施例相同，本实施例与第三十二实施例的差异在于该金属壳 40 的上、下板是分别向舌片 31 弯折一凸部 43 藉以限制该连接槽 41 的插入口高度，该二凸部 43 是由金属壳 40 左侧连续至右侧不间断。

[0229] 请参阅图 68 及图 68A，是本发明第三十五实施例，其大致与第三十二实施例相同，本实施例与第三十二实施例的差异在于该金属壳 40 的上、下板 410 分别向舌片 31 弯折的二凸部 43 是设于该连接槽 41 的插入口四角落，藉以限制该连接槽 41 的插入口高度，该四凸部 43 卡定金属壳 40 的二侧板 49 的凹口 415，如此可更藉由二侧板 49 的力量增加该连接槽 41 的插入口的整体刚性。

[0230] 请参阅图 69、图 70 及图 71，是本发明第三十六实施例，其大致与第二十七实施例相同，本实施例与第二十七实施例的差异在该限位构造 100 设有二个可弹动的限位件 101，该二限位件 101 为一体连接于该金属壳 40 二侧的弹片，该二限位件 101 是呈纵向且中段一侧藉由一连接片 415 连接于该金属壳 40 的二侧板，该限位件 101 的上、下端各设有一呈水平的限位板 113，该限位板 113 伸入连接槽 41 内且设有一导入斜角 114。

[0231] 请参阅图 72，当该金属壳型 USB2.0 接头 90 的接点朝下插入连接槽 41 时，此时该二限位件 101 上端的限位板 113 被抵推而向外侧枢转，故下端的限位板 113 即限位在该金属壳型 USB2.0 接头 90 下，如此该金属壳型 USB2.0 接头 90 无法向下转，藉以确保舌片 31 不致折损。

[0232] 请参阅图 73，是本发明第三十七实施例，其大致与第三十六实施例相同，本实施例与第三十六实施例的差异在该限位构造 100 的二限位件 101 是中段二侧各藉由一连接片 415 连接于该金属壳 40 的二侧板。

[0233] 请参阅图 74，是本发明第三十八实施例，其大致与第二十四实施例相同，本实施例与第二十四实施例的差异在该二排第一端子 50 皆设有一连接凸部 58 与一电路板 120 电连接，使二排第一端子 50 藉由该电路板 120 成一对一串接，形成共用一排接脚，即舌片上方的一排第一端子 50 藉由舌片下方的一排第一端子 50 的接脚 53 作电性输出。

[0234] 再者二排第一端子 50 藉由该电路板 120 成一对一串接可采反向依序串接，即上排序号 1 端子和下排序号 4 端子电连接、上排序号 2 端子和下排序号 3 端子电连接、上排序号 3 端子和下排序号 2 端子电连接、上排序号 4 端子和下排序号 1 端子电连接；另外可采上下对齐串接，即上排序号 1 端子和下排序号 1 端子电连接、上排序号 2 端子和下排序号 2 端子电连接、上排序号 3 端子和下排序号 3 端子电连接、上排序号 4 端子和下排序号 4 端子电连接。

[0235] 在较佳实施例的详细说明中所提出的具体的实施例仅为了易于说明本实用新型

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的技术内容，而并非将本实用新型狭义地限制于该实施例，在不超出本实用新型的精神及申请专利范围的情况，可作种种变化实施。

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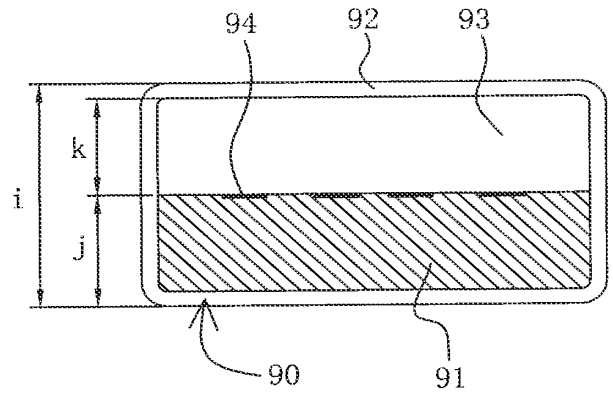


图 1

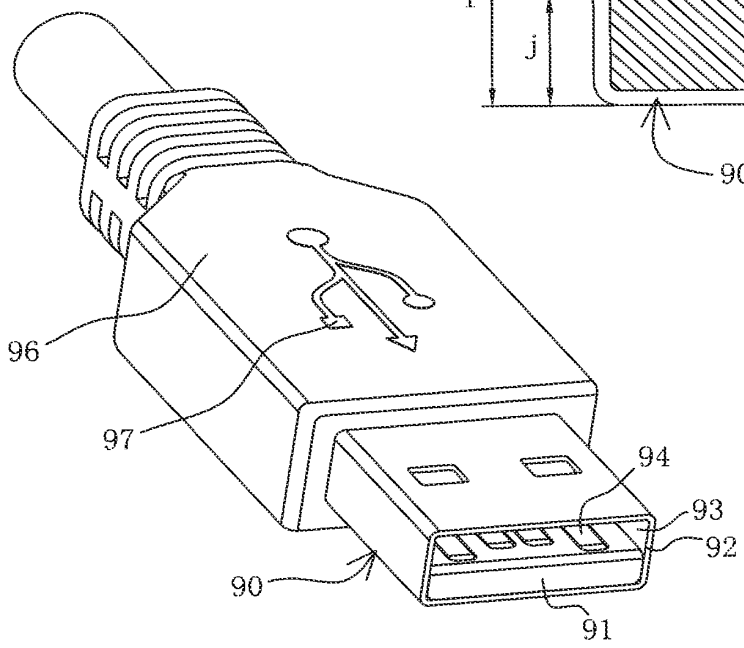


图 1A

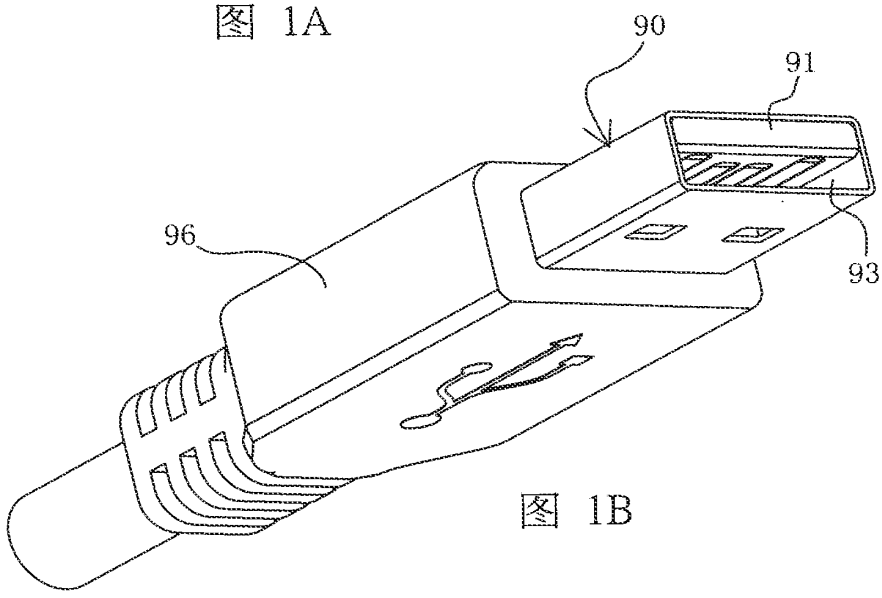


图 1B

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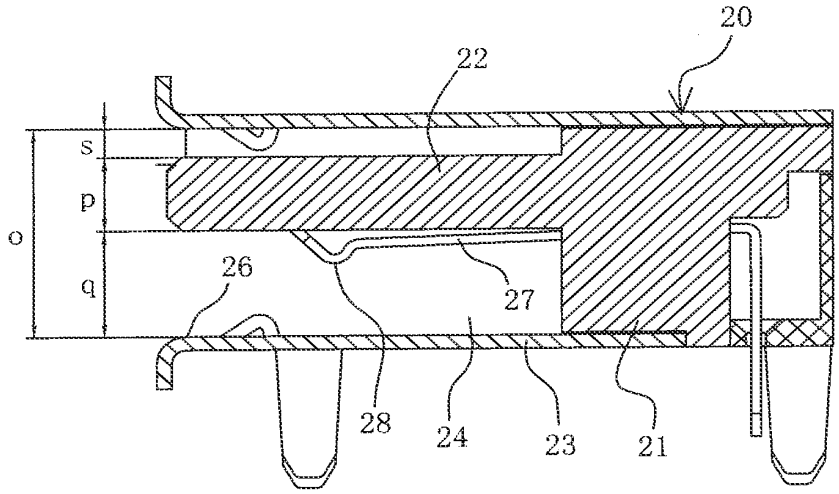


图 2

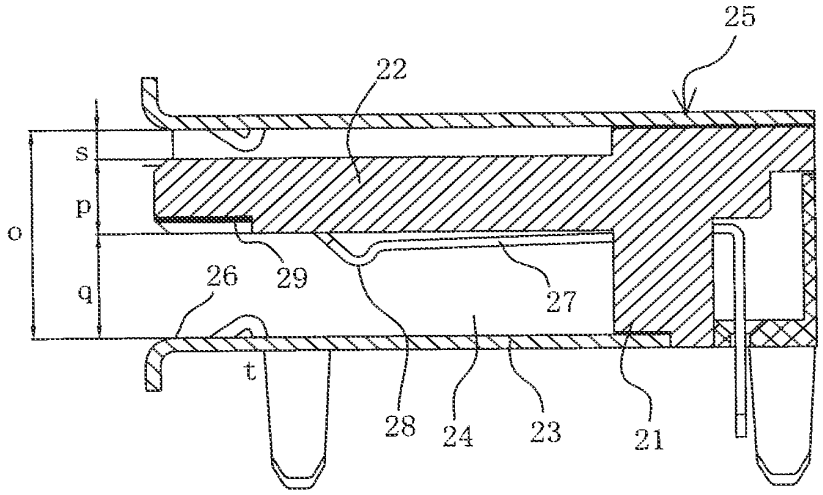
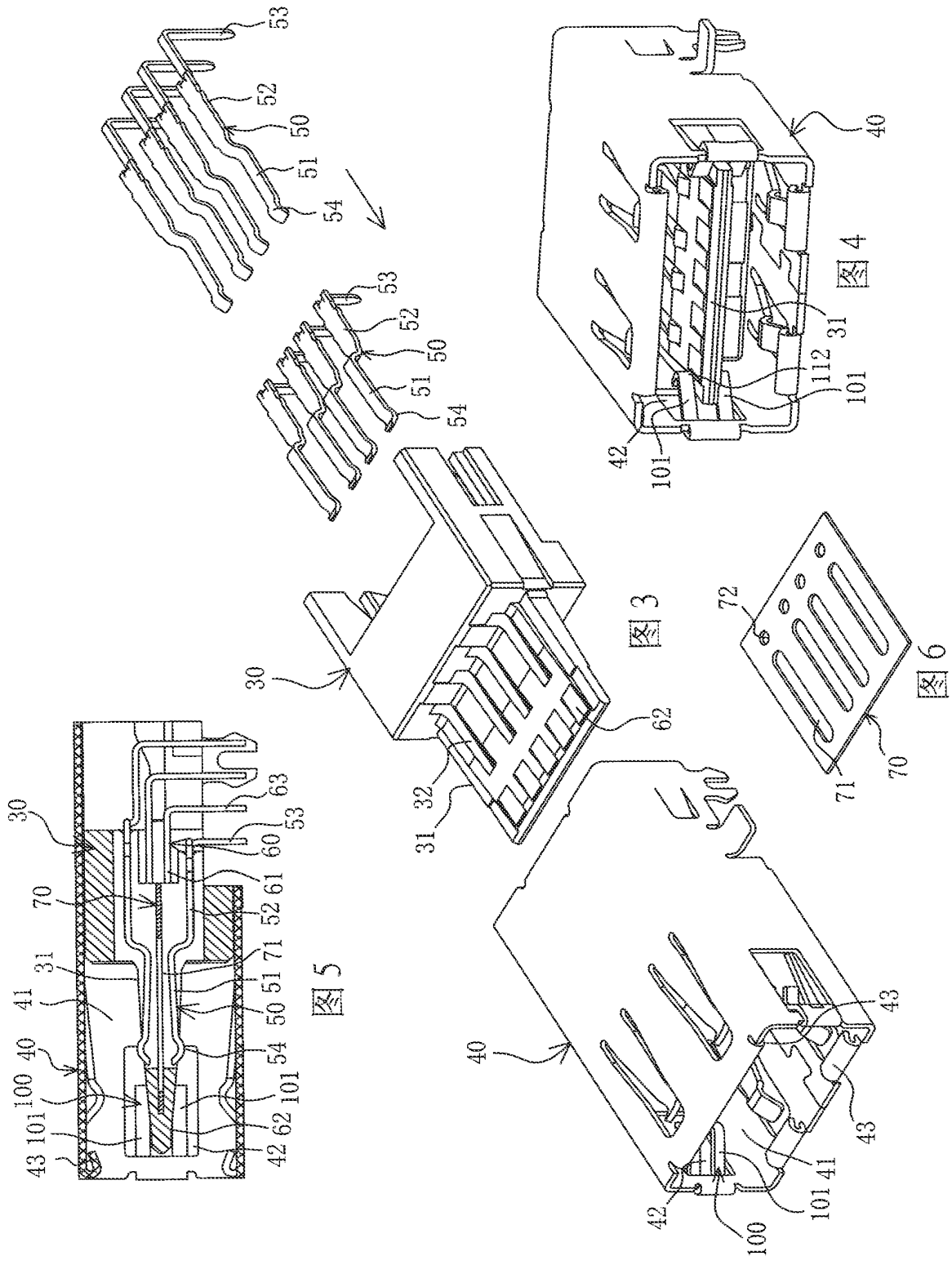


图 2A

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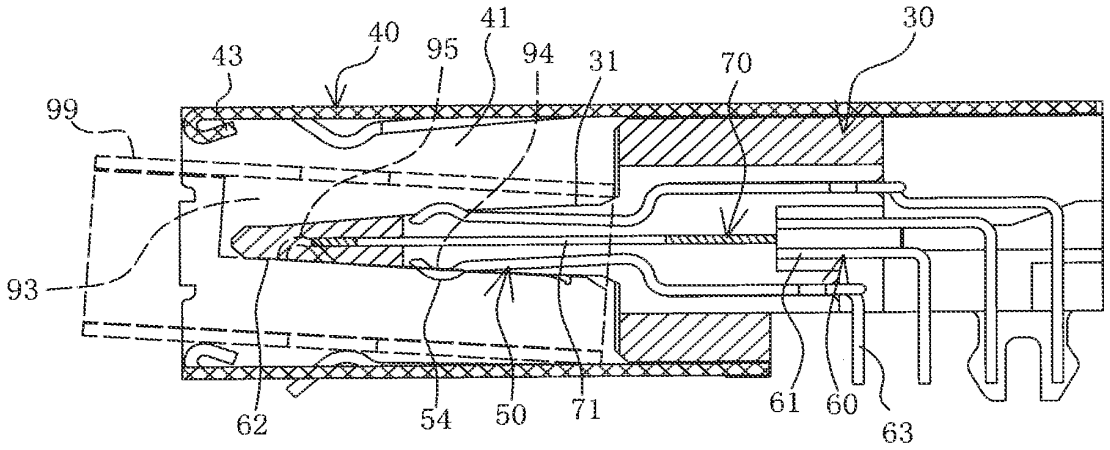


图 7

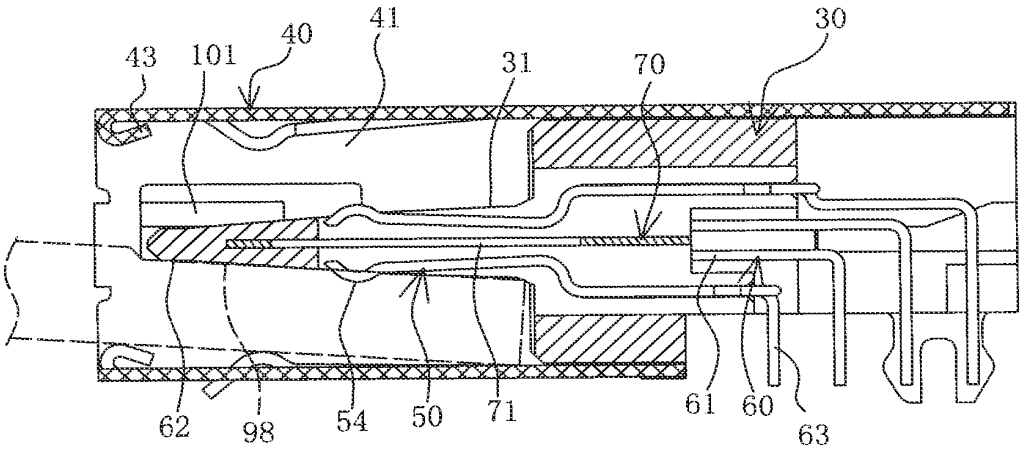


图 7A

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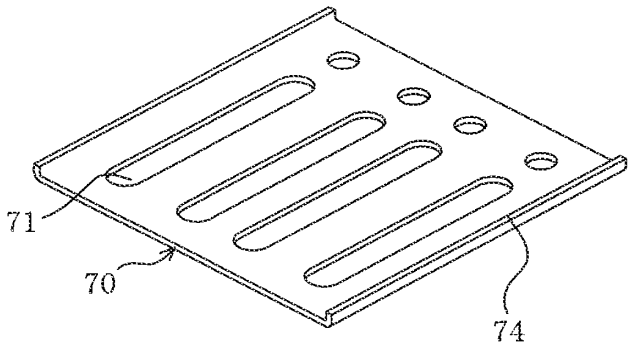


图 8

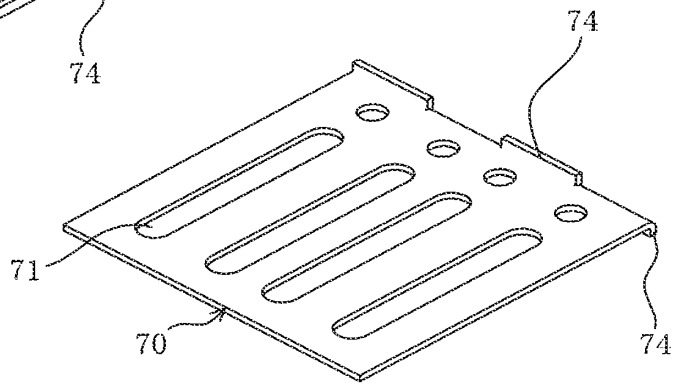


图 9

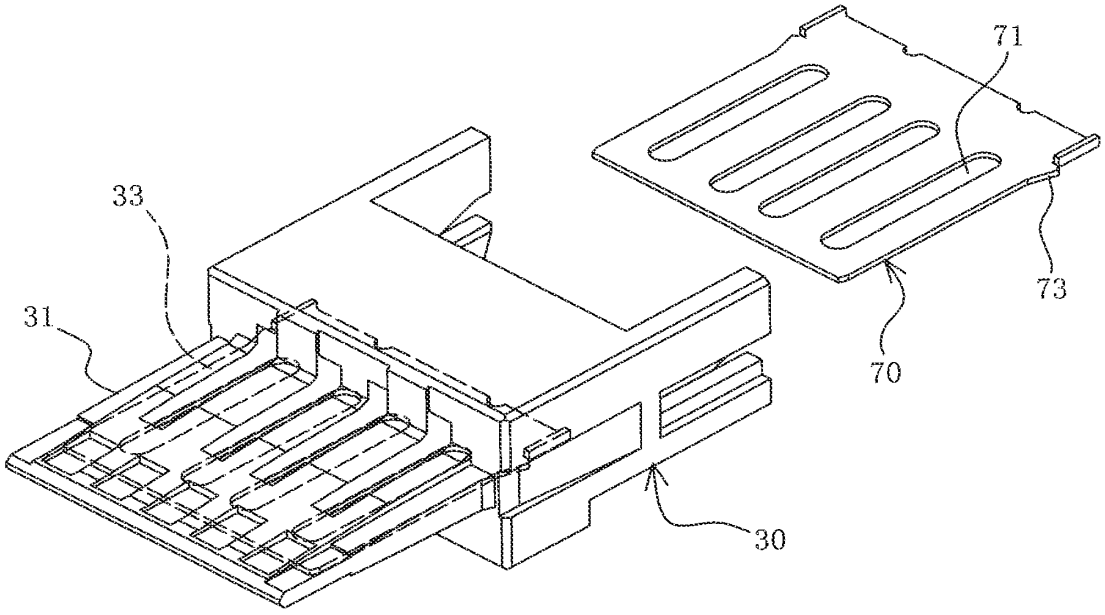


图 10

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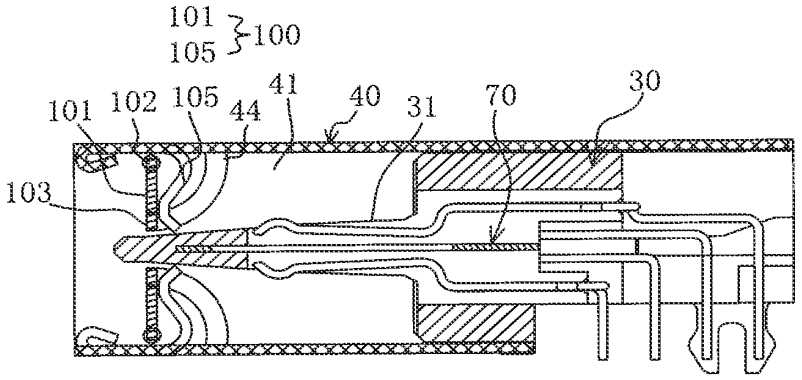


图 11

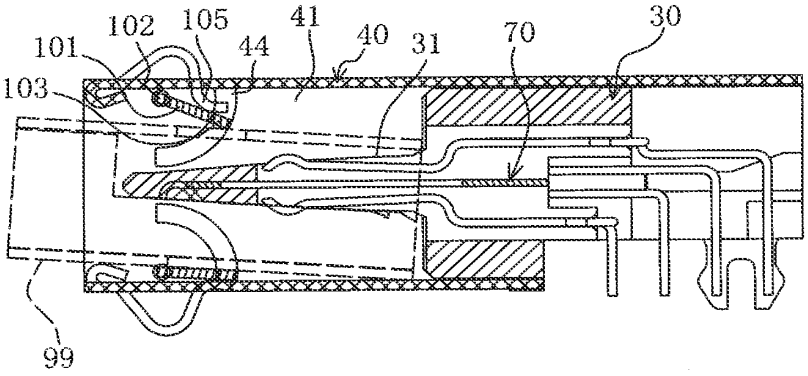


图 12

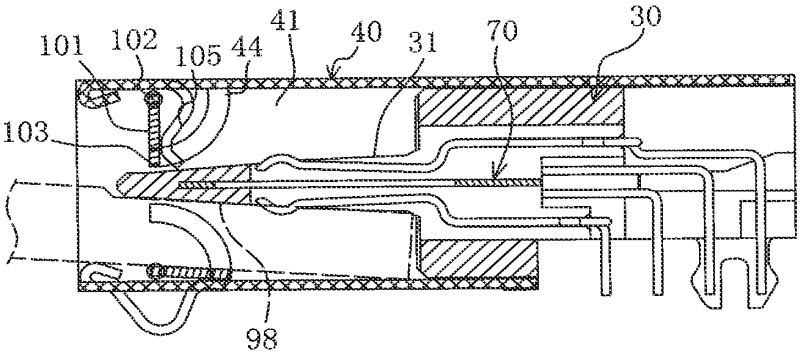


图 12A

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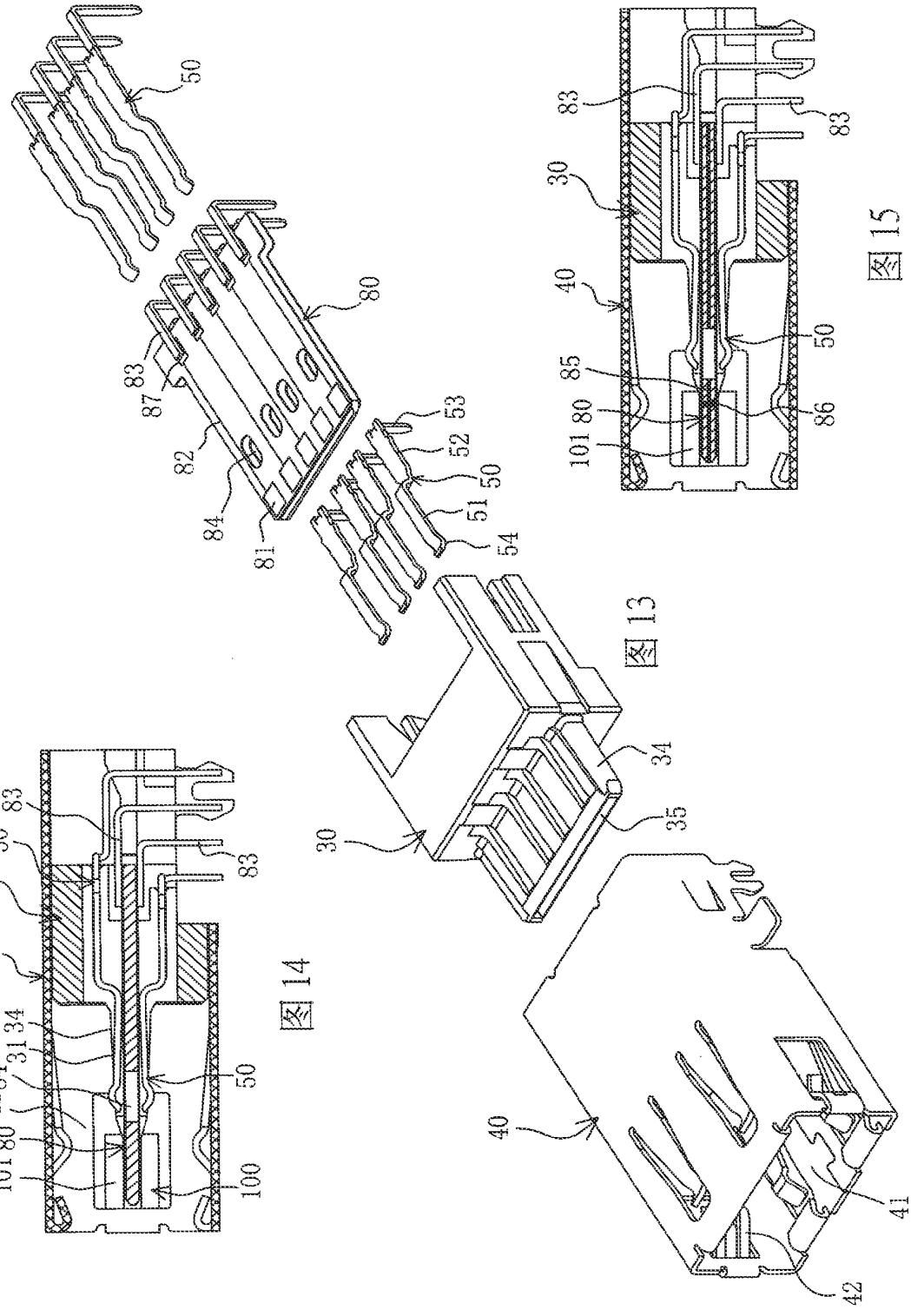


图 13

图 14

图 15

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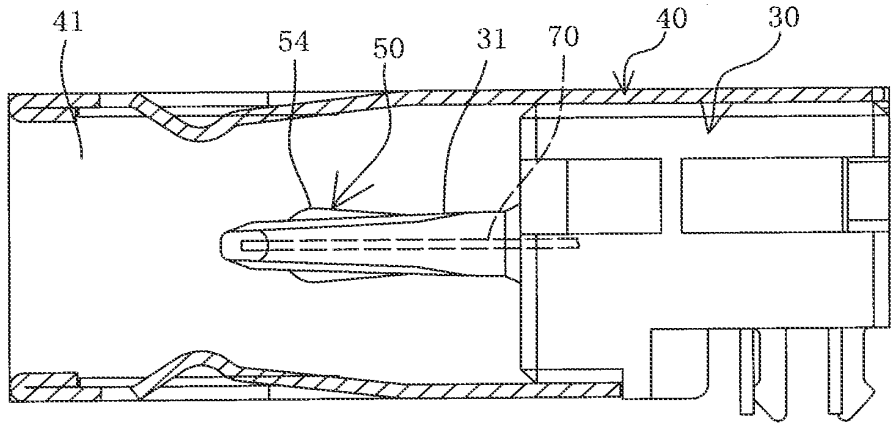


图 16

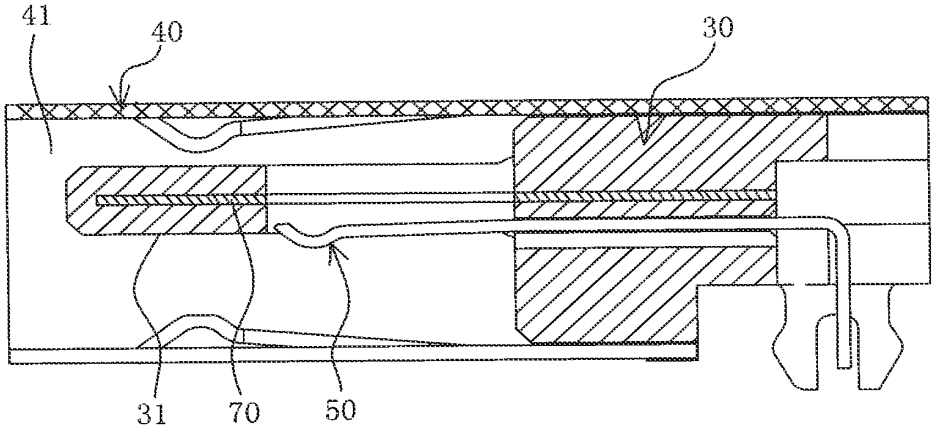


图 17

Samsung, EX1002, p. 2609

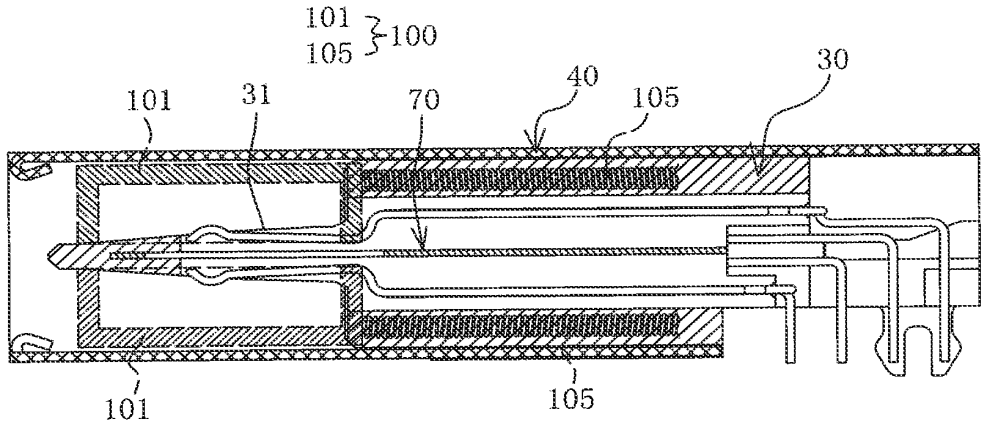


图 18

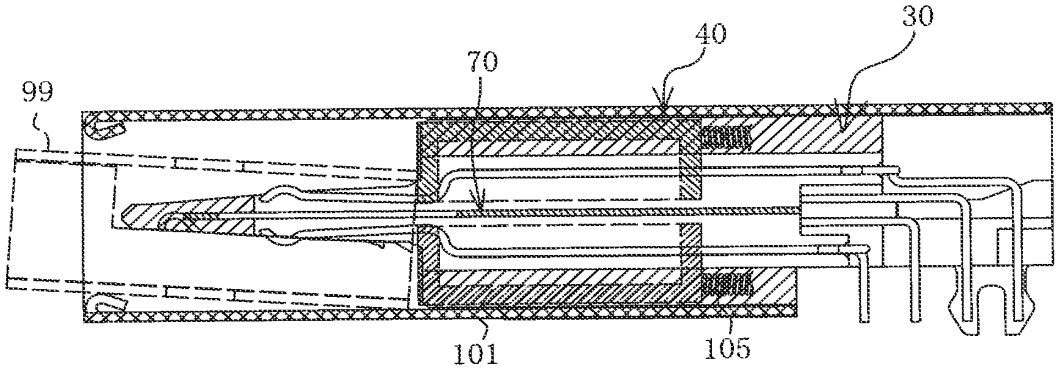


图 19

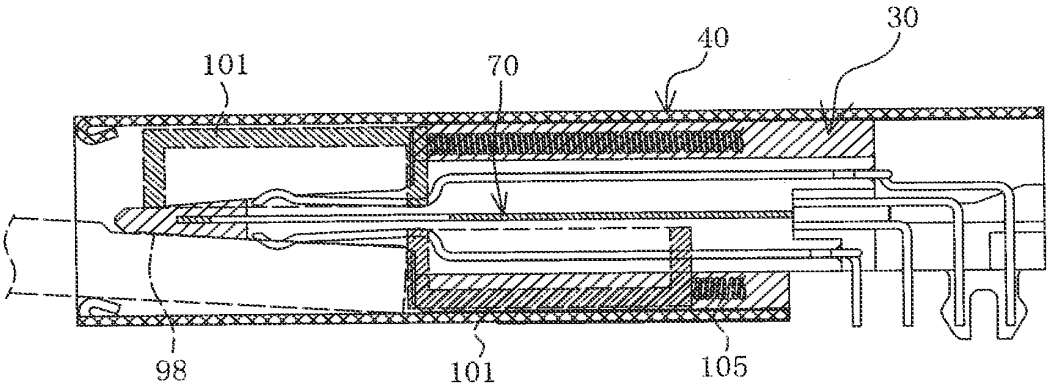


图 20

Samsung, EX1002, p. 2610

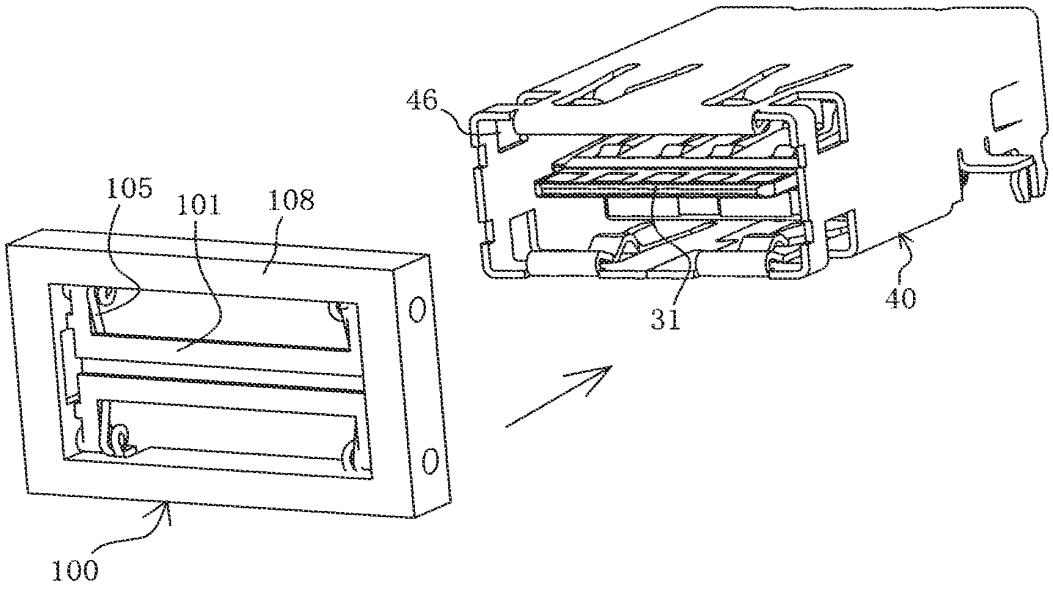


图 21

Samsung, EX1002, p. 2611

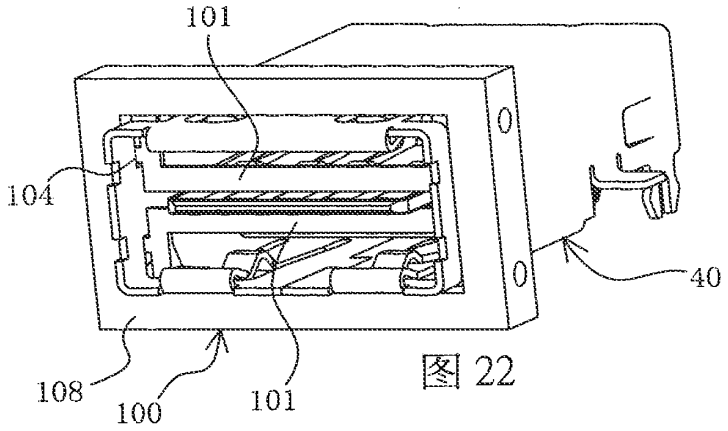


图 22

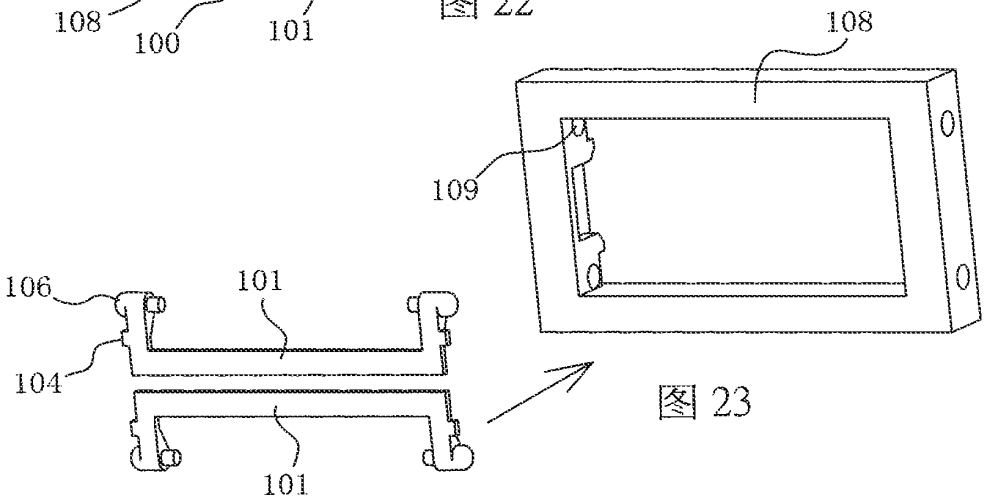


图 23

Samsung, EX1002, p. 2612

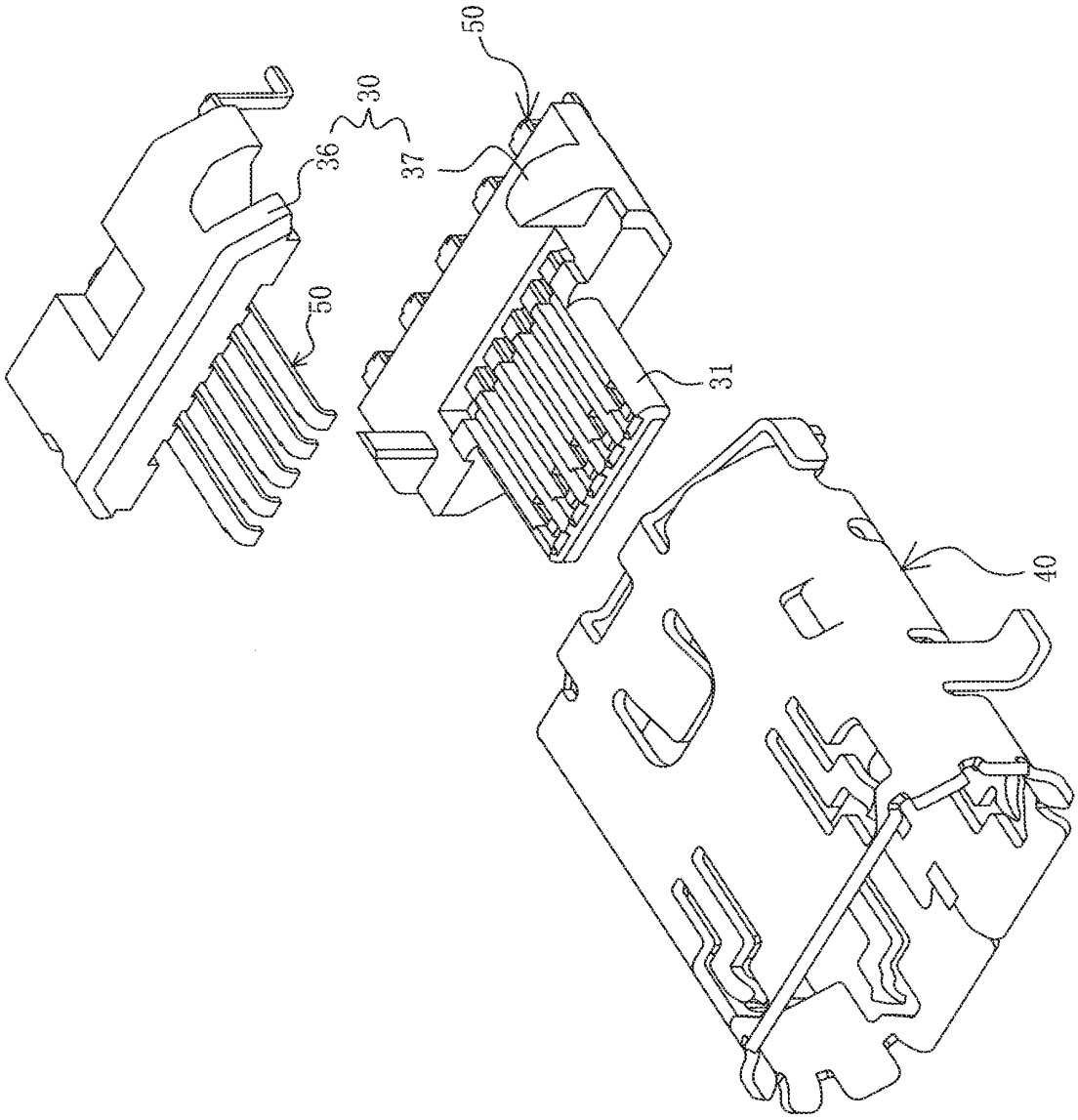


图 24

Samsung, EX1002, p. 2613

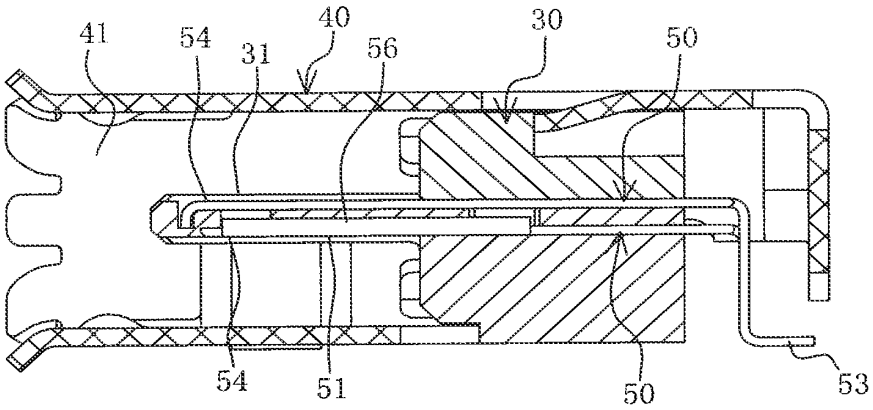


图 25

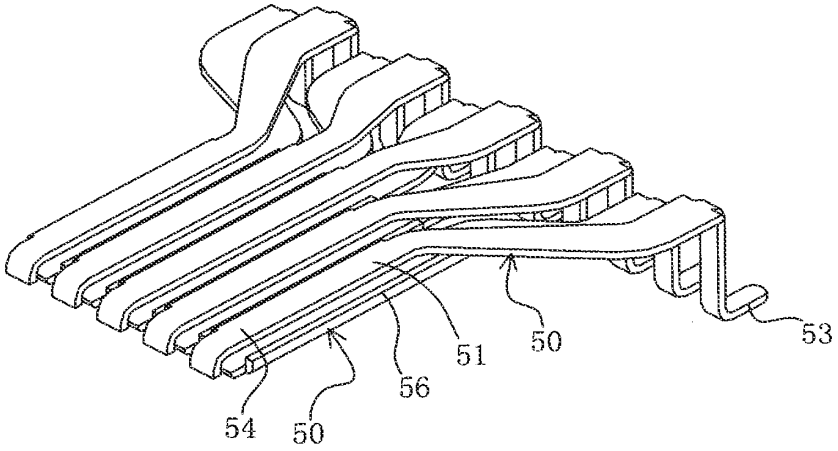


图 26

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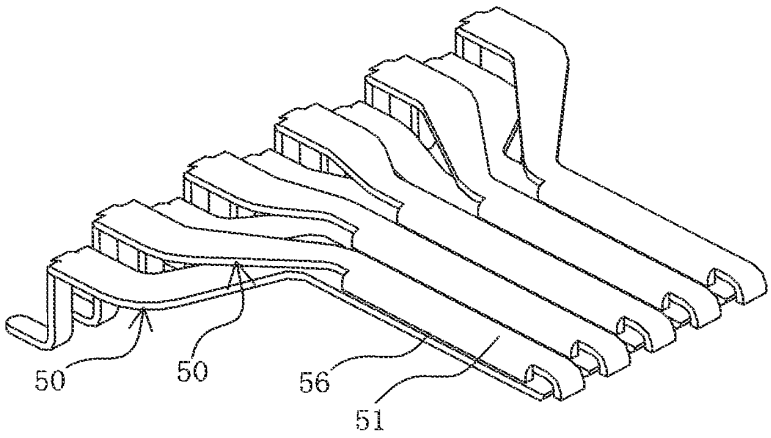


图 27

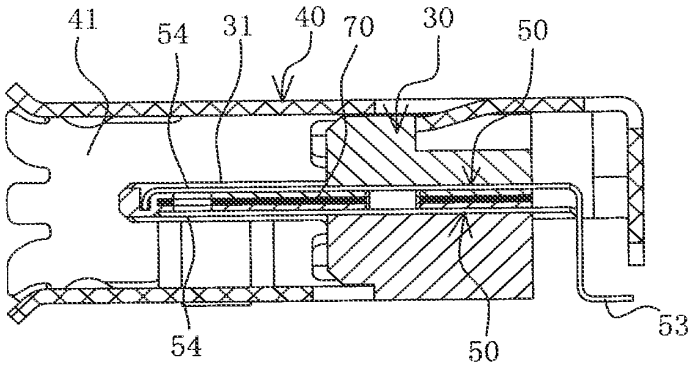


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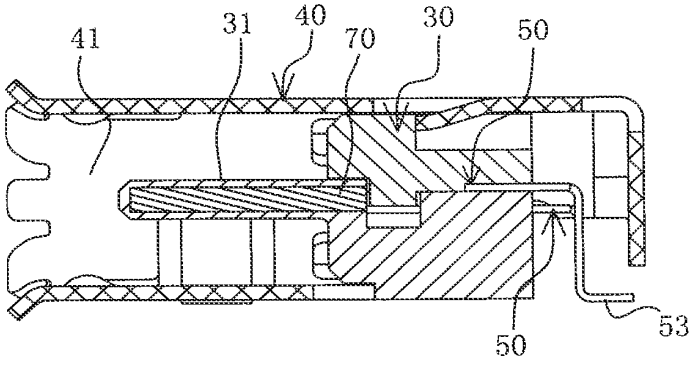


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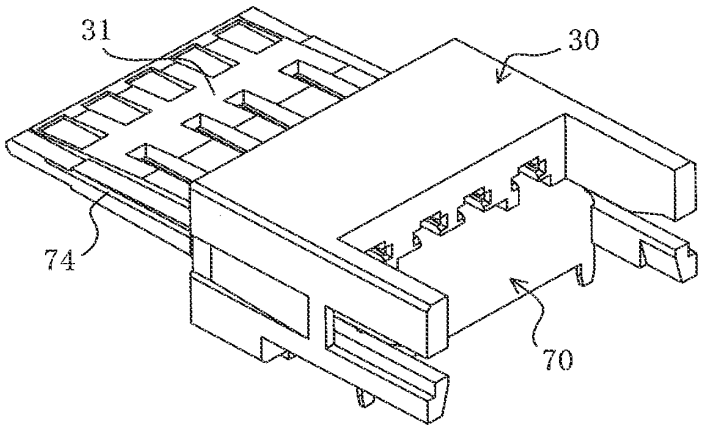


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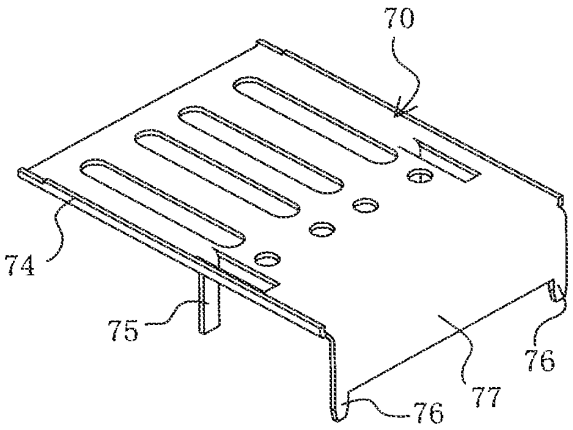
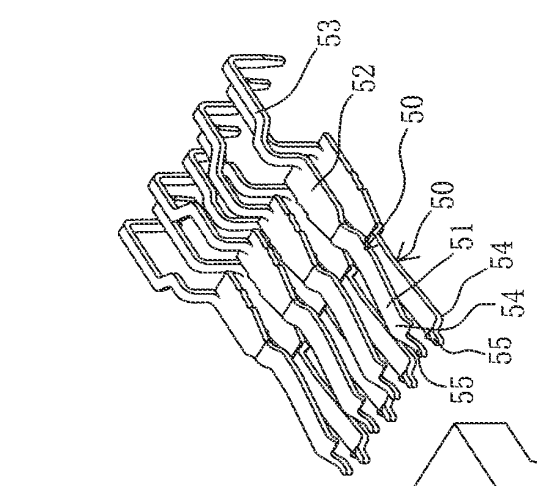


图 31

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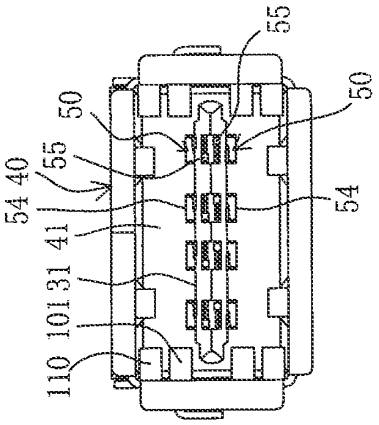


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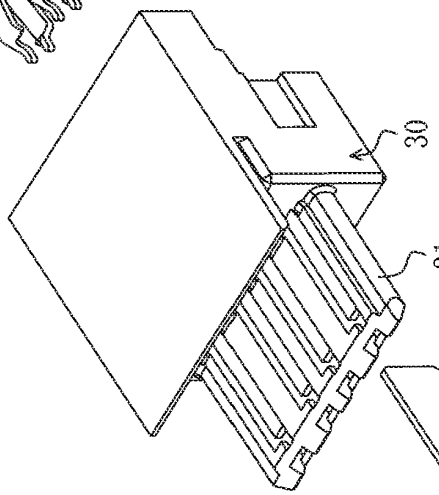


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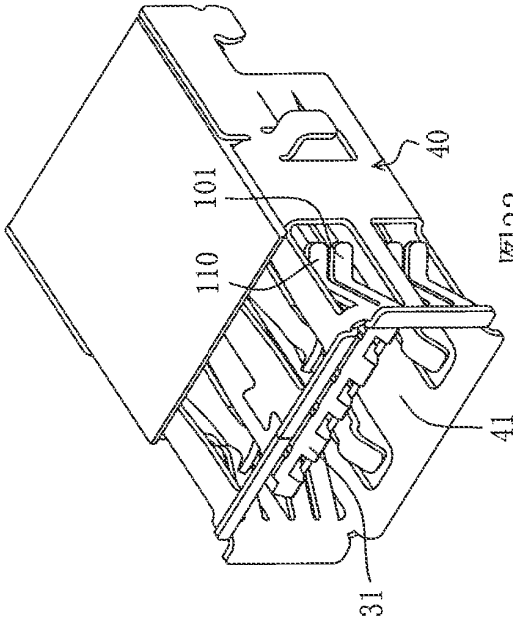
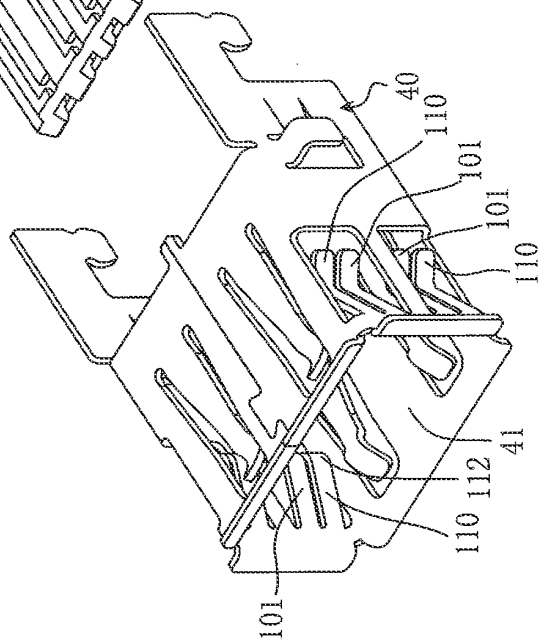


图33



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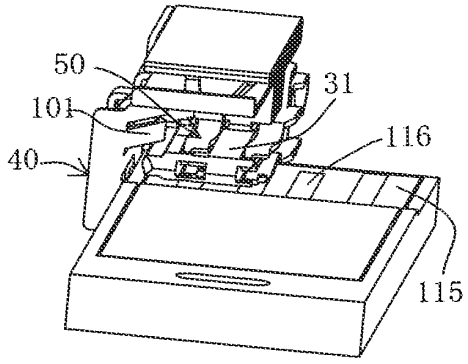


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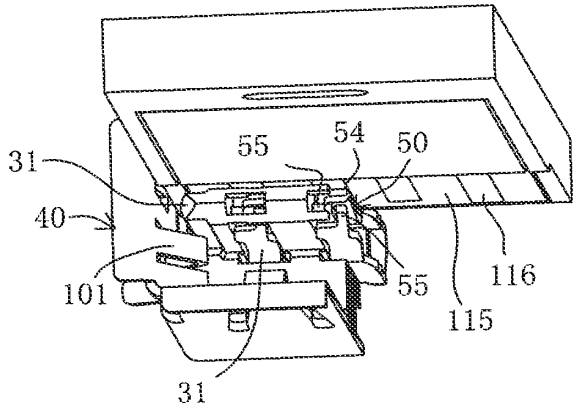


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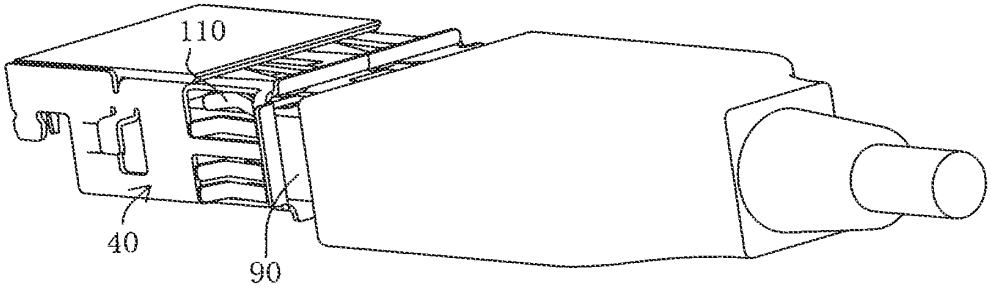


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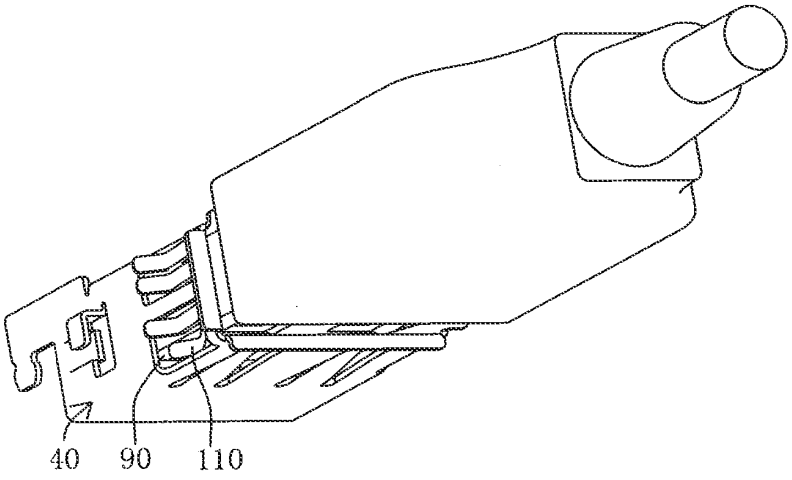


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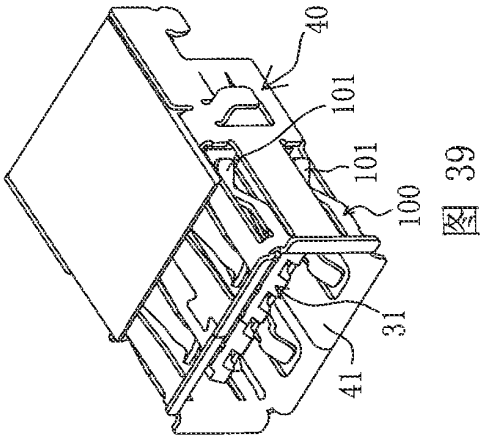


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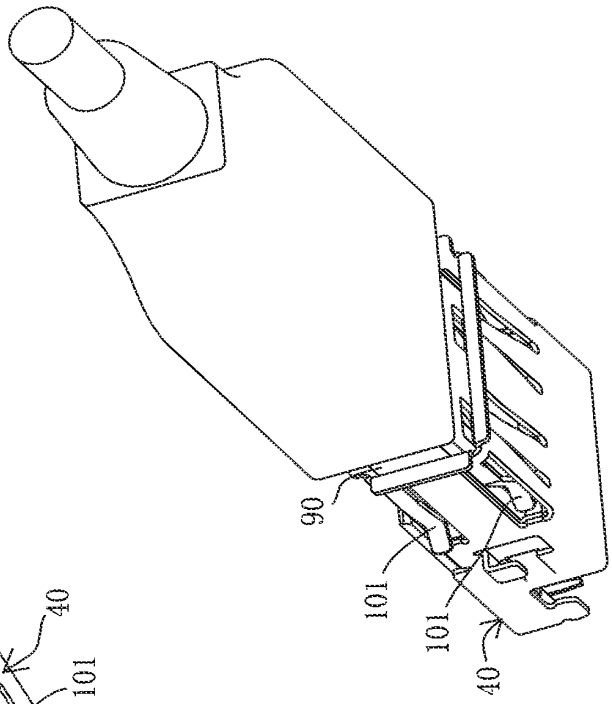


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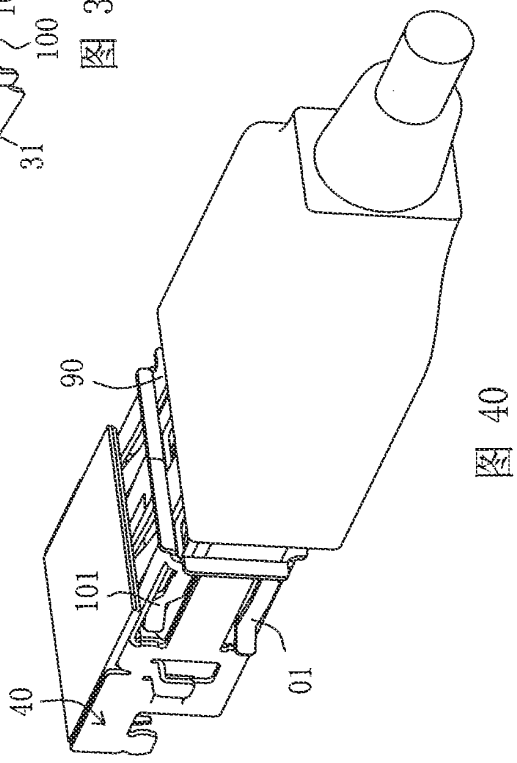


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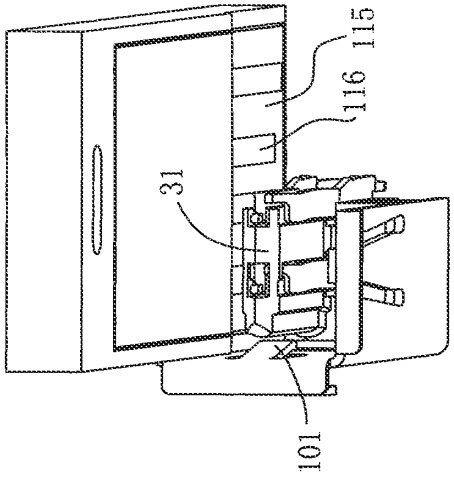


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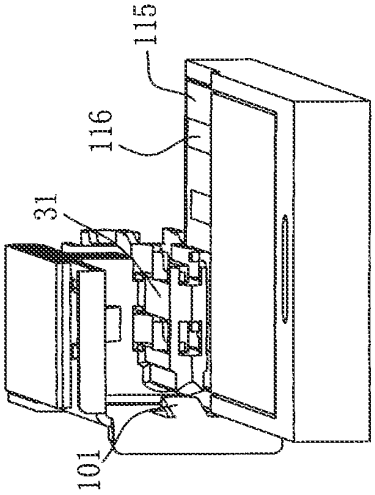


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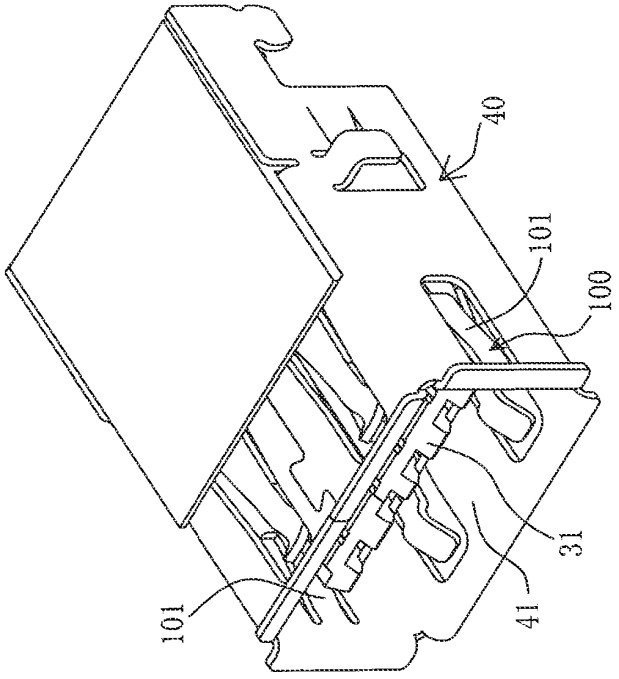


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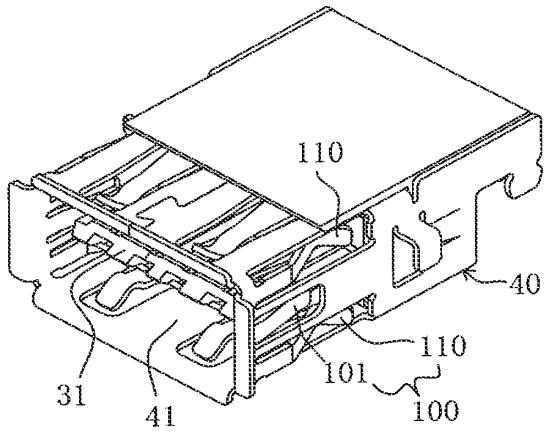


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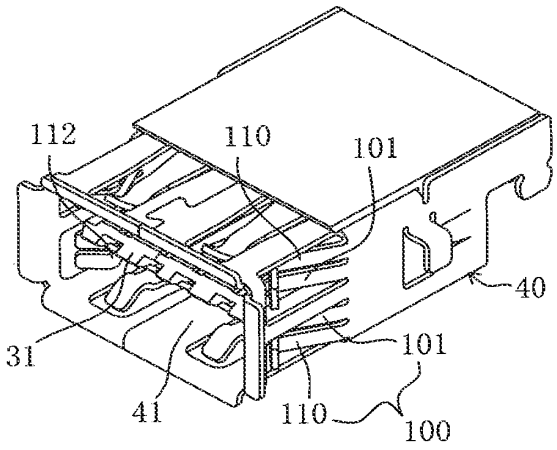


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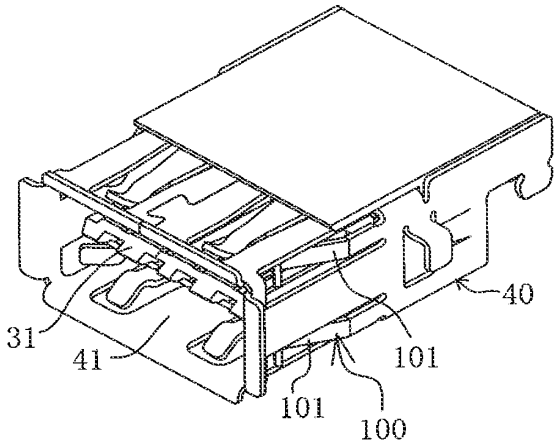


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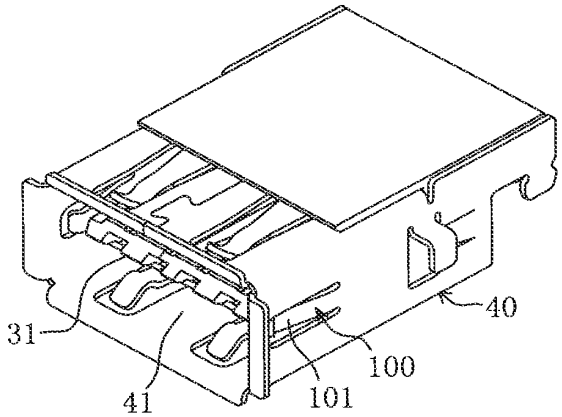


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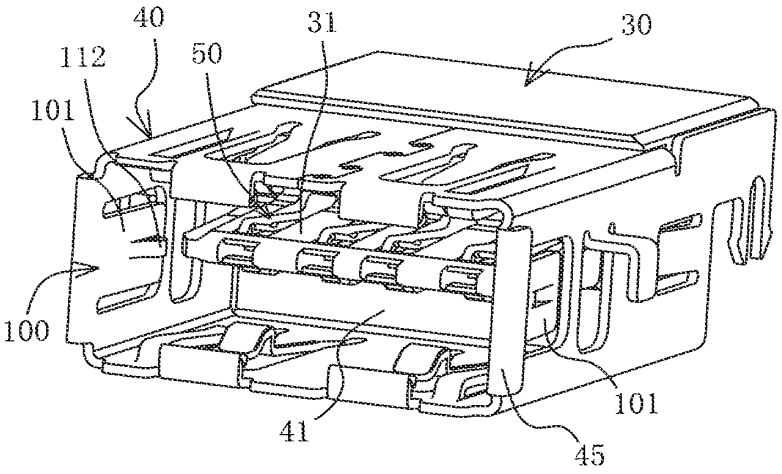


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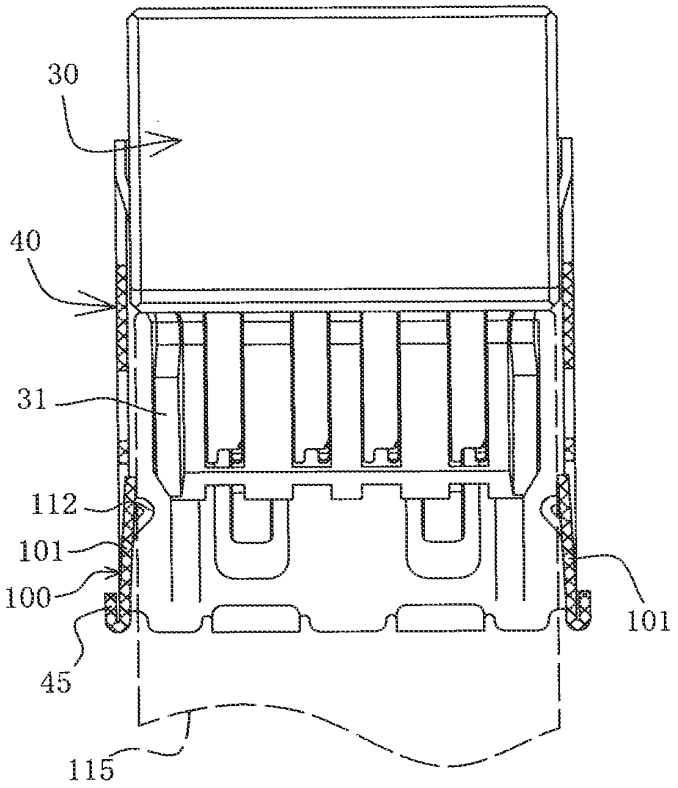


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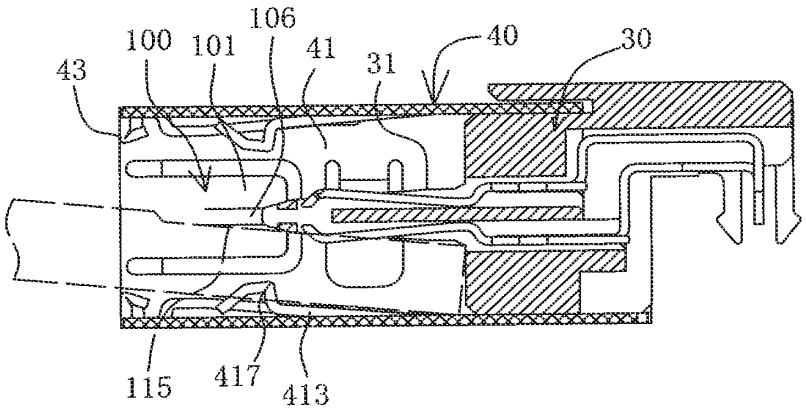


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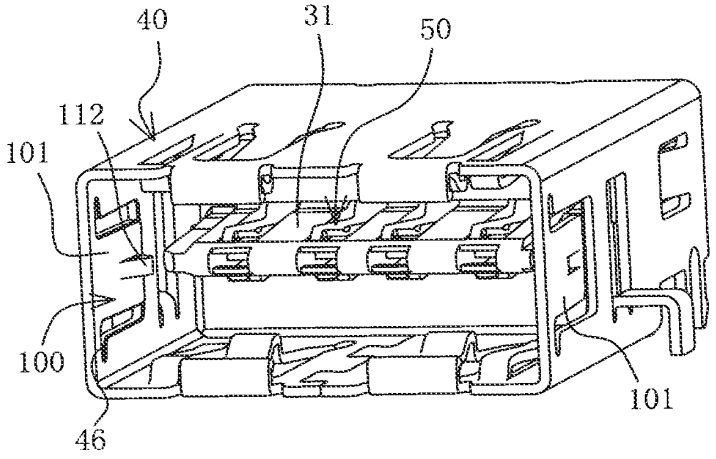


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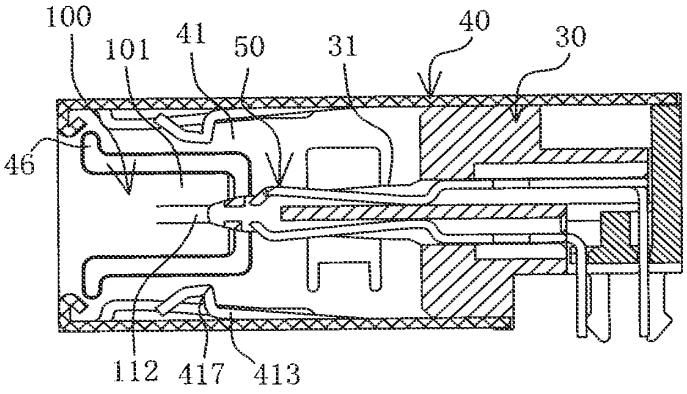


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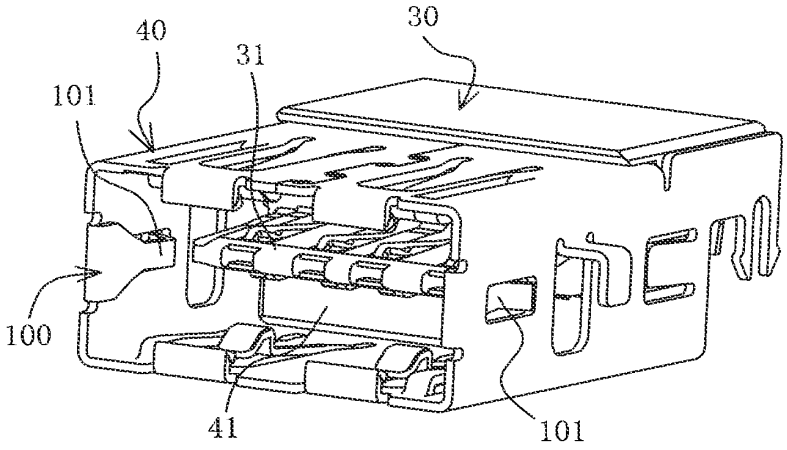


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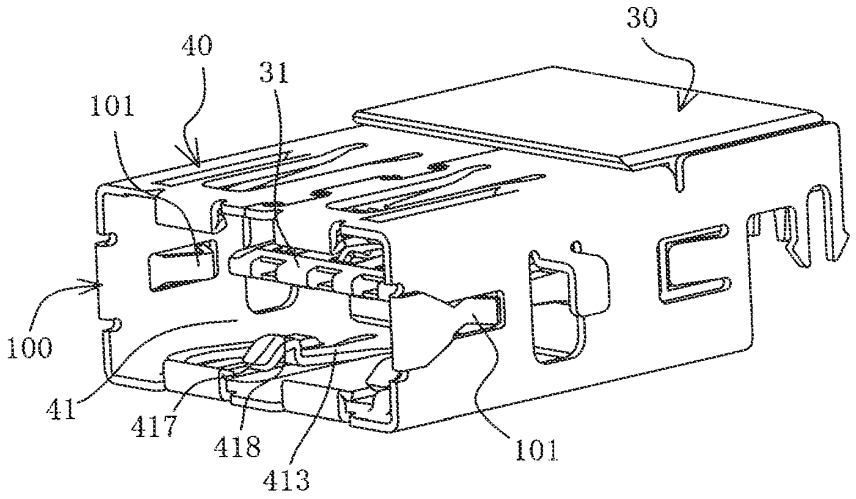


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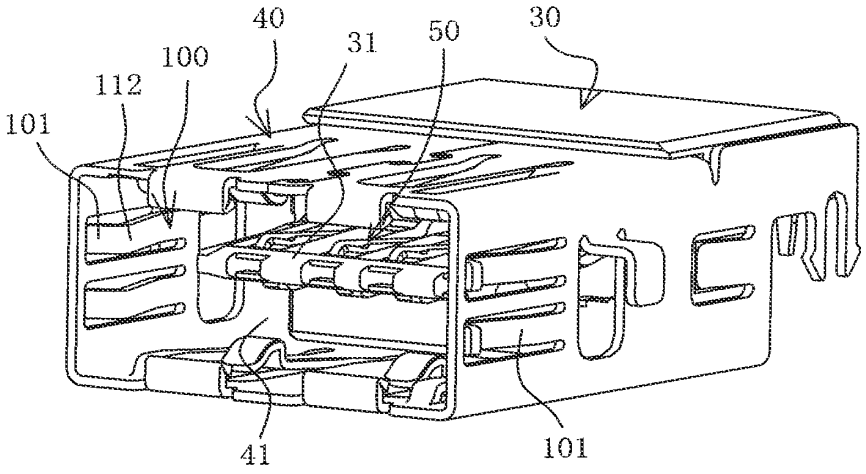


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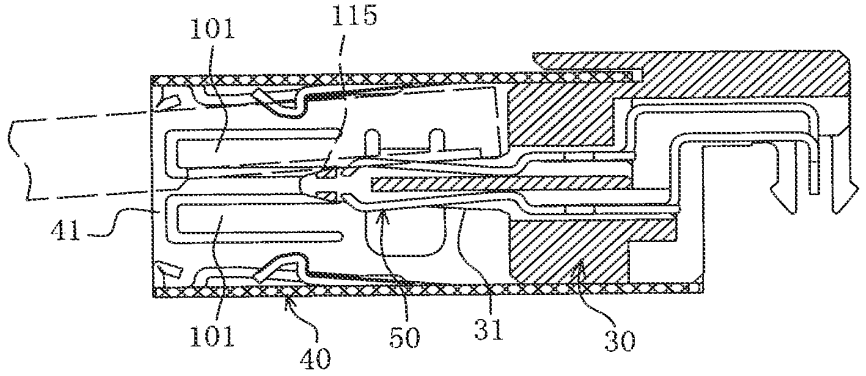


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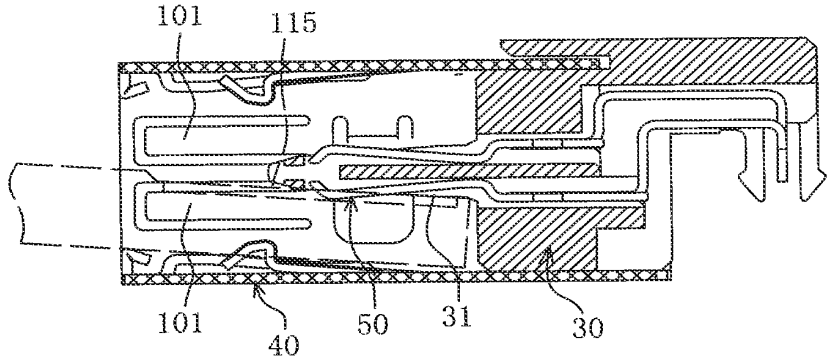


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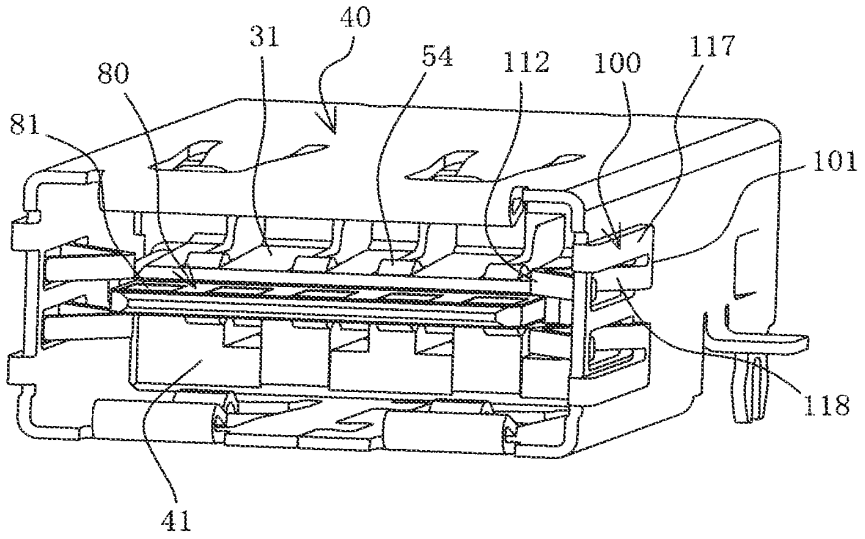


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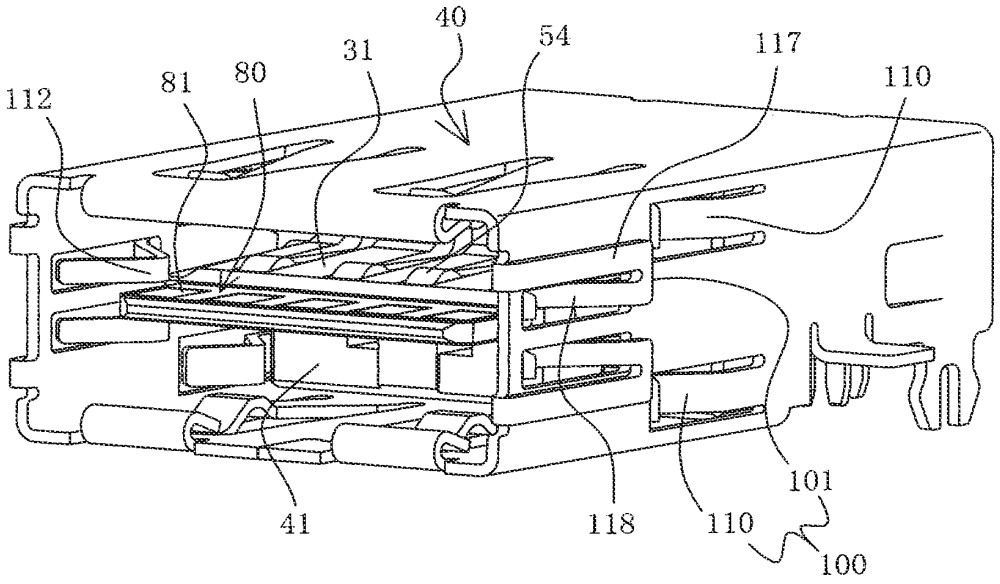


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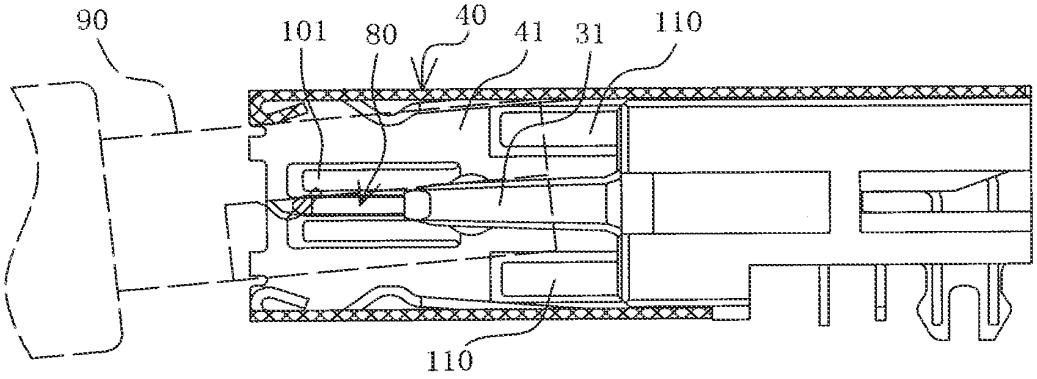


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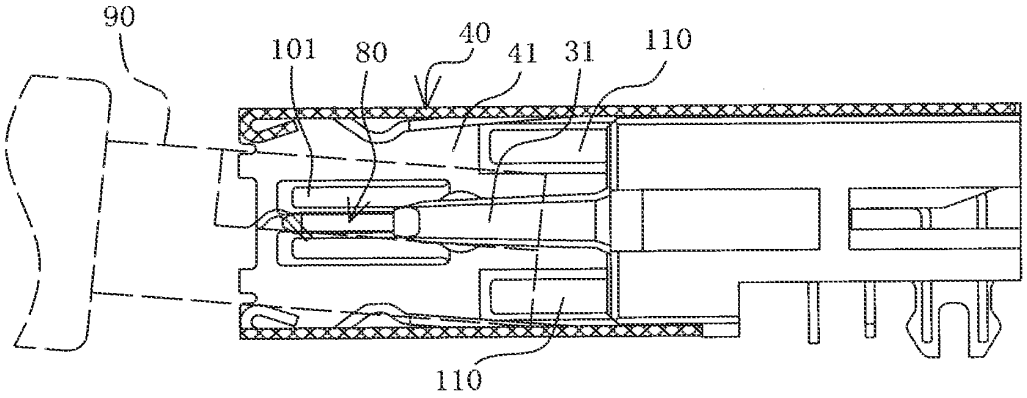


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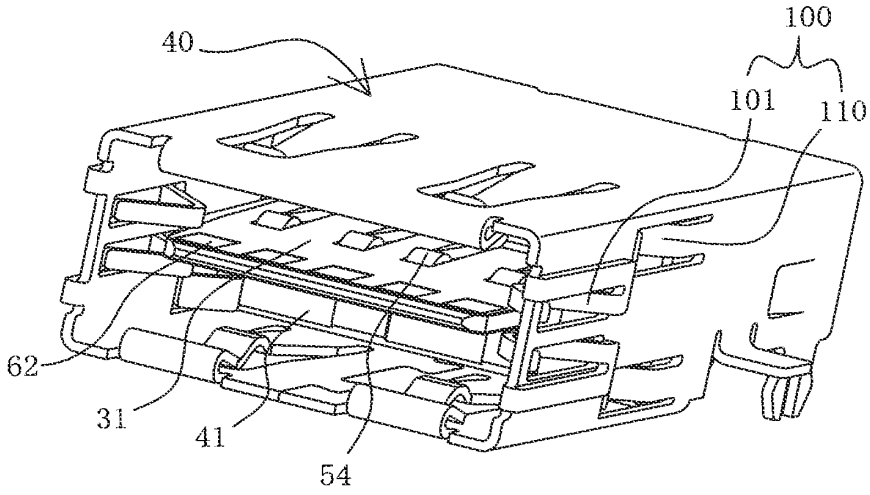


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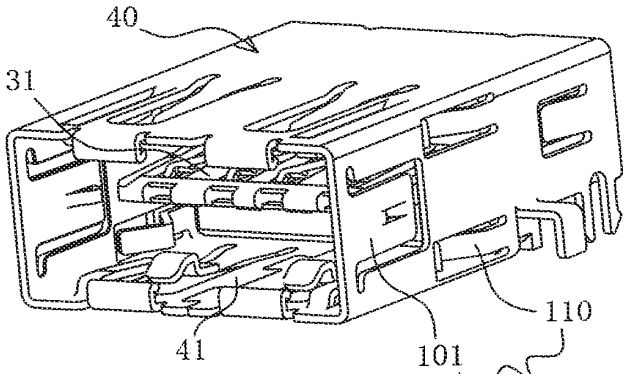


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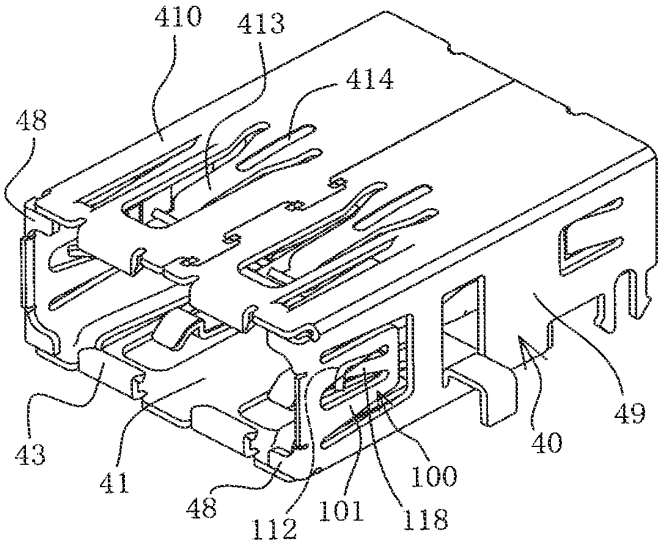


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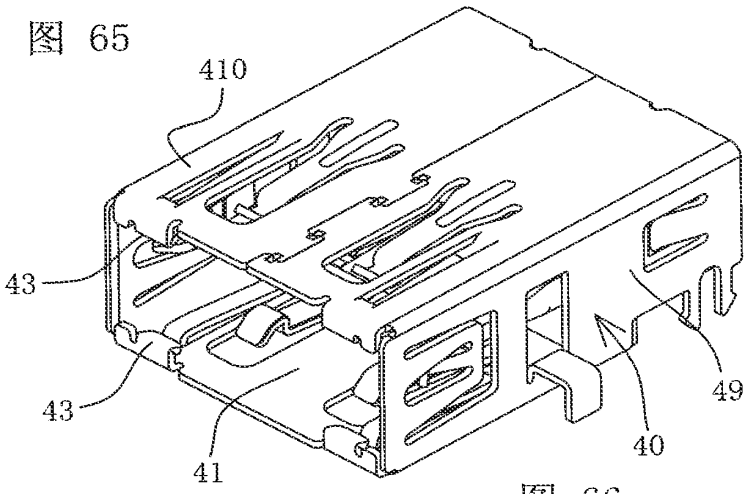


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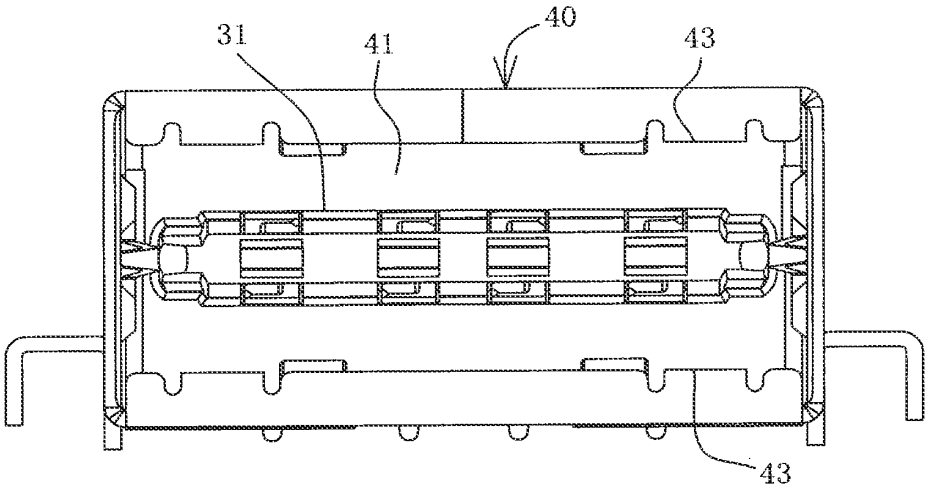


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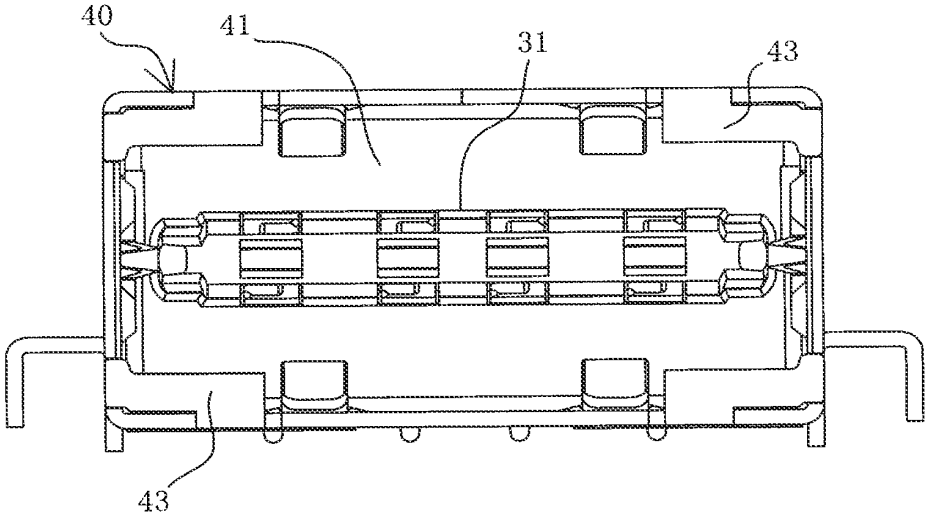


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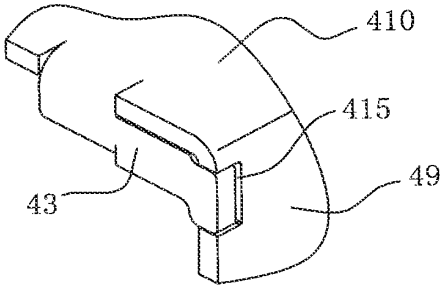


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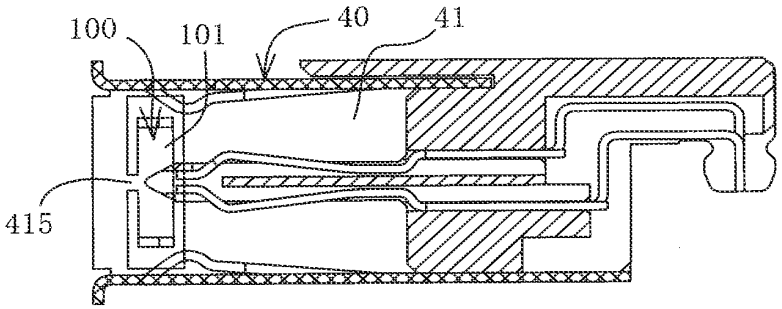


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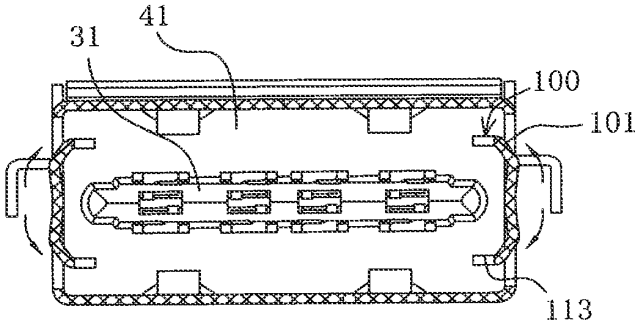


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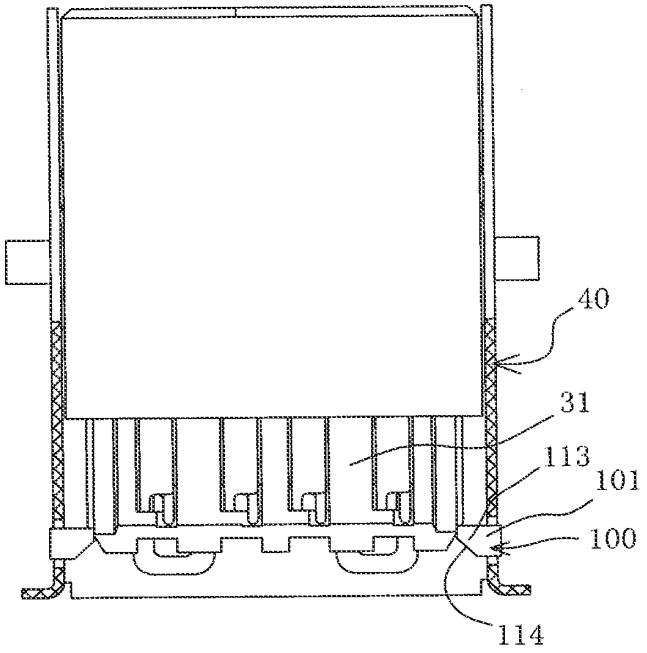


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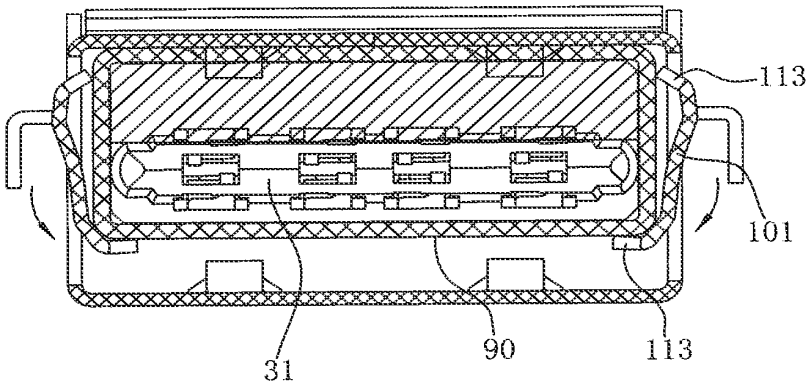


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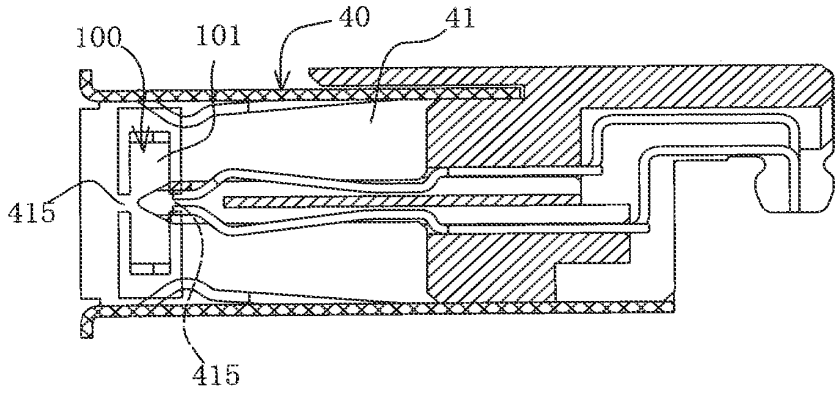


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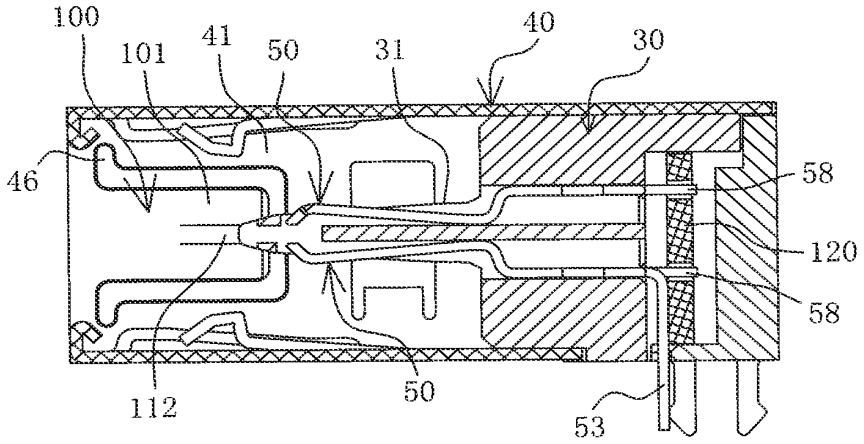


图 74

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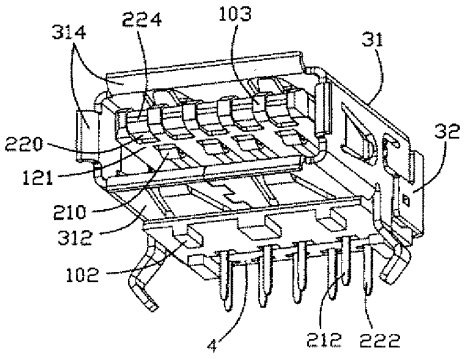
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(54)【発明の名称】ソケットコネクタ

(57)【要約】
【課題】本発明は、信号を転送する速度を高めるソケットコネクタを提供することを目的とする。
【解決手段】本発明のソケットコネクタは、絶縁性本体と、第１、第２端子グループと、遮蔽部材とを備える。絶縁性本体は、相手面と実装面とを含み、主体部と該主体部から前向きに延在して複数の第２端子溝と凹溝とが形成される舌板とを有する。第１端子グループは、前記絶縁性本体の第２端子溝に固着される第１固持部と、該第１固持部の前端に設けられる第１接触部と、絶縁性本体から延出する第１半田接続部とを含む。第２端子グループは、前記絶縁性本体の凹溝に固着される第２接触部と、該第２接触部と連接する第２固持部と、絶縁性本体から延出する第２半田接続部とを含む。遮蔽部材は、頂面と底面と一対の側面と前記舌板を収納ための収納穴とを有する。前記第１、第２接触部が舌板の同じ側に配置され、異なる高度に位置する。
【選択図】図１Ｂ



Samsung, EX1002, p. 2633

【特許請求の範囲】
【請求項1】
相手面と実装面とを含み、主体部と該主体部から前向きに延在して複数の第２端子溝と凹溝とが形成される舌板とを有する絶縁性本体と、
前記絶縁性本体の第２端子溝に固着される第１固持部と、該第１固持部の前端に設けられる第１接触部と、絶縁性本体から延出する第１半田接続部とを含む第１端子グループと、
前記絶縁性本体の凹溝に固着される第２接触部と、該第２接触部と連接する第２固持部と、絶縁性本体から延出する第２半田接続部とを含む第２端子グループと、
頂面と底面と一対の側面と前記舌板を収納するための収納穴とを有する遮蔽部材と、
を備え、前記第１、第２接触部が舌板の同じ側に配置され、異なる高度に位置することを特徴とするソケットコネクタ。
【請求項2】
前記第１接触部が弾性的な構造に製造され、第２接触部が平板状の構造に製造されることを特徴とする請求項１に記載のソケットコネクタ。
【請求項3】
前記舌板の長さに沿って、第２接触部が一列に配置され、第１接触部が第２接触部の後に一列に配置されることを特徴とする請求項１に記載のソケットコネクタ。
【請求項4】
前記舌板は、当接面と、該当接面と対向する係合面とを含み、前記凹溝と第２端子溝が当接面から凹まされ、舌板の係合面には、第２固持部を収納するための第１端子溝が形成され、第１、第２固持部が舌板の両側に配置され、第２固持部と第２接触部の間には折部が設けられ、舌板の前端には、当接面と係合面とを貫通して前記折部を収納するための凹部が形成されることを特徴とする請求項１に記載のソケットコネクタ。
【請求項5】
前記第１接触部には、相手コネクタと相対するための第１接触点が設けられ、第２接触部には、相手コネクタと相対するための第２接触点が設けられ、第１、第２接触点が舌板の当接面に配置されることを特徴とする請求項４に記載のソケットコネクタ。
【請求項6】
前記第２舌板の寸法は、標準のＵＳＢ２．０Ａ型のソケットコネクタの対応する舌板の寸法と略同一であり、第１端子グループがパワー端子と第１対の差分信号端子と第１接地端子とを含み、第２端子グループが並列に配置される第２対の差分信号端子と、第２接地端子と、第３対の差分信号端子とを有することを特徴とする請求項１に記載のソケットコネクタ。
【請求項7】
前記実装面が遮蔽部材の底面の上方に位置することを特徴とする請求項１に記載のソケットコネクタ。
【請求項8】
前記絶縁性本体には、導電端子を定位するための固定板が設けられ、主体部の後端には固定板を収納する凹所が形成され、第１、第２端子グループがそれぞれ固定板の両側に配置されることを特徴とする請求項１に記載のソケットコネクタ。
【請求項9】
前記絶縁性本体の収納穴は上向きに開口する相手口を含み、前記舌板が実装面と直交することを特徴とする請求項１に記載のソケットコネクタ。
【請求項10】
前記相手面が実装面に対して傾斜するか或いは平行であるか或いは直交することを特徴とする請求項１に記載のソケットコネクタ。

【発明の詳細な説明】
【技術分野】
【0001】

Samsung, EX1002, p. 2634

本発明は、電気コネクタに関し、特に、ＵＳＢ（Ｕｎｉｖｅｒｓａｌ　Ｓｅｒｉａｌ　Ｂｕｓ）標準に符合したソケットコネクタに関するものである。

【背景技術】

【0002】

従来技術のＵＳＢコネクタは、プラグとソケットとを具備する。プラグは、ケブールと該ケブールを被覆する絶縁本体とを有する。該絶縁本体は、舌片と、舌片に装着される四つのプラグ端子と、前記舌片とプラグ端子とを被覆するハウジングとを備える。舌片の上表面とハウジングとの間には、ソケットの舌片を収納するための収納孔が形成される。プラグ端子は、パワー端子と、負信号端子と、正信号端子と、接地端子とを含む。ソケットは舌片と、舌片の下表面に実装される四つのソケット端子と、ハウジングとを備える、前記ソケット端子はパワー端子と、負信号端子と、正信号端子と、接地端子とを含む。舌片の下表面とハウジングとの間には、プラグの舌片を収納するための収納孔が形成される。プラグがソケットと連接する時、ソケット端子がプラグ端子と電気接続する。

【発明の開示】

【発明が解決しようとする課題】

【0003】

信号を転送する速度を高めるため、通常の端子には複数の端子を増加する必要がある。同時に、通常のＵＳＢコネクタが占めるスペースを増加させないことが求められる。

【0004】

そこで本発明の目的は、信号を転送する速度を高めるソケットコネクタを提供することにある。

【課題を解決するための手段】

【0005】

前記目的を達成するために、本発明のソケットコネクタは、絶縁性本体と、第１、第２端子グループと、遮蔽部材とを備える。絶縁性本体は、相手面と実装面とを含み、主体部と該主体部から前向きに延在して複数の第２端子溝と凹溝とが形成される舌板とを有する。第１端子グループは、前記絶縁性本体の第２端子溝に固着される第１固持部と、該第１固持部の前端に設けられる第１接触部と、絶縁性本体から延出する第１半田接続部とを含む。第２端子グループは、前記絶縁性本体の凹溝に固着される第２接触部と、該第２接触部と連接する第２固持部と、絶縁性本体から延出する第２半田接続部とを含む。遮蔽部材は、頂面と底面と一対の側面と前記舌板を収納するための収納穴とを有する。前記第１、第２接触部が舌板の同じ側に配置され、異なる高度に位置する。

【発明の効果】

【0006】

従来の技術に比べると、本発明は以下の長所がある。本発明のソケットコネクタには、複数の差分信号端子が増加される。これにより、信号を転送する速度が高められる。

【発明を実施するための最良の形態】

【0007】

図１Ａ～図６及び図２１～２２を参照すると、本発明のソケットコネクタは、ＵＳＢ２．０標準のＡ型のプラグコネクタ８或いは第２プラグ７と連接するＵＳＢソケットコネクタ１００である。ＵＳＢ２．０標準プラグのＡ型のコネクタ８の舌片８０には、四つの平板状の接点８１が設けられる。第２プラグ７の舌片７０の寸法がＵＳＢ２．０標準のＡ型のプラグ８の舌板８０の寸法と略同一である。舌片７０には四つの平板状の接点７１と５つの付加接点７２とが設けられる。該ソケットコネクタ１００は、絶縁性本体１と、該絶縁性本体１に挿入される複数の導電端子２と、導電端子２を定位するための定位部材４と、絶縁性本体１を覆う遮蔽部材３とを備える。

【0008】

絶縁性本体１は、主体部１１と、該主体部１１から突出する舌板１２とを備える。主体部１１の側面には、複数のスロット１１７が形成される。主体部１１の後面には、阻止板１１４が設けられる。舌板１２の寸法がＵＳＢ２．０標準プラグのＡ型のコネクタ８の舌

Samsung, EX1002, p. 2635

板８０の寸法と同一である。前記舌板１２の上表面が係合面１２０であり、下表面が当接面１２１である。係合面１２０には、複数の第１端子溝１２０１が形成される。当接面１２１には、複数の第２端子溝１２１１と、複数の凹溝１２１２とが形成される。舌板１２の前端には、係合面１２０と当接面１２１とを貫通する凹部１２２が形成される。絶縁性本体１において、プラグコネクタ８或いは第２プラグ７と相対する面が相手面１０３であり、回路基板１０１と係合する面が実装面１０２である。

【0009】

遮蔽部材３は、前蓋体３１と、前蓋体３１と係合する後蓋体３２とを含む。前蓋体３１は、頂面３１１と、底面３１２と、一対の側面３１３と、頂面３１１と底面３１２と側面３１３とによって包囲される収納穴３１０とを有する。前蓋体３１の頂面３１１と底面３１２と側面３１３には、複数の弾力片３１５と、係合孔３１８とが設けられる。一対の側面３１３には、側面３１３から下向きに延在する半田接続脚３１６が設けられる。後蓋体３２には、複数の係合片３２１と凸点３２２が設けられる。

【0010】

導電端子２は、第１端子グループ２１及び第２端子グループ２２を具備する。第１端子グループ２１は、パワー端子２１７と、一対の第１差分信号端子（即ち、正、負信号端子）２１８と、第１接地端子２１９とを具備する。各第１端子グループ２１の中の端子は、第１固持部２１１と、第１固持部２１１の前端に設けられる弾性的な第１接触部２１０と、第１半田接続部２１２とを有する。第２端子グループ２２は、第２対の差分信号端子２２５と、第３対の差分信号端子２２７と、該第２、第３対の差分信号端子２２５，２２７の間に配置される第２接地端子２２６とを有する。第２端子グループ２２の中の端子は、第２固持部２２１と、第２固持部２２１の前端に設けられる平板状な第２接触部２２０と、第２接触部２２０と固持部２２１との間に設けられる折部２２４と、第２固持部２２１の尾端に設けられる第２半田接続部２２２とを備える。

【0011】

定位部材４には、上下に延在する複数の定位溝４１が形成される。定位部材４の両側には、一対のビーム部４２が設けられる。

【0012】

該ソケットコネクタ１００を組み合わせる時、第１、第２端子グループ２１，２２は主体部１１の舌板１２に固着される。第１端子グループ２１が舌板１２の第２端子溝１２１１に挿入される。第２端子グループ２２の第２固持部２２１が舌板１２の第１端子溝１２０１に挿入され、第２接触部２２０が凹溝１２１２に嵌合され、折部２２４が凹部１２２に嵌入される。第１端子グループ２１の第１接触部２１０が舌板１２の当接面１２１から突出し、第２端子グループ２２の第２接触部２２０が、当接面１２１に到着しない。第１、第２接触部２１０，２２０は、舌板１２の長さによって二列に配置される。第１接触部２１０には、プラグコネクタ８或いは第２プラグ７と相対する第１接触点２１３が設けられる。第２接触部２２０には、プラグコネクタ８或いは第２プラグ７と相対する第２接触点２２３が設けられる。第１、第２接触点２１３，２２３が舌板１２の当接面１２１に配置される。第１、第２端子グループ２１，２２の第１、第２半田接続部２１２，２２２が、それぞれ阻止板１１４の両側に位置して絶縁性本体１から延出する。第２端子グループ２２は、舌板１２の幅に沿って配置される。第２端子グループ２２が第１端子グループ２１と接触しない。前蓋体３１は絶縁性本体１を覆う。前蓋体３１の側面の弾力片３１５が絶縁性本体１のスロット１１７に当接する。後蓋体３２が前蓋体３１と係合する。後蓋体３２の係合片３２１、凸点３２２とは、前蓋体３１の係合孔３１８と係合する。

【0013】

図７Ａ～図８に示すように、本発明の第２実施状態におけるソケットコネクタ２００に関して、第１実施状態におけるソケットコネクタ１００と異なる特徴は、舌板１２と前蓋体３１の頂面３１１の間の距離は、舌板１２と前蓋体３１の底面３１２の間の距離より大きいことである。又、舌板１２の係合面１２０と当接面１２１とは、それぞれ舌板１２の下表面と上表面である。前記第２端子溝１２１１と凹溝１２１２とが舌板１２の上表面（

Samsung, EX1002, p. 2636

即ち、当接面１２１）に形成され、第１端子溝１２０１が舌板１２の下表面（即ち、係合面１２０）に形成される。第１接触部２１０と第２接触部２２０とは舌板１２の上方に配置される。

【0014】

図９Ａ～図１０に示すように、本発明の第３実施状態におけるソケットコネクタ３００に関して、第１実施状態におけるソケットコネクタ１００と異なる特徴は、該ソケットコネクタ３００が開口１０４が形成される回路基板１０１に装着されることである。前蓋体３１の前端に設けられる半田接続脚３１６が前蓋体３１の側面３１３の中間部から外へ水平方向に沿って折り曲げられて形成される。ソケットコネクタ３００の実装面１０２が前端に設けられる半田接続脚３１６の下表面であり、前蓋体３１の底面３１２の上に配置される。前蓋体３１の底面３１２及び部分の側面３１３とは、回路基板１０１の開口１０４に収納される。これにより、ソケットコネクタ３００と回路基板１０１との高度が減少される。

【0015】

主体部１１の下端が前向きに延在して、回路基板１０１の開口１０４を支持するための支持部１１５が形成される。該支持部１１５が舌板１２と略平行である。前蓋体３１の底面３１２が後向きに延在して係合部３１９が形成される。係合部３１９が主体部１１に固定される。支持部１１５が前蓋体３１の底面３１２の後部を支持する。

【0016】

図１１Ａ～図１５に示すように、本発明の第４実施状態におけるソケットコネクタ４００に関して、第１実施状態におけるソケットコネクタ１００と異なる特徴は、ソケットコネクタ４００の舌板１２が実装面１０２と直交することである。本実施例において、舌板１２の当接面１２１と係合面１２０とは舌板１２の左側面と右側面である。第１接触部２１０が上下に沿って一列に配置される。第２接触部２２０が上下に沿って他列に配置される。第１端子グループ２１と第２端子グループ２２との間には固持板５が配置される。絶縁性本体１の後部には、固持板５及び第１、第２端子グループ２１，２２を収納するための凹所１１６が形成される。固持板５の両側には、細長い突出部５１が設けられる。第１、第２半田接続部２１２，２２２が隣接する突出部５１の間に固持される。第１端子グループ２１の第１半田接続部２１２と第１固持部２１１との間には、前向きに延在して横に延在する折曲部２１４が設けられる。該折曲部２１４の後端が突出部５１の頂端に当接し、折曲部２１４が固持部５の前表面に部分に付着される。

【0017】

図１６Ａ～図１８に示すように、本発明の第５実施状態におけるソケットコネクタ５００に関して、第１実施状態におけるソケットコネクタ１００と異なる特徴は、収納穴３１０の開口が上向きに開放し、舌板１２が実装面１０２と直交することである。第１、第２接触部２１０，２２０は舌板１２の右側に配置される。第１固持部２１１と第１半田接続部２１２とは略平行である。第２固持部２２１と第２半田接続部２２２とは上下に沿って対応する。

【0018】

図１９Ａ～図２０に示すように、本発明の第６実施状態におけるソケットコネクタ６００に関して、第１実施状態におけるソケットコネクタ１００と異なる特徴は、収納穴３１０の開口が上向きに開放し、舌板１２が実装面１０２と直交することである。第１、第２接触部２１０，２２０は舌板１２の右側に配置される。第１固持部２１１と第１半田接続部２１２とは略平行である。第２固持部２２１と第２半田接続部２２２とは傾斜するように延在する。実装面１０２と相手面１０３は、直交せず、平行でもない。実装面１０２が相手面１０３に対して傾斜する。

【0019】

従来のＵＳＢ標準２．０のソケットコネクタには、両対の差分信号端子２２５，２２７及び接地端子２２６が増加される。データを転送する速度が高められる。

【0020】

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以上、本発明について好ましい実施形態を参照して詳細に説明したが、実施形態はあくまでも例示的なものであり、これらに限定されるものではない。また上述の説明は、本発明に基づき成し得る細部の修正或は変更などは、いずれも本発明の技術的範囲に属するものである。

【図面の簡単な説明】

【0021】

【図1A】本発明の第１実施状態におけるソケットコネクタが回路基板に取付けられる組立図である。

【図1B】図１Ａに示されるソケットコネクタの斜視図である。

【図2】図１Ｂに示すソケットコネクタの部分の分解斜視図である。

【図3】図２に示すソケットコネクタの分解斜視図である。

【図4】図２に示すソケットコネクタの別の分解斜視図である。

【図5】図３に示すソケットコネクタの別の分解斜視図である。

【図6】図５に示すソケットコネクタの別の分解斜視図である。

【図7A】本発明の第２実施状態におけるソケットコネクタが回路基板に取付けられる組立図である。

【図7B】図７Ａに示すソケットコネクタの斜視図である。

【図8】図７Ｂに示すソケットコネクタの分解斜視図である。

【図9A】本発明の第３実施状態におけるソケットコネクタが回路基板に取付けられる組立図である。

【図9B】図９Ａに示すソケットコネクタの斜視図である。

【図10】図９Ａに示すソケットコネクタの分解斜視図である。

【図11A】本発明の第４実施状態におけるソケットコネクタが回路基板に取付けられる組立図である。

【図11B】図１１Ａに示すソケットコネクタを回路基板から分離させた部分的な分解斜視図である。

【図12】図１１Ｂに示すソケットコネクタの部分の分解斜視図である。

【図13】図１２に示すソケットコネクタの別の分解斜視図である。

【図14】図１３の別の分解斜視図である。

【図15】図１１Ｂに示すソケットコネクタの分解斜視図である。

【図16A】本発明の第５実施状態におけるソケットコネクタが回路基板に実装される組立図である。

【図16B】図１６Ａの別の平面図である。

【図17】図１６Ａに示すソケットコネクタの部分の分解斜視図である。

【図18】図１６Ａに示すソケットコネクタの分解斜視図である。

【図19A】本発明の第６実施状態におけるソケットコネクタが回路基板に実装される組立図である。

【図19B】図１９Ａの別の平面図である。

【図20】図１９Ａに示すソケットコネクタの分解斜視図である。

【図21】本発明のソケットコネクタと相対する第２プラグの斜視図である。

【図22】本発明のソケットコネクタと相対するＵＳＢ２．０標準プラグの斜視図である。

【符号の説明】

【0022】

１　絶縁性本体

１００～６００　ソケットコネクタ

１０１　回路基板

１０２　実装面

１０３　相手面

１０４　開口

１１　主体部

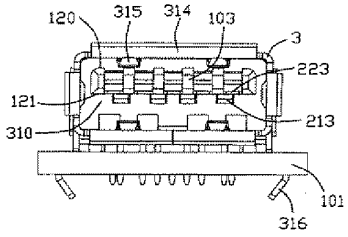
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１１１　固定溝
１１４　阻止板
１１５　支持部
１１６　凹所
１１７　スロット
１２　舌板
１２０　係合面
１２０１　第１端子溝
１２１　当接面
１２１１　第２端子溝
１２１２　凹溝
１２２　凹部
１３　足部
２　導電端子
２１　第１端子グループ
２１０　第１接触部
２１１　第１固持部
２１２　第１半田接続部
２１３　第１接触点
２１４，２１６　折曲部
２１７　パワー端子
２１８　第１差分信号端子
２１９　第１接地端子
２２　第２端子グループ
２２０　第２接触部
２２１　第２固持部
２２２　第２半田接続部
２２３　第２接触点
２２４　折部
２２５　第２対差分信号端子
２２６　第２接地端子
２２７　第３対差分信号端子
３　遮蔽部材
３１　前蓋体
３１０　収納穴
３１１　頂面
３１２　底面
３１３　側面
３１４　導入片
３１５　弾力片
３１６　半田接続脚
３１８　係合孔
３１９　係合部
３２　後蓋体
３２１　係合片
３２２　凸点
４　定位部材
４１　定位溝
４２　ビーム部
５　固持板

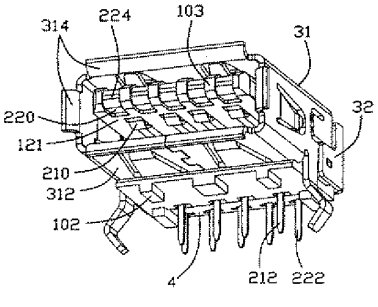
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５１　突出部
７　第２プラグ
７０，８０　舌片
７１，８１　接点
７２　付加接点
８　プラグコネクタ

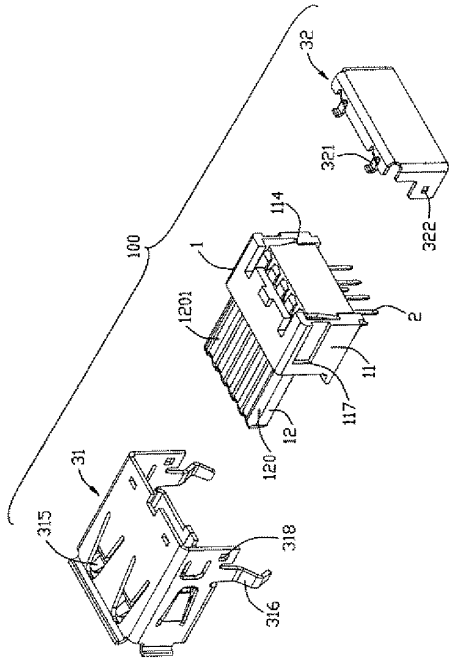
【図1A】



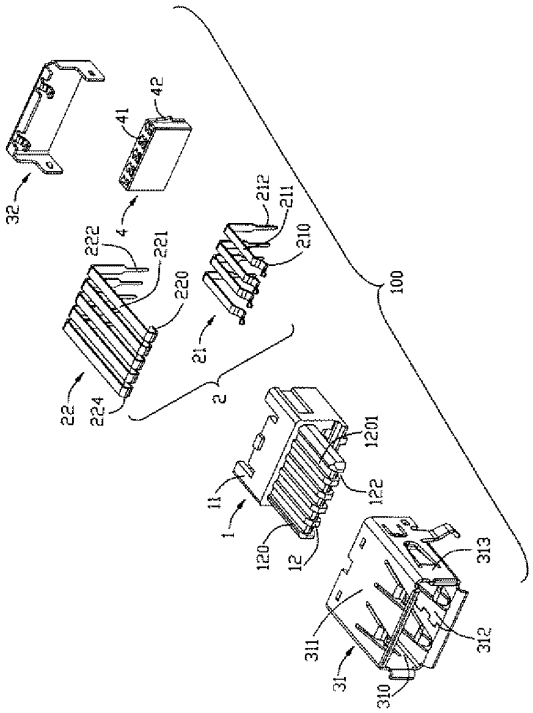
【図1B】



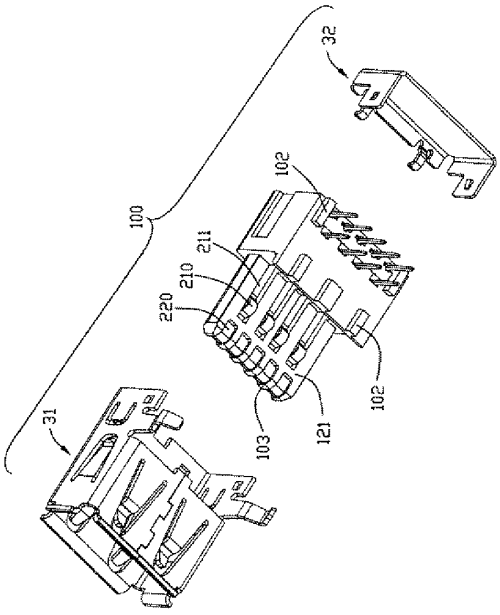
【図2】



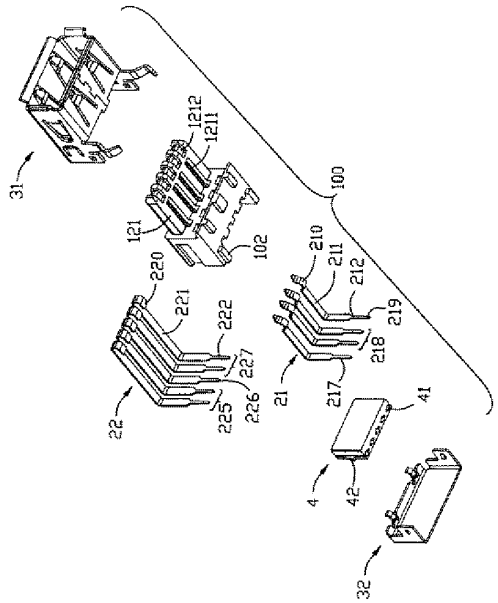
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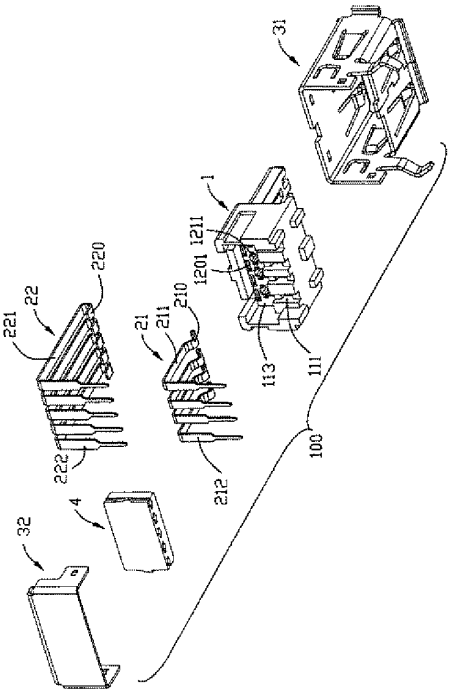
【図4】



【図5】

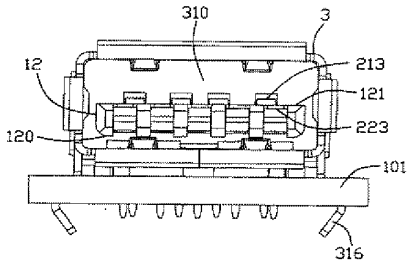


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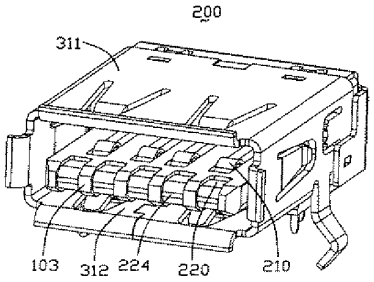


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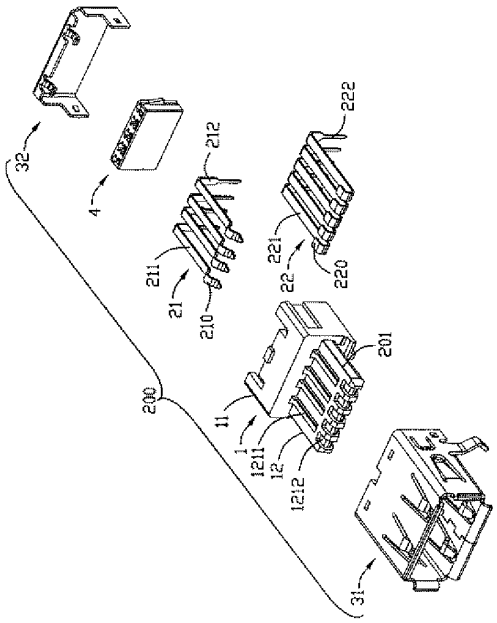
【図7A】



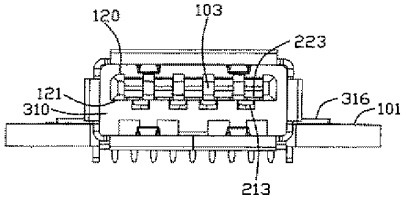
【図7B】



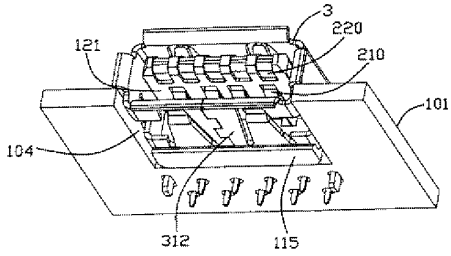
【図8】



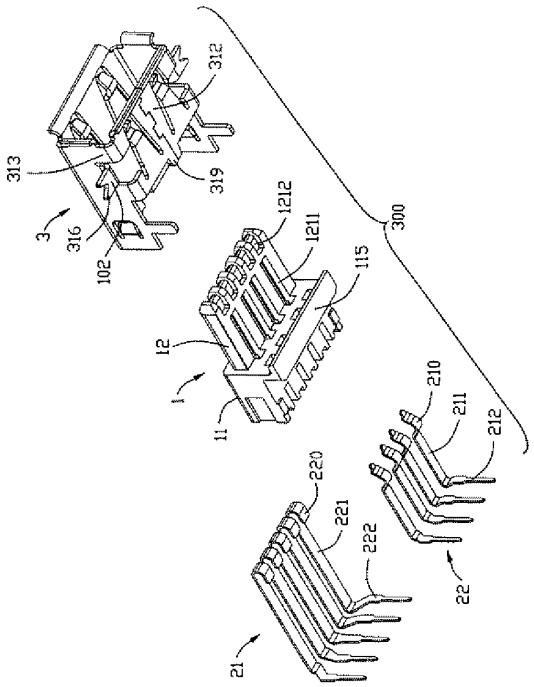
【図9A】



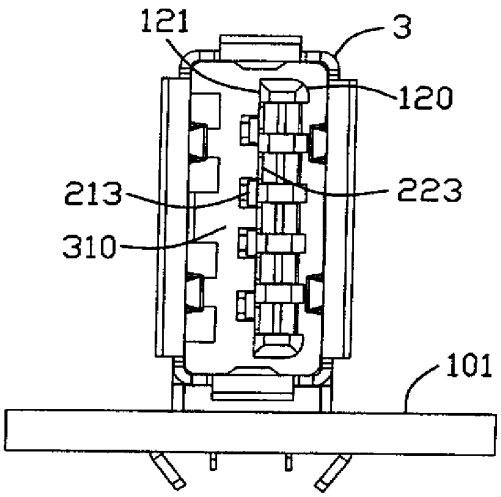
【図9B】



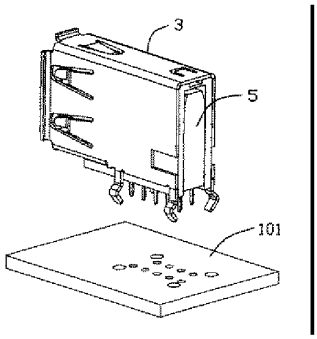
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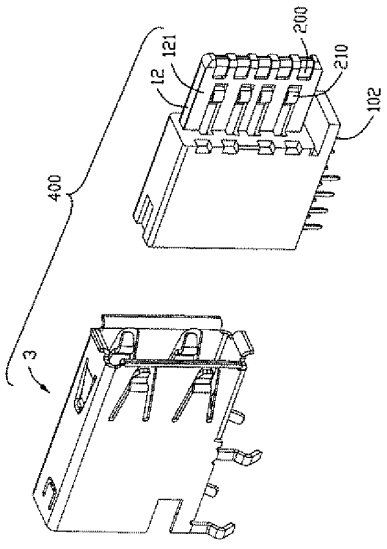
【図11A】



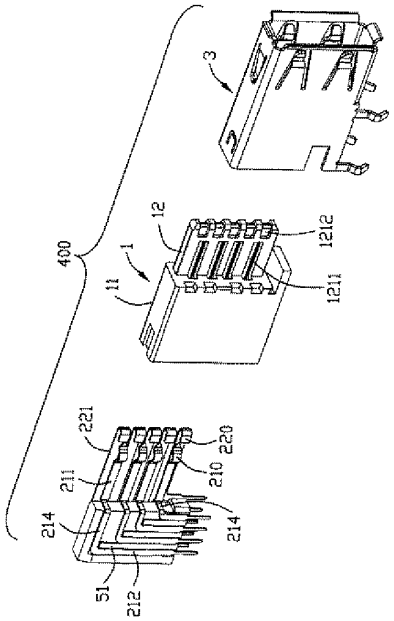
【図11B】



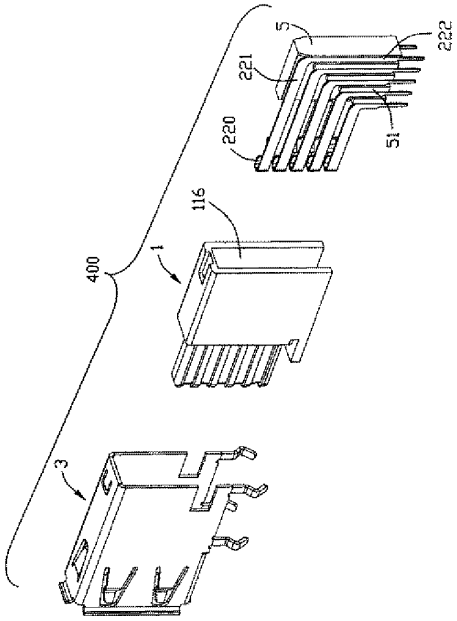
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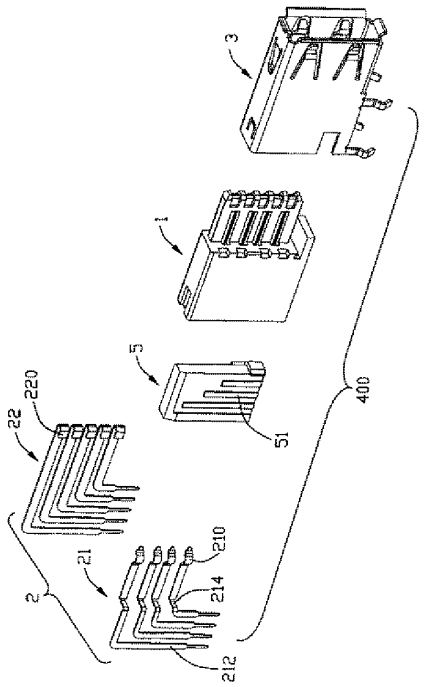
【図13】



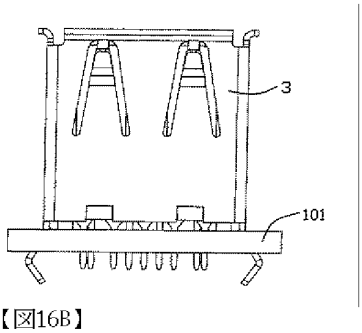
【図14】



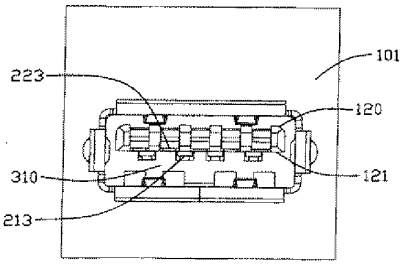
【図15】



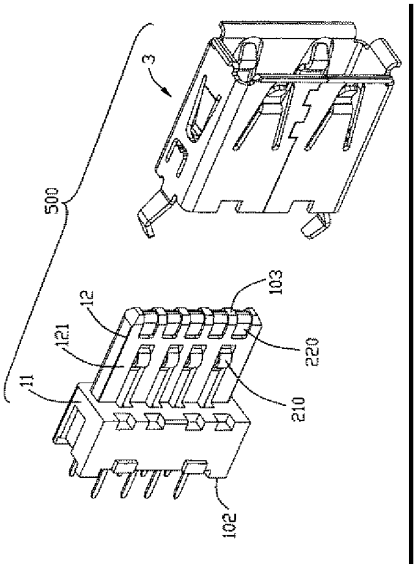
【図16A】



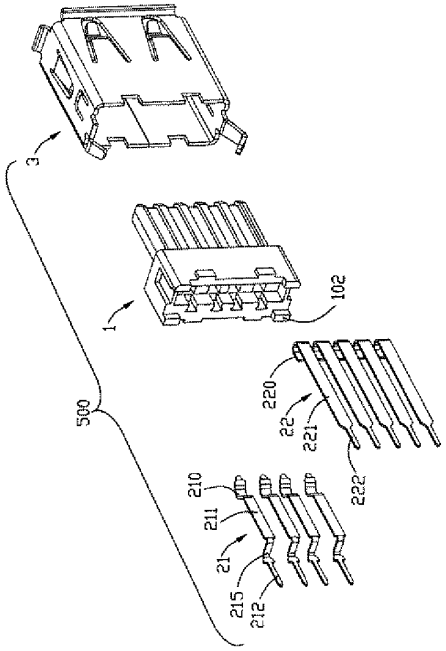
【図16B】



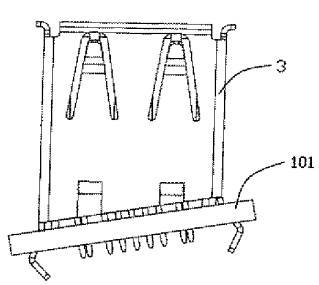
【図17】



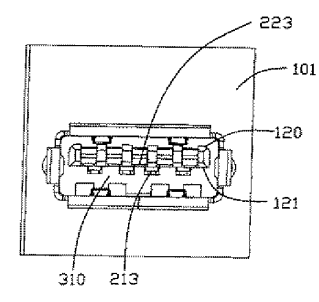
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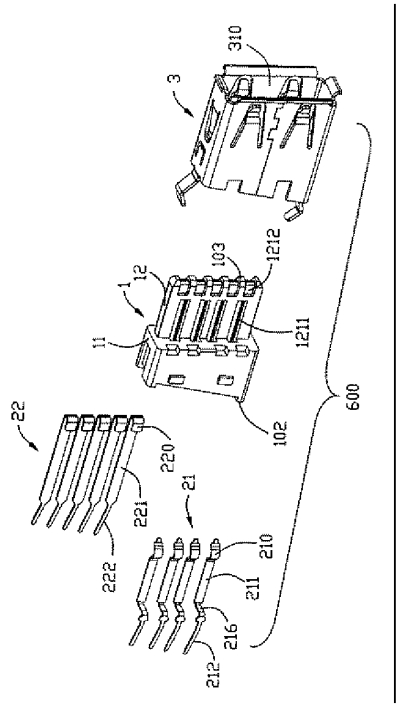
【図19A】



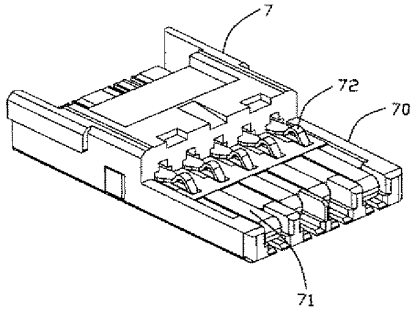
【図19B】



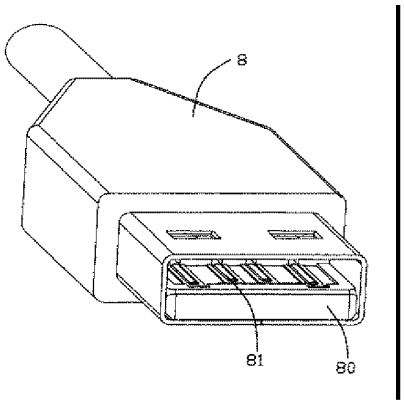
【図20】



【図21】



【図22】



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JA09 LA06 LA09 LA15

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Espacenet

Bibliographic data: CN101227046 (A) — 2008-07-23

Bidirectional connector

Inventor(s): JIANCHENG LAI [CN] ± (LAI JIANCHENG)

Applicant(s): JIANCHENG LAI [CN] ± (LAI JIANCHENG)

Classification: **- international:** ***H01R13/631; H01R13/64; H01R24/28***
- cooperative:

Application number: CN20071001925 20070115

Priority number(s): CN20071001925 20070115

Abstract of CN101227046 (A)

The invention is a two-way adapter, which is capable of being inserted without positive and negative direction when using. The two-way adapter comprises a body, a connecting tongue with insulating material quality, which is received in the body and is provided with two connecting faces, a plurality of electric terminals which is contained in the connecting tongue and is fixedly arranged on the two connecting faces. Using the two-way adapter of the invention, the two-way adapter is capable of according to the direction of insertion, conducts electric current on a corresponding interface joint utilizing elasticity of the connecting tongue and the electric terminals which are arranged on the two connecting faces of the connecting tongue, therefore being capable of pull-in and pull-out usage without positive and negative direction in order to reduce the capable damage and abrasion when wrong insertion and also advance convenient using.

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[51] Int. Cl.
H01R 24/06 (2006.01)
H01R 13/631 (2006.01)
H01R 13/64 (2006.01)

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[21] 申请号 200710001925.8

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[74] 专利代理机构 北京三友知识产权代理有限公司
代理人 赵燕力

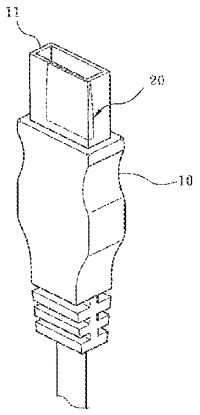
权利要求书 1 页 说明书 6 页 附图 8 页

[54] 发明名称

双向连接器

[57] 摘要

本发明为一种双向连接器，其使用时可以不分插入的正反方向。该双向连接器包含有一本体；一连接舌，其收容于该本体中，且其为一绝缘材质，其更具有二连接面；复数个导电端子，其容纳于该连接舌内且固设于该二连接面。使用本发明的双向连接器，可依据其插入的方向，利用该连接舌的弹性及设置在该连接舌的该二连接面上的该导电端子，导通于相对应的接口接头上，因此可不分方向插拔使用，以减少插错可能造成的损坏，及所造成的磨损，也提升使用的便利性。



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1. 一种双向连接器，其特征在于该双向连接器包含有：

一本体，其具有一第一接合部及一固定部；

一连接舌，具有二连接面，该连接舌的一端为固定端，另一端为自由端，且该连接舌收容于该第一接合部中，该固定端设置于该固定部；

至少一组导电端子，该组导电端子容纳于该连接舌内，且固设于该连接舌的二连接面上。

2. 如权利要求 1 所述的双向连接器，其特征在于：该组导电端子长度小于该连接舌长度。

3. 如权利要求 1 所述的双向连接器，其特征在于：该组导电端子为一导电金属片。

4. 如权利要求 1 所述的双向连接器，其特征在于：该组导电端子为一导电胶。

5. 如权利要求 1 所述的双向连接器，其特征在于：该组导电端子的顺序依 USB 规格。

6. 如权利要求 1 所述的双向连接器，其特征在于：该连接舌具有弹性、挠性及绝缘性，且其厚度由该固定端至该自由端递减。

7. 如权利要求 1 所述的双向连接器，其特征在于：该连接舌可以为一手指状，可增加弯曲挠性。

8. 如权利要求 1 所述的双向连接器，其特征在于：该连接舌可以为一可更换的元件。

9. 如权利要求 8 所述的双向连接器，其特征在于：该连接舌具有一第一组接部，该本体具有一第一基座。

10. 如权利要求 8 所述的双向连接器，其特征在于：该连接舌具有至少一第二组接部，该本体具有至少一第二基座。

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双向连接器

技术领域

本发明有关一种连接器，尤指一种使用时能以正、反插入方向使用的双向连接器。

背景技术

个人电脑的普及带动电脑相关接口的发展，也让个人电脑的外围配备更为一般的消费大众所接受。如现在的通用串行端口(USB，Universal Serial Bus)，便是消费者熟悉且常使用的扩充接口。通用串行端口(USB，Universal Serial Bus)规格是由国际大厂包括英特尔、微软等业者在内积极推动的安装界面。其传输速率从最早的USB1.0进步到USB1.1，再进而发展到USB2.0，其资料的传输速度大幅的从12Mbps提升到480Mbps，简单易用，不需要使用者安装、下载各种驱动程序，因大部分的扩充装置都可直接在连接后，由操作系统所接受并驱动。从键盘到鼠标，到光驱及外接硬盘，都看得到通用串行端口(USB，Universal Serial Bus)的身影。使用通用串行端口(USB，Universal Serial Bus)接口的外围装置，常常需要做插拔的动作，虽然，通用串行端口(USB，Universal Serial Bus)的母座接头有防呆设计，然其方向特征不明显(请参阅图1，是已知技术的立体示意图)，常常造成使用者的困扰，无法正确的将插座插入，且插错方向时，可能将该接头磨损。另外，防呆设计是在通用串行端口(USB，Universal Serial Bus)母座接头中虽有设计一档板，但是，使用者在做外围设备扩充而进行插拔动作时，还是有可能用力过当，或对防呆设计的不熟悉，而在插入方向错误时，仍施力于通用串行端口(USB，Universal Serial Bus)母座，造成接

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触不良或通用串行端口(USB，Universal Serial Bus)母座接头的结构毁损，而需要更换接头。

鉴于上述已知结构的缺失，为了符合使用上的需求并减少使用上损坏的可能，本发明提供一种新的双向连接器，可用以解决传统的单方向使用的连接器所常有的问题。

发明内容

本发明的目的在于提供一种双向连接器，该双向连接器可以正、反方使用，仍能连接具有防呆保护设计的母座接头。

本发明的目的是这样实现的，一种双向连接器，该双向连接器包含有：

一本体，其具有一第一接合部及一固定部；

一连接舌，具有二连接面，该连接舌的一端为固定端，另一端为自由端，且该连接舌收容于该第一接合部中，该固定端设置于该固定部；

至少一组导电端子，该组导电端子容纳于该连接舌内，且固设于该连接舌的二连接面上。

该组导电端子长度小于该连接舌长度。

该组导电端子为一导电金属片。

该组导电端子为一导电胶。

该组导电端子的顺序依USB规格。

该连接舌具有弹性、挠性及绝缘性，且其厚度由该固定端至该自由端递减。

该连接舌可以为一手指状，可增加弯曲挠性。

该连接舌可以为一可更换的元件。

该连接舌具有一第一组接部，该本体具有一第一基座。

该连接舌具有至少一第二组接部，该本体具有至少一第二基座。

由上所述，本发明的双向连接器，利用收容于该第一接合部中具弹性

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的该连接舌的弹性及设置在该连接舌的二连接面上的该组导电端子的转换，可正、反方向导通于相对应的接口接头上，因此可不分方向插拔使用。

附图说明

图 1，已知技术的立体示意图。

图 2，本发明较佳实施例的双向连接器立体透视图。

图 3，本发明较佳实施例的双向连接器立体剖面图。

图 4，本发明较佳实施例的双向连接器正向插入示意图。

图 5，本发明较佳实施例的双向连接器反向插入示意图。

图 6，本发明第二较佳实施例的双向连接器导电端子配置示意图。

图 7，本发明第三较佳实施例的立体剖面图。

图 8，本发明第四较佳实施例的立体剖面图。

图 9，本发明第五较佳实施例的立体剖面图。

附图标号：

10. . . . . 本体

11. . . . . 第一接合部

12. . . . . 固定部

12a. . . . . 第一基座

12b. . . . . 第二基座

13. . . . . 导电部

20、20a、20b、20c . . . . . 连接舌

21. . . . . 第一连接面

21a、21b、21c、21d. . . . . 第一组导电端子

22. . . . . 第二连接面

22a、22b、22c、22d. . . . . 第二组导电端子

23. . . . . 自由端

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24. . . . . 固定端

25a. . . . . 第一组接部

25b. . . . . 第二组接部

30. . . . . 导线

40. . . . . USB 母座接头

41. . . . . 第二接合部

42. . . . . 防呆挡板

43. . . . . 导通部

具体实施方式

请参阅图 2、图 3，是本发明较佳实施例的立体透视图及立体剖面图。

本发明较佳实施例的双向连接器，其包括有一本体 10，一连接舌 20，一组导电端子 21a ~ 21d；该本体 10 具有一第一接合部 11 及一固定部 12；该连接舌 20 具弹性、挠性，该连接舌 20 的一端为固定端 24，另一端为自由端 23，该连接舌 20 的厚度由该固定端 24 至该自由端 23 递减，且该连接舌 20 收容于该第一接合部 11 中，该固定端 24 设置于该固定部 12，该连接舌 10 更具有一第一连接面 21 及一第二连接面 22；该组导电端子 21a ~ 21d 的顺序是依 USB 规格（视实际情况，该导电端子 21a ~ 21d 的材质为导电材质，如导电金属片或导电胶），该导电端子 21a ~ 21d 长度小于该连接舌 20 的长度，在该连接舌弯曲时，该导电端子 21a ~ 21d 不会触及该第一接合部 11。

请参阅图 4、图 5，是本发明较佳实施例的双向连接器正向及反向插入示意图。

本发明的较佳实施例使用时是用以连接一相对应的 USB 母座接头 40，以做数据传输。该 USB 母座接头 40 包括有一第二接合部 41，一防呆挡板 42，及复数个导通部 43。该防呆挡板 42 收容在该第二接合部 41 中，该复

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数个导电部 43 设置在该防呆挡板 42 上，依插入方向而言，可接触插入的该双向连接器的导电端子 21a～21d。

当该双向连接器正向插入该 USB 母座接头 40 时(如图 4 所示)，该第一接合部 11 插入该第二接合部 41，该连接舌 20 受该防呆挡板 42 阻挡，而该自由端 23 弯曲导入该防呆挡板 42 具有复数个导接部 43 的一侧，该导电端子 21a～21d 位于该第一连接面 21 的一侧可以接触到该复数个导接部 43，完成导通。该连接舌 20 弯曲时，因该导电端子 21a～21d 长度小于该连接舌 20 长度，因此该自由端 23 弯曲时，该导电端子 21a～21d 位于第二连接面 22 的一侧不会接触该第一接合部 11，造成错误导通。

当该双向连接器反向插入该 USB 母座接头 40 时(如图 5 所示)，该第一接合部 11 插入该第二接合部 41，该连接舌 20 受该防呆挡板 42 阻挡，而弯曲导入该防呆挡板 42 具有复数个导接部 43 的一侧，该上的导电端子 21a～21d 可以接触到相对应该复数个导接部 43，完成导通。该连接舌 20 弯曲时，因该导电端子 21a～21d 长度小于该连接舌 20 长度，因此该自由端 23 弯曲时，该导电端子 21a～21d 不会接触该第一接合部 11，造成错误导通。

为求节省成本，该导电端子也可设计为二组导电端子，分别设置于该连接舌的该二连接面上，请参阅图 6，本发明第二较佳实施例的双向连接器，该连接舌 20 的一端为固定端 24，另一端为自由端 23，该连接舌 20 具有一第一连接面 21 及一第二连接面 22；该导电端子可分为第一组导电端子 21a～21d 及第二组导端子 22a～22d，该导电端子 21a～21d、22a～22d 长度小于该连接舌 20 的长度，在该连接舌弯曲时，该导电端子 21a～21d、22a～22d 不会触及该第一接合部 11。

该第一组导电端子 21a～21d 是以一第一顺序设置于该第一连接面 21(由左至右依序为 21a、21b、21c、21d)，该第二组导电端子 22a～22d 设置于该第二连接面 22，其是依该第一顺序设置，由左至右依序为 22a、22b、22c、22d，该导电端子 21a～21d、22a～22d 长度小于该连接舌 20 的长度，

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在该连接舌弯曲时，该导电端子 21a～21d、22a～22d 不会触及该第一接合部 11，且该第一组导电端子 21a～21d 是依该第一顺序两两导通连接该第二组导电端子 22a～22d（视实际情况，可使用一导线 30 连接），该导电端子 21a 连接该导电端子 22a；该导电端子 21b 连接该导电端子 22b；该导电端子 21c 连接该导电端子 22c；该导电端子 21d 连接该导电端子 22d。前述该第一顺序可以为 USB 规格。

上述第二较佳实施例的该二组导电端子导通连接的方式，除以导线导通连接外，其它例如以电性讯号转换或以机构设计方式切换导通的等效变化，皆可为应用于本发明的技术。

请参阅图 7，是本发明第三较佳实施例的立体剖面图。该连接舌 20a 可以为手指状，可增加弯曲挠性。

请参阅图 8，是本发明第四较佳实施例的立体剖面图。该连接舌 20b 可以为一可更换的元件，其具有一第一组接部 25a，该本体 10 具有一第一基座 12a，该第一组接部 25a 可对应组接该第一基座 12a，该第一基座 12a 具有复数个导电部 13，可在组接后从该连接舌 20b 内部对应并连接该组导电端子 21a～21d。

请参阅图 9，是本发明第五较佳实施例的立体剖面图。该连接舌 20c 可以为一可更换的元件，其具有复数个第二组接部 25b，该本体 10 具有复数个第二基座 12b，该复数个第二组接部 25b 可对应组接该复数个第二基座 12b，该第二基座 12b 分别具有复数个导电部 13，可在组接后从该连接舌 20c 内部对应并连接该组导电端子 21a～21d。

虽然本发明已以具体实施例揭示，但其并非用以限定本发明，任何本领域的技术人员，在不脱离本发明的构思和范围的前提下所作出的等同组件的置换，或依本发明专利保护范围所作的等同变化与修饰，皆应仍属本专利涵盖之范畴。

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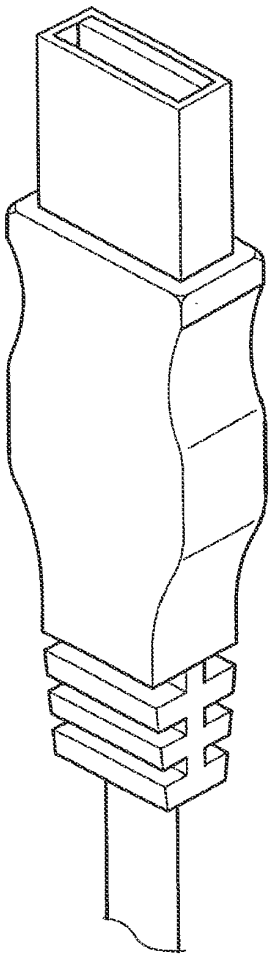


图 1

Samsung, EX1002, p. 2656

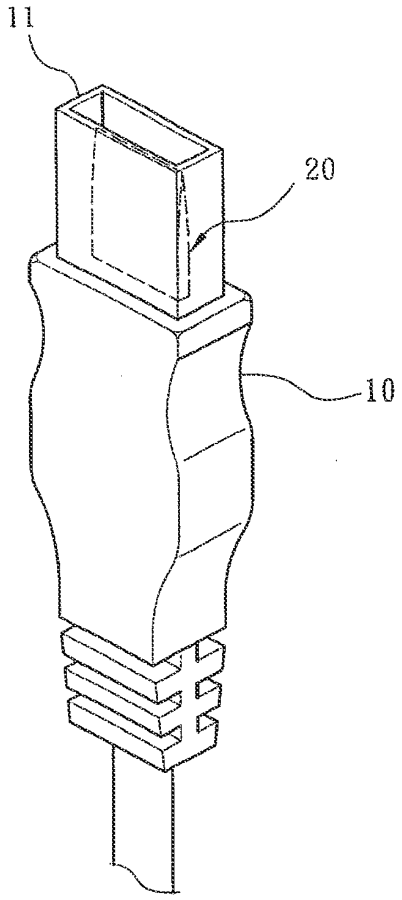


图 2

Samsung, EX1002, p. 2657

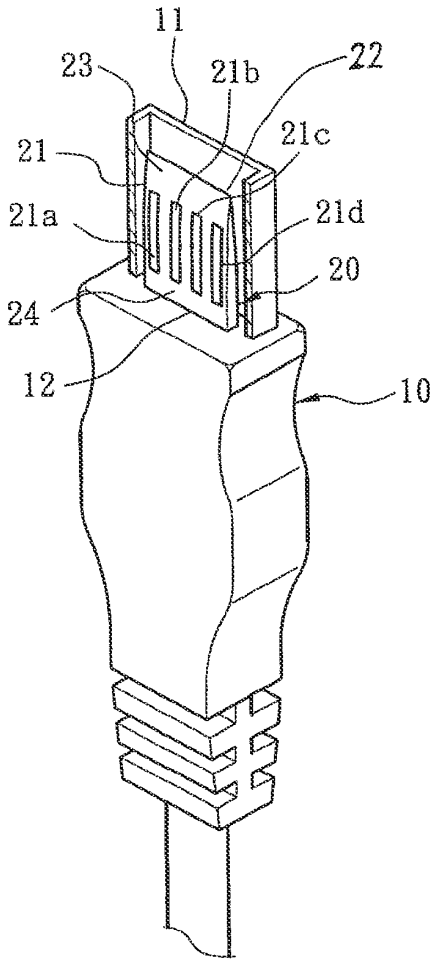


图 3

Samsung, EX1002, p. 2658

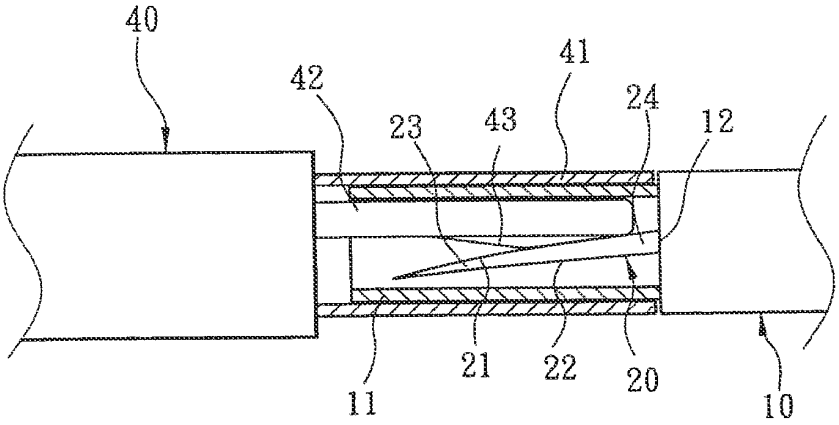


图 4

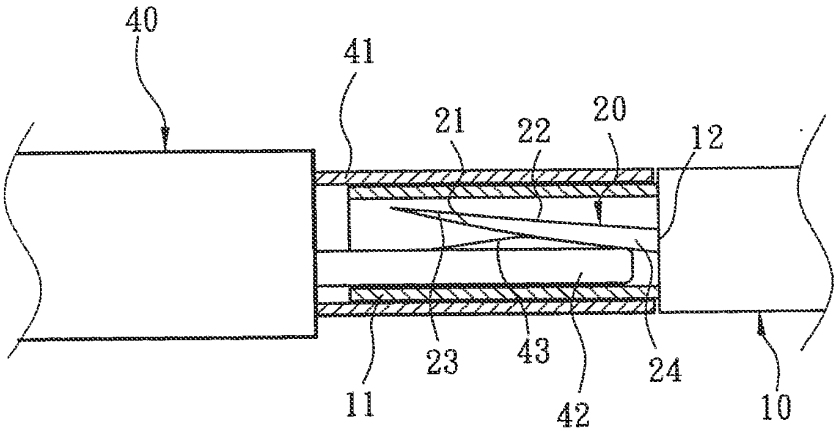


图 5

Samsung, EX1002, p. 2659

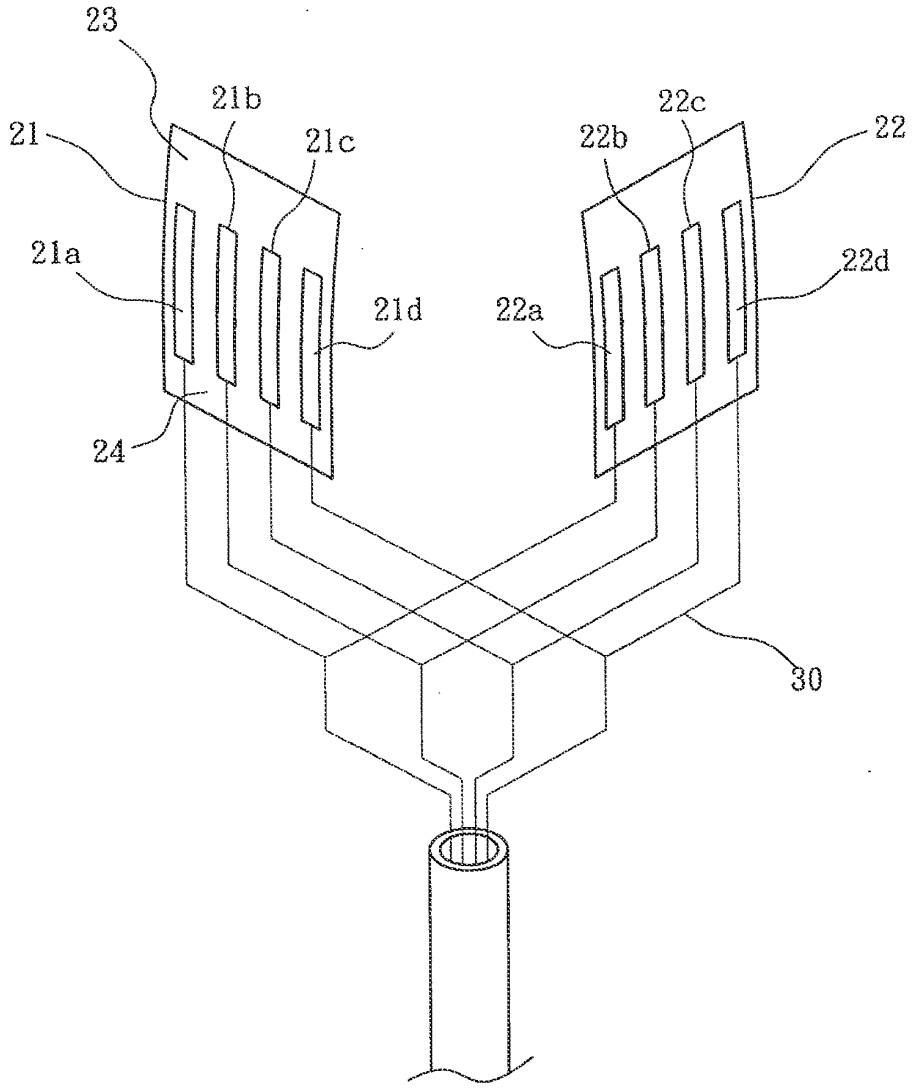


图 6

Samsung, EX1002, p. 2660

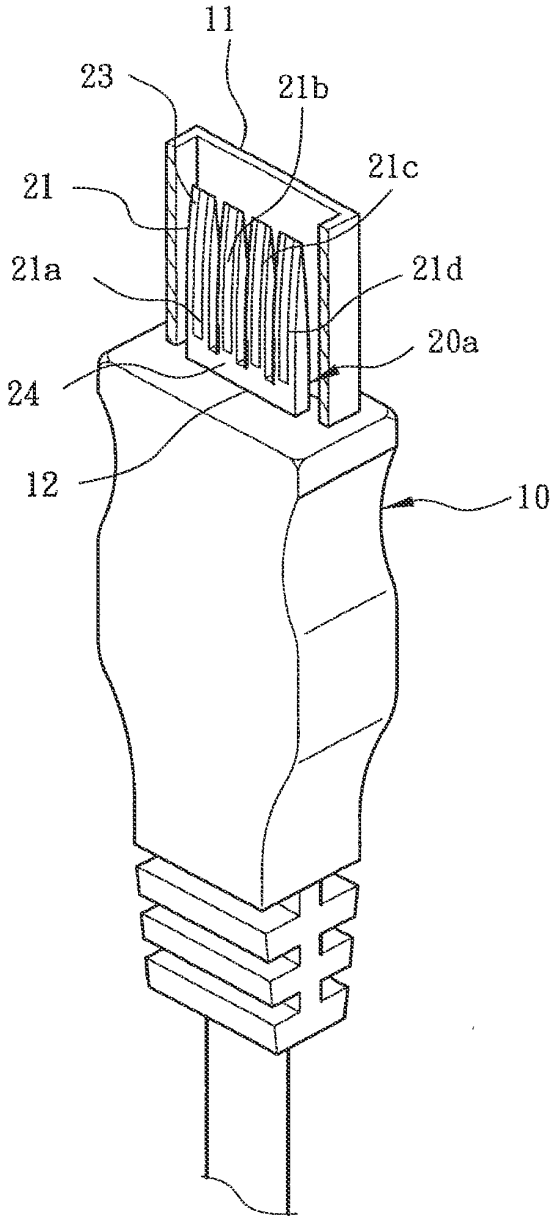


图 7

Samsung, EX1002, p. 2661

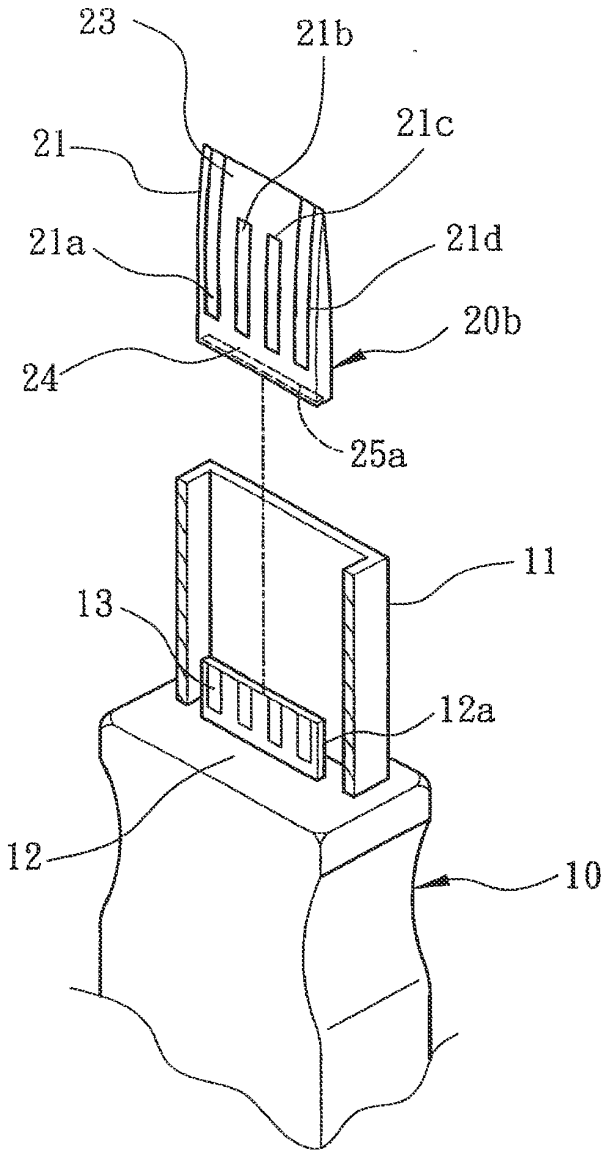


图 8

Samsung, EX1002, p. 2662

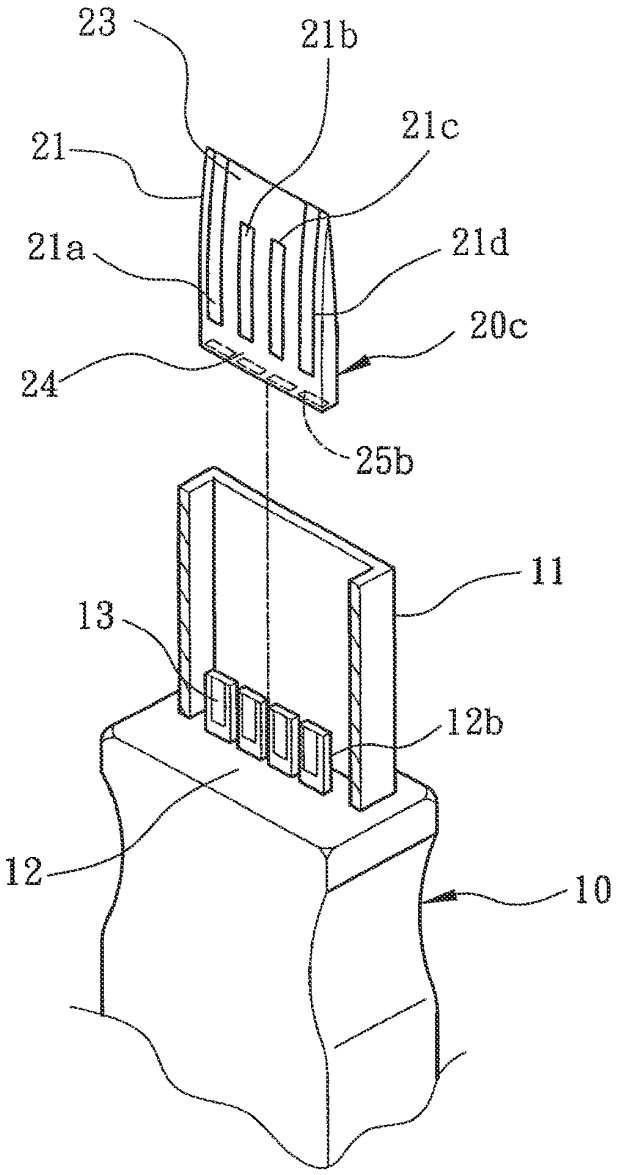


图 9

Samsung, EX1002, p. 2663

Espacenet

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Electric connector having metal casing

Inventor(s): ZHOUXIAN CAI ± (CAI ZHOUXIAN)

Applicant(s): ZHOUXIAN CAI ± (CAI ZHOUXIAN)

Classification: **- international:** ***H01R13/502; H01R13/516; H01R13/621; H01R13/648; H01R13/73***

- cooperative:

Application number: CN200910173528 20090915

Priority number(s): CN200810215987 20080916 ; CN200910173528 20090915

Also published as: CN101677158 (A)

Abstract of CN101677157 (A)

The invention relates to an electric connector having metal casing, which includes a plastic seat with a plurality of terminal slots ordered therein; a plurality of terminals provided in the terminalslot of the plastic seat; at least one screw pore component provided on one side of the plastic seat and connected to the planar surface on one side of the metal casing, the screw pore equipped with afirst plate sheet having a sheet surface positioned on one end of the plastic seat and a screw pore provided in the middle, a second plate sheet integrally connected to one end of the first plate sheet and extending to the other end of the plastic seat; and at least one board connection element having a lower end provided with a board connection portion, and an upper end connected to the second plate sheet of the screw pore member. The invention is simply clamped in assembling, the screw pore component and the projection portion of the metal casing are substantially in the same height, so that the manufacturing cost can be evidently reduced.

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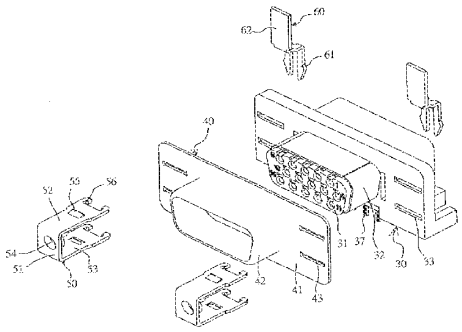
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[54] 发明名称

具有金属套壳的电连接器

[57] 摘要

一种具有金属套壳的电连接器，包括有：塑胶座体，其内排设有多个端子槽；多个端子，设于该塑胶座体的端子槽；金属套壳，设有两侧的平面及一中间的凸部，其设于该塑胶座体的一端；至少一螺孔构件，设于该塑胶座体一侧并与该金属套壳一侧平面连接，其设有第一板片及第二板片，该第一板片的板面位于该塑胶座体一端且中间设有一螺孔，该第二板片一体相连于第一板片一端并向该塑胶座体另一端延伸；及至少一接板元件，其下端设有一接板部，其上端与该螺孔构件的第二板片连接。本发明在组装上仅是简单的卡扣，本发明的螺孔构件与金属套壳的凸部大约等高，故可明显降低制造成本。



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1. 一种具有金属套壳的电连接器，其特征在于：包括有：

一塑胶座体，其内排设有多个端子槽；

多个端子，其设于该塑胶座体的端子槽；

一金属套壳，其设有两侧的平面及一中间的凸部，所述金属套壳设于该塑胶座体的一端；

至少一螺孔构件，其设于该塑胶座体一侧并与该金属套壳一侧平面连接，所述螺孔构件设有第一板片及第二板片，该第一板片的板面位于该塑胶座体一端且中间设有一螺孔，该第二板片一体相连于第一板片一端并向该塑胶座体另一端延伸；及

至少一接板元件，所述接板元件下端设有一接板部，所述接板元件上端与该螺孔构件的第二板片连接。

2. 如权利要求 1 所述的具有金属套壳的电连接器，其特征在于：该第一板片的板面呈纵向且该第二板片的板面呈横向，该金属套壳设于该塑胶座体的前端，该第一板片位于该塑胶座体的前端，该第二板片延伸至该塑胶座体的背面。

3. 如权利要求 1 所述的具有金属套壳的电连接器，其特征在于：该螺孔构件的第一板片与金属套壳的凸部等高。

4. 如权利要求 1 所述的具有金属套壳的电连接器，其特征在于：该螺孔构件的第一板片的另一端一体相连设有一第三板片，该第三板片平行于该第二板片。

5. 如权利要求 2 所述的具有金属套壳的电连接器，其特征在于：该螺孔构件的第二板片的外端设有一卡槽，该金属套壳及塑胶座体一侧各设有一横向长孔配合让该第二板片穿过，该接板元件的上段设有一卡板卡定该第二板片的卡槽。

6. 如权利要求 5 所述的具有金属套壳的电连接器，其特征在于：该螺孔构件的第一板片的另一端一体相连设有一第三板片，该第三板片平行于该第二板片，该第三板片的外端设有一卡槽，该金属套壳及塑胶座体一侧各设有另一横向长孔配合让该第三板片穿过，该卡块卡定金属套壳的一

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侧平面，该接板元件的卡板卡定该第三板片的卡槽。

7. 如权利要求 2 所述的具有金属套壳的电连接器，其特征在于：该螺孔构件的第二板片外端设有一卡槽，该金属套壳及塑胶座体一侧各设有一横向长孔让该第二板片穿过及设有一圆孔让该螺孔套入，该接板元件的上段设有一卡板卡定该第二板片的卡槽，该第一板片平贴该金属套壳的一侧平面。

8. 如权利要求 7 所述的具有金属套壳的电连接器，其特征在于：该螺孔构件的第一板片的另一端一体相连设有一第三板片，该第三板片平行于该第二板片，该螺孔构件的第三板片外端设有一卡槽，该金属套壳及塑胶座体一侧各设有另一横向长孔令该第三板片穿过，该接板元件的卡板卡定该第三板片的卡槽。

9. 如权利要求 4 所述的具有金属套壳的电连接器，其特征在于：该螺孔构件的第二、三板片皆设有一凸出板面的卡块且外端设有一凸出板面的卡缘，该塑胶座体一侧设有一横向卡槽且背面设有一开口，该螺孔构件的第二、三板片的卡缘可自侧向卡入该横向卡槽，该第二板片的卡缘自该开口露出，该金属套壳一侧设有一开孔配合螺孔构件的第一板片套入，该第二、三板片的卡块卡定该金属套壳的一侧平面，该接板元件的上段设有一卡板卡定于该塑胶座体背面，该卡板上端设有一凸片伸入该开口连接该第二板片的卡缘。

10. 如权利要求 2 所述的具有金属套壳的电连接器，其特征在于：该螺孔构件与该接板元件一体相连。

11. 如权利要求 10 所述的具有金属套壳的电连接器，其特征在于：该接板元件连接于该螺孔构件的第二板片，该第二板片设有一凸出板面的卡块且外端设有一侧向凸出的卡缘，该塑胶座体一侧和金属套壳一侧的平面皆设有一开孔配合该螺孔构件的第一板片穿过，该塑胶座体的开孔后端设有一横向卡槽，该螺孔构件由该塑胶座体背面穿过该塑胶座体和金属套壳的开孔，第二板片的卡块卡定该金属套壳的一侧平面且卡缘卡定该塑胶座体的横向卡槽。

12. 如权利要求 11 所述的具有金属套壳的电连接器，其特征在于：该螺孔构件的第一板片的另一端一体相连设有一第三板片，该第三板片平行于该第二板片，该第三板片设有一凸出板面的卡块且外端设有一侧向凸出

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的卡缘，该塑胶座体的开孔后端设有另一横向卡槽，该螺孔构件由该塑胶座体背面穿过该塑胶座体和金属套壳的开孔，第二、三板片的卡块卡定该金属套壳的一侧平面且卡缘卡定该塑胶座体的二横向卡槽。

13. 如权利要求 10 所述的具有金属套壳的电连接器，其特征在于：该接板元件连接于该螺孔构件的第二板片，该第二板片设有一凸出板面的卡块，该金属套壳一侧的平面设有一开孔配合该该螺孔构件的第一板片穿过，该塑胶座体的一侧背面设有一纵向卡槽，该接板元件上段设有一卡板，该接板元件的卡板由上而下卡定于该塑胶座体的纵向卡槽，该金属套壳的开孔穿过该螺孔构件，借由该卡块卡定该金属套壳一侧的平面而将该金属套壳定位于该塑胶座体前端。

14. 如权利要求 2 所述的具有金属套壳的电连接器，其特征在于：该螺孔构件一体相连于金属套壳一侧的平面，该螺孔构件的第二板片外端设有一卡槽，该塑胶座体一侧设有一横向长孔让该第二板片穿过及设有一圆孔让该螺孔套入，该接板元件的上段设有一卡板卡定该第二板片的卡槽，该第一板片平贴该塑胶座体前端一侧。

15. 如权利要求 14 所述的具有金属套壳的电连接器，其特征在于：该螺孔构件的第一板片的另一端一体相连设有一第三板片，该第三板片平行于该第二板片，该螺孔构件的第三板片外端设有一卡槽，该塑胶座体一侧设有另一横向长孔令该第三板片穿过，该接板元件的卡板卡定该第三板片的卡槽。

16. 如权利要求 1 所述的具有金属套壳的电连接器，其特征在于：该螺孔构件的第一板片与该金属套壳的平面齐平。

17. 如权利要求 1 所述的具有金属套壳的电连接器，其特征在于：该第一板片的板面呈横向且该第二板片的板面呈纵向，该金属套壳设于该塑胶座体的上端，该第一板片位于该塑胶座体的上端，该第二板片向该塑胶座体的下端延伸。

18. 如权利要求 17 所述的具有金属套壳的电连接器，其特征在于：该第一板片的另一端一体相连设有一第三板片，该第三板片平行于该第二板片。

19. 如权利要求 17 所述的具有金属套壳的电连接器，其特征在于：该塑胶座体的一侧设有一纵向穿孔，该纵向穿孔的一边设有一卡槽，该第二板片卡定于该卡槽。

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20. 如权利要求 18 所述的具有金属套壳的电连接器，其特征在于：该塑胶座体的一侧设有一纵向穿孔，该纵向穿孔的二对应边各设有一卡槽，该第二、三板片分别卡定该一卡槽。

21. 如权利要求 18 所述的具有金属套壳的电连接器，其特征在于：该塑胶座体的一侧设有二纵向长孔，该金属套壳的一侧设有二长孔对应该二纵向长孔，该第二、三板片分别穿过该金属套壳的二长孔及该塑胶座体的一纵向长孔。

22. 如权利要求 18 所述的具有金属套壳的电连接器，其特征在于：该螺孔构件与该接板元件一体相连，该接板元件呈两弹性卡片，其分别连接于该第二、三板片的下端。

23. 如权利要求 17 所述的具有金属套壳的电连接器，其特征在于：该螺孔构件与该接板元件一体相连，该接板元件的上端连接于该第二板片的下端。

24. 如权利要求 18 所述的具有金属套壳的电连接器，其特征在于：该第二、三板片的下端设有一卡槽，该接板元件设有一卡板，该卡板组装卡定于该第二、三板片的下端的卡槽。

25. 如权利要求 18 所述的具有金属套壳的电连接器，其特征在于：该第二、三板片的下端各设有一卡孔，该接板元件设有一卡板，该卡板设有二卡勾，该二卡勾分别穿该过该第二、三板片的卡孔。

26. 如权利要求 2 所述的具有金属套壳的电连接器，其特征在于：该螺孔构件的第二板片的外端设有一卡孔，该金属套壳及塑胶座体一侧各设有一横向长孔配合该第二板片穿过，该接板元件的上段设有一卡板穿过该第二板片的卡孔。

27. 如权利要求 26 所述的具有金属套壳的电连接器，其特征在于：该螺孔构件的第一板片的另一端一体相连设有一第三板片，该第三板片平行于该第二板片，该第三板片的外端设有一卡孔，该金属套壳及塑胶座体一侧各设有另一横向长孔配合该第三板片穿过，该接板元件的卡板穿过该第二板片的卡孔。

28. 如权利要求 26 所述的具有金属套壳的电连接器，其特征在于：该螺孔构件是板材弯折包圆方式而成一空心的圆柱。

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说 明 书

具有金属套壳的电连接器

【技术领域】

本发明是有关于一种电连接器，特别是关于一种具有金属套壳的电连接器。

【背景技术】

请参阅图1及图2，为一种现有的具有金属套壳的电连接器，其包括有一塑胶座体10，其内排设有多个端子槽，其两侧各设有一穿孔12；多个端子14，其设于该塑胶座体10的端子槽，端子14的接脚伸出塑胶座体10外；一金属套壳15，其是设于该塑胶座体10的前端，其设有两侧的平面16及一中间的凸部17，该两侧的平面16各设有一穿孔18；二接板元件20，其是定位于该塑胶座体10的背面两侧，其下段设有一弹性卡扣21，其上段设有一定位板22，该定位板设有一穿孔23；二铆钉25，其设有一螺孔26及一卡面27，其是穿过该该接板元件20的穿孔23、塑胶座体10的穿孔12、及金属套壳15的穿孔18后铆合固定；二螺件28，其后段有外螺纹螺锁于该铆钉25的螺孔26，其前段设有一螺孔29，该螺件28的前端与金属套壳15的凸部17等高。

现有构造是借由一铆钉25将金属套壳15及接板元件20铆合固定该塑胶座体10，同时金属套壳15及接板元件20借由该铆钉25电气导通，达到接地效果，最后再锁上一螺件28与金属套壳15的凸部17等高，如此在加工上较为费工，增加制造成本。

【发明内容】

本发明的主要目的在于提供一种具有金属套壳的电连接器，其结合一螺孔构件达到制造上的简便，降低制造成本。

为达上述目的，本发明具有金属套壳的电连接器包括有：一塑胶座体，其内排设有多个端子槽；多个端子，其设于该塑胶座体的端子槽；一金属

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套壳，其是设于该塑胶座体的一端，其设有两侧的平面及一中间的凸部；至少一螺孔构件，其是设于该塑胶座体一侧并与该金属套壳一侧平面连接，其设有第一板片及第二板片，该第一板片的板面位于该塑胶座体一端且中间设有一螺孔，该第二板片一体相连于第一板片一端并向该塑胶座体另一端延伸；及至少一接板元件，其下段设有一接板部，其上端与该螺孔构件的第二板片连接。

承接上述，本发明提供一种具有金属套壳的电连接器，其特征在于：包括有：

一塑胶座体，其内排设有多个端子槽；

多个端子，其设于该塑胶座体的端子槽；

一金属套壳，其设有两侧的平面及一中间的凸部，所述金属套壳设于该塑胶座体的一端；

至少一螺孔构件，其设于该塑胶座体一侧并与该金属套壳一侧平面连接，所述螺孔构件设有第一板片及第二板片，该第一板片的板面位于该塑胶座体一端且中间设有一螺孔，该第二板片一体相连于第一板片一端并向该塑胶座体另一端延伸；及

至少一接板元件，所述接板元件下端设有一接板部，所述接板元件上端与该螺孔构件的第二板片连接。

借由以上说明可知本发明在组装上仅是简单的卡扣，不需借由打铆钉的机器加工且不需再螺锁二螺件，本发明的螺孔构件与金属套壳的凸部大约等高即等同现有的锁螺件，故可明显降低制造成本。

本发明的上述及其他目的、优点和特色由以下较佳实施例的详细说明中并参考图式当可更加明白。

【附图说明】

图1 是现有具有金属套壳的电连接器的立体组合图。

图2 是现有具有金属套壳的电连接器的立体分解图。

图3 是本发明第一实施例的立体图。

图4 是本发明第一实施例的立体图。

图5 是本发明第一实施例的立体分解图。

图6 是本发明第二实施例的立体分解图。

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图7 是本发明第三实施例的立体分解图。

图8 是本发明第四实施例的立体图。

图9 是本发明第四实施例的立体图。

图10是本发明第四实施例的立体分解图。

图11是本发明第五实施例的立体图。

图12是本发明第五实施例后视的立体分解图。

图13是本发明第五实施例前视的立体分解图。

图14是本发明第六实施例的立体图。

图15是本发明第六实施例的立体分解图。

图16是本发明第七实施例的立体分解图。

图17是本发明第八实施例的立体图。

图18是本发明第八实施例的立体分解图。

图19是本发明第九实施例的立体图。

图20是本发明第九实施例的立体分解图。

图21是本发明第十实施例的立体图。

图22是本发明第十实施例的立体分解图。

图23是本发明第十一实施例的立体图。

图24是本发明第十二实施例的立体分解图。

图25是本发明第十二实施例的立体组合图。

图26是本发明第十二实施例的剖面侧视图。

图27是本发明第十三实施例的立体分解图。

图28是本发明第十三实施例的立体组合图。

图29是本发明第十四实施例的立体分解图。

图30是本发明第十四实施例的剖面侧视图。

图31是本发明第十五实施例的剖面侧视图。

图32是本发明第十六实施例的立体分解图。

图33是本发明第十七实施例的立体分解图。

图34是本发明第十八实施例的立体分解图。

图35是本发明第十八实施例的立体组合图。

图36是本发明第十九实施例的立体分解图。

图37是本发明第二十实施例的立体组合图。

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图38是本发明第二十一实施例的立体分解图。

图39是本发明第二十一实施例的立体组合图。

图40是本发明第二十二实施例的立体分解图。

图41是本发明第二十二实施例的螺孔构件与接板元件组合侧视图。

塑胶座体 30	端子槽 31	凸部 32	横向长孔 33	
圆孔 34	横向卡槽 35	开口 36	纵向卡槽 38	
端子37	开孔39	横向卡槽310	卡槽311	
卡柱312	纵向穿孔313	卡槽314	凹面315	
纵向长孔316	侧部317	纵向卡槽318	纵向槽319	
金属套壳 40	平面 41	凸部 42	横向长孔 43	
圆孔 44	开孔 45	凹面 46	长孔 46	
螺孔构件 50	第一板片 51	第二板片 52	第三板片 53	
螺孔 54	卡块 55	卡槽 56	卡缘 57	
卡孔 58	卡孔 59	接板元件 60	接板部 61	卡板 62
卡槽 63	凸片 64	连接板 66	倒刺 67	卡勾 68
卡勾 69				

【具体实施方式】

请参阅图3、图4及图5，为本发明第一实施例，其为连接部朝前的D-SUB电连接器，其包括有：一塑胶座体30、多个端子37、一金属套壳40、二螺孔构件50、及二接板元件60，其中：

该塑胶座体 30 内排设有多个端子槽 31，其前端设有一凸部 32，其两侧各设有二横向长孔 33。

该多个端子 37 设于该塑胶座体 30 的端子槽 31，端子 37 的接脚伸出塑胶座体 30 外。

该金属套壳 40 设于该塑胶座体 30 的前端，其设有两侧的平面 41 及一中间的凸部 42，其凸部 42 包覆该塑胶座体 30 的凸部 32 周边，其两侧平面 41 各设有二横向长孔 43。

该二螺孔构件 50 设于该塑胶座体 30 二侧，其与该金属套壳 40 一侧平面 41 连接，其设有纵向的第一板片 51 及横向的第二、三板片 52、53，该

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第一板片 51 中间设有一螺孔 54，该第二、三板片 52、53 一体相连于第一板片 51 的上、下端，两者的板面呈横向且平行向后延伸至该塑胶座体 30 背面，该第二、三板片 52、53 各设有一凸出板面的卡块 55 且外端各设有一卡槽 56。

该二接板元件 60 是作为连接于一电路板上而形成接地，其设于塑胶座体 30 背面二侧，其下段设有一接板部 61，该接板部 61 为一弹性卡扣，其上段设有一卡板 62 卡定该第二、三板片 52、53 的卡槽 56。

在组装上动作如下：

1. 该金属套壳 40 的凸部 42 先套合该塑胶座体 30 的凸部 32。

2. 该螺孔构件 50 的第二、三板片 52、53 穿过该金属套壳 40 的二横向长孔 43 及该塑胶座体 30 的二横向长孔 33，并借由该卡块 55 抵止于该金属套壳 40 的平面 41，此时该螺孔构件 50 的第一板片 51 与金属套壳 40 的凸部 42 大约等高，第二、三板片 52、53 的外端已延伸至该塑胶座体 30 背面。

3. 该接板元件 60 的卡板 62 由上而下卡定该第二、三板片 52、53 的卡槽 56，如此即使该螺孔构件 50、金属套壳 40、及接板元件 60 固定于该塑胶座体 30 上。

借由以上说明，可知本发明在组装上仅是简单的卡扣，不需借由打铆钉的机器加工且不需再螺锁二螺件，本发明的螺孔构件 50 与金属套壳 40 的凸部 42 大约等高即等同现有的锁螺件，故可明显降低制造成本。

请参阅图6，为本发明第二实施例，其大致与第一实施例相同，其中差异于本实施例的塑胶座体30为架高式，二接板元件60亦配合加高。

请参阅图7，为本发明第三实施例，其大致与第一实施例相同，其中差异于本实施例的螺孔构件50是板材弯折包圆方式而成一空心的圆柱，该螺孔构件50同样设有第一、二、三板片51、52、53，该第一板片52呈圆形且中间设有一螺孔54，该第二板片52的两侧向下弯折圆弧，该第三板片53的两侧向上弯折圆弧，该第二、三板片52、53外端各设有一卡槽56，该螺孔构件50的第一板片51与金属套壳40的凸部42大约等高。

请参阅图8、图9及图10，为本发明第四实施例，其大致与第一实施例相同，其包括有：一塑胶座体30、多个端子37、一金属套壳40、二螺孔构件50、及二接板元件60，其中差异在于该金属套壳40两侧平面41的二横向长孔43间更设有一圆孔44，该塑胶座体30两侧的二横向长孔33间更设有一

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圆孔34，该螺孔构件50较第一实施例为短，组装后该第一板片51平贴该金属套壳40的一侧平面41。

请参阅图11、图12及图13，为本发明第五实施例，其大致与第一实施例相同，其包括有：一塑胶座体30、多个端子37、一金属套壳40、二螺孔构件50、及二接板元件60，其中：

该塑胶座体30内排设有多个端子槽31，其前端设有一凸部32，其二侧各设有一横向卡槽35，其背面二侧设有一开口36及一纵向卡槽38，该开口36对应该横向卡槽35。

该多个端子 37 设于该塑胶座体 30 的端子槽 31，端子 37 的接脚伸出塑胶座体 30 外。

该螺孔构件50设有纵向的第一板片51及横向的第二、三板片52、53，该第一板片52中间设有一螺孔54，该第二、三板片52、53一体相连于第一板片51的上、下端且两者的板面呈横向平行延伸，该第二、三板片52、53皆设有一凸出板面的卡块55且外端设有一凸出板面的卡缘57，该螺孔构件50的第二、三板片的卡缘56可自侧向卡入该横向卡槽35，该第二板片52的卡缘57自该开口36露出。

该金属套壳40设于该塑胶座体30的前端，其设有两侧的平面41及一中间的凸部42，其凸部42包覆该塑胶座体30的凸部32周边，两侧的平面41各设有一开孔45，该金属套壳40套合于该塑胶座体30前端时，该开孔45配合螺孔构件50的第一板片51套入，该第二、三板片的卡块55卡定该金属套壳40的二侧平面41，该螺孔构件50的第一板片51与金属套壳40的凸部42大约等高。

该接板元件60的下段设有一接板部61，该接板部61为一弹性卡扣，其上段设有一卡板62，该卡板62中间设有卡槽63卡定于该塑胶座体30背面的纵向卡槽38，该卡板62上端设有一凸片64伸入该开口36连接该第二板片52的卡缘57。

请参阅图14及图15，为本发明第六实施例，其大致与第一实施例相同，其包括有：一塑胶座体30、多个端子37、一金属套壳40、二螺孔构件50、及二接板元件60，其中：

该塑胶座体30内排设有多个端子槽31，其前端设有一凸部32，其二侧各设有一开孔39，该开孔39后端上下皆设有一横向卡槽310。

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该多个端子 37 设于该塑胶座体 30 的端子槽 31，端子 37 的接脚伸出塑胶座体 30 外。

该金属套壳40设于该塑胶座体30的前端，其设有两侧的平面41及一中间的凸部42，其凸部42包覆该塑胶座体30的凸部32周边，两侧的平面41各设有一开孔45对应该塑胶座体30的开孔39。

该螺孔构件50设有纵向的第一板片51及横向的第二、三板片52、53，该第一板片52中间设有一螺孔54，该第二、三板片52、53一体相连于第一板片51的下、上端且两者的板面呈横向平行延伸，该第二、三板片52、53皆设有一凸出板面的卡块55且外端设有一侧向的卡缘57。

该接板元件60一体连接于该螺孔构件50的第二板片52，其下段设有一接板部61，该接板部61为一弹性卡扣。

在组装上，该金属套壳40的凸部42先套合该塑胶座体30的凸部32，该螺孔构件50再由该塑胶座体30背面穿过该塑胶座体的开孔39和金属套壳40的开孔45，该第二、三板片52、53的卡块55卡定该金属套壳40的一侧平面41且卡缘57卡定该塑胶座体30的横向卡槽310，该螺孔构件50的第一板片51与金属套壳40的凸部42大约等高。

请参阅图16，为本发明第七实施例，其大致与第六实施例相同，其包括有：一塑胶座体30、多个端子37、一金属套壳40、二螺孔构件50、及二接板元件60；其中差异于该螺孔构件50的第一板片51的上、下端各一体相连第二、三板片52、53，该接板元件60上段设有一连接板66，该连接板66一体相连于该螺孔构件50的第二板片52，该第三板片53外端卡勾于该连接板66。

请参阅图17及图18，为本发明第八实施例，其大致与第一实施例相同，其包括有：一塑胶座体30、多个端子37、一金属套壳40、二螺孔构件50、及二接板元件60，其中：

该塑胶座体30内排设有多个端子槽31，其前端设有一凸部32，其二侧背面各设有一纵向卡槽38。

该多个端子 37 设于该塑胶座体 30 的端子槽 31，端子 37 的接脚伸出塑胶座体 30 外。

该金属套壳40设于该塑胶座体30的前端，其设有两侧的平面41及一中间的凸部42，其凸部42包覆该塑胶座体30的凸部32周边，两侧的平面41各

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设有一开孔45。

该螺孔构件50设有纵向的第一板片51及横向的第二板片52，该第一板片51中间设有一螺孔54，该第二板片52一体相连于第一板片51的上端且横向延伸至该塑胶座体30背面，该第二板片52设有一凸出板面的卡块55。

该接板元件60一体连接于该螺孔构件50的第二板片52，其下段设有一接板部61，该接板部61为一弹性卡扣，其上段设有一卡板62。

组装时，首先将一体相连的螺孔构件50及接板元件60由上而下组装定位于该塑胶座体30，该卡板62卡定于塑胶座体30的纵向卡槽38，该金属套壳40套合于该塑胶座体30前端时，该开孔45配合螺孔构件50的第一板片51套入，该第二板片52的卡块55卡定该金属套壳40的二侧平面41。

请参阅图19及图20，为本发明第九实施例，其大致与第八实施例相同，其包括有：一塑胶座体30、多个端子37、一金属套壳40、二螺孔构件50、及二接板元件60；其中差异在于该螺孔构件50第一板片51的下端一体相连一第三板片53，该第三板片53平行于第二板片52，该塑胶座体30前端两侧各设有一卡槽311，该螺孔构件50的第三板片53外端卡定于卡槽311。

请参阅图21及图22，为本发明第十实施例，其大致与第四实施例相同，其包括有：一塑胶座体30、多个端子37、一金属套壳40、二螺孔构件50、及二接板元件60，其中差异在于本实施例的螺孔构件50一体相连于金属套壳40一侧的平面41。

请参阅图23，为本发明第十一实施例，其大致与第一实施例相同，其差异在于本实施例的接板元件60的接板部61呈一水平板，各端子37伸出塑胶座体30外的接脚呈水平，另外该塑胶座体30的底部设有数个卡柱312。

请参阅图24、图25及图26，为本发明第十二实施例，其是为直立式的D-SUB电连接器，其包括有：一塑胶座体30、多个端子37、一金属套壳40、二螺孔构件50、二接板元件60及二金属片70，其中：

该塑胶座体 30 内排设有多个端子槽 31，其上端设有一凸部 32，其两侧各设有一纵向穿孔 313，该纵向穿孔 313 的二对应边各设有一卡槽 314，塑胶座体的前、后面对应该凸部 32 的下方分别设有一凹面 315。

该多个端子 37 设于该塑胶座体 30 的端子槽 31，端子 37 的接脚伸出塑胶座体 30 外。

该金属套壳 40 设于该塑胶座体 30 的上端，其设有两侧的平面 41 及一

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中间的凸部 42，其凸部 42 包覆该塑胶座体 30 的凸部 32 周边，其两侧平面 41 各设有一开口 45。

该二螺孔构件 50 设于该塑胶座体 30 二侧，其与该金属套壳 40 一侧平面 41 连接，其设有横向的第一板片 51 及纵向的第二、三板片 52、53，该第一板片 51 中间设有一螺孔 54，该第二、三板片 52、53 一体相连于第一板片 51 的二对应边，两者的板面呈纵向且平行向该塑胶座体 30 下端延伸，该第二、三板片 52、53 上段二侧各设有一侧向凸出的卡块 55 且中段二侧各设有一凸出板面的固定部 58。

该接板元件 60 呈两弹性卡片，其分别一体连接于该第二、三板片 52、53 的下端。

该二金属片70是设于该塑胶座体30的前、后面的凹面58，使在该塑胶座体30设置端子的部位有较佳的遮蔽效果。

在组装上动作如下：

1. 该金属套壳 40 的凸部 42 先套合该塑胶座体 30 的凸部 32。

2. 该二螺孔构件 50 的第二、三板片 52、53 穿过该金属套壳 40 二侧的开口 45 及该塑胶座体 30 二侧的纵向穿孔 313，并借由该卡块 55 抵止于该金属套壳 40 的平面 41，此时该螺孔构件 50 的第一板片 51 与金属套壳 40 的凸部 42 大约等高，该第二、三板片 52、53 的固定部 58 与该塑胶座体 30 的卡槽 314 卡定，该接板元件 60 伸出该塑胶座体 30 下端。

请参阅图 27 及图 28，为本发明第十三实施例，其大致与第十二实施例相同，其差异在于本实施例的二螺孔构件 50 为短型，第二、三板片 52、53 没有设有卡块，故该第一板片 51 会平贴于该金属套壳 40 的凹面 46 而与该平面 41 齐平。

请参阅图 29 及图 30，为本发明第十四实施例，其大致与第十二实施例相同，其差异在于本实施例的二螺孔构件 50 与接板元件 60 并非一体成型，该第二、三板片 52、53 的下端各设有一卡槽 56，该卡槽 56 的中间设有缩小的夹口，该接板元件 60 设有一卡板 62 及一接板部 61，该卡板 62 的两侧各设有一倒刺 67 组装卡定于该第二、三板片的下端的卡槽 56，该接板部 61 呈一鱼叉状的弹性卡扣。

请参阅图 31，为本发明第十五实施例，其大致与第十四实施例相同，其差异在于本实施例为短型的螺孔构件 50，该螺孔构件 50 的第一板片 51

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与金属套壳 40 的平面 41 齐平。

请参阅图 32，为本发明第十六实施例，其大致与第十二实施例相同，其差异在于本实施例的接板元件 60 的上端一体连接于该螺孔构件 50 的第二板片 52 的下端，该接板部 61 呈一鱼叉状的弹性卡扣。

请参阅图 33，为本发明第十七实施例，其大致与第十六实施例相同，其差异在于本实施例的螺孔构件 50 仅设有一横向的第一板片 51 及一纵向的第二板片 52，没有设置第三板片。

请参阅图 34 及图 35，为本发明第十八实施例，其大致与第十四实施例相同，其差异在于本实施例的塑胶座体 30 的两侧部 317 的厚度较中间的厚度为薄，该两侧部 317 各设有二个纵向卡槽 318，该螺孔构件 50 的第二、三板片 52、53 下端各设有一卡槽 56，该第二、三板片 52、53 的下段是穿过该二个纵向卡槽 318，该卡块 55 挡止于该金属套壳 40 的平面，接板元件 60 设有一卡板 62 及一接板部 61，该卡板 62 呈横向组装卡定于该第二、三板片的下端的卡槽 56，如此即使该螺孔构件 50、金属套壳 40 及接板元件 60 固定于塑胶座体 30。

请参阅图 36，为本发明第十九实施例，其大致与第十四实施例相同，其差异在于本实施例的塑胶座体 30 的一侧设有二纵向长孔 316，该金属套壳的一侧设有二长孔 47 对应该二纵向长孔 316，该第二、三板片 52、53 分别穿过该金属套壳的一长孔 47 及塑胶座体的一纵向长孔 316。

上述的各种实施例皆为母座型态的电连接器，即该塑胶座体一端设有一凸部者，各端子为母端子型态排列设于该凸部内，然而若是公座型态的电连接器者同样可以应用本发明实施，

请参阅图 37，为本发明第二十实施例，其为公座型态的电连接器，本实施例的塑胶座体 30 前端未设有一凸部，而各端子 37 为公端子型态具有一针状的接触端凸出塑胶座体 30 前端，该金属套壳 40 的凸部 42 将各端子 37 包覆于内，本实施例为短型的螺孔构件 50，该螺孔构件 50 的第一板片 51 与金属套壳 40 的平面 41 齐平。

请参阅图 38 及图 39，为本发明第二十一实施例，其大致与第三实施例相同，同样该塑胶座体 30 的两侧设有二横向长孔 33，该金属套壳 40 的两侧设有二横向长孔 43，该螺孔构件 50 同样是板材弯折包圆方式而成一空心的圆柱。其中差异于本实施例的塑胶座体 30 为架高式，二接板元件 60

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亦配合加高，且该螺孔构件 50 的第二、三板片 52、53 外端各设有一卡孔 58，该接板元件 60 的上段板面冲压凸出设有一卡板 62，借由该卡板 62 穿过该第二、三板片 52、53 的卡孔 58 即使该螺孔构件 50、金属套壳 40、及接板元件 60 固定于该塑胶座体 30 上。

另外本实施例螺孔构件 50 的圆柱下缘设有二对称的凸片 59 卡入塑胶座体 30 借以增加稳固性。

请参阅图 40 及图 41，为本发明第二十二实施例，其大致与第十四实施例相同，其中该第二、三板片 52、53 的下端分别设有一卡孔 58、59，该第二板片 52 较第三板片 53 长，使得该卡孔 58 稍较该卡孔 59 低，接板元件 60 的卡板 62 设有一较低的卡勾 68 及一较高的卡勾 69，该塑胶座体 30 一面接近二侧各设有一纵向槽 319 借以供该接板元件 60 穿过；组装时该螺孔构件 50 先穿过该塑胶座体 30 的纵向穿孔 313，该接板元件 60 的二卡勾 68、69 再分别穿该过该第二、三板片的卡孔 58、59。

上述第一至第十一实施例及第二十一实施例为连接部朝前的 D-SUB 电连接器，第十二至第二十实施例及第二十二实施例为连接部朝上的直立式 D-SUB 电连接器，两种类型者仅分别举出数种实施例来说明，然而第一至第十一实施例及第二十一实施例的构造亦可应用于直立式 D-SUB 电连接器，不在此赘述。

在较佳实施例的详细说明中所提出的具体的实施例仅为了易于说明本发明的技术内容，而并非将本发明狭义地限制于该实施例，在不超出本发明的精神及申请专利范围的情况，可作种种变化实施。

Samsung, EX1002, p. 2680

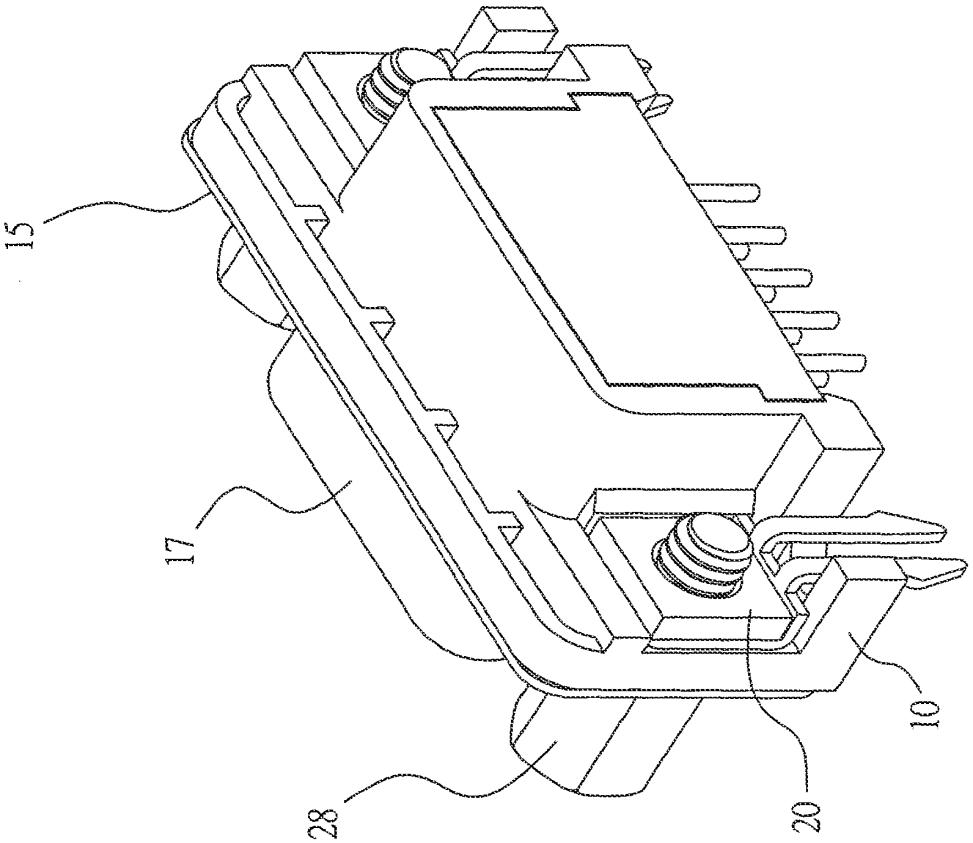


图 1

Samsung, EX1002, p. 2681

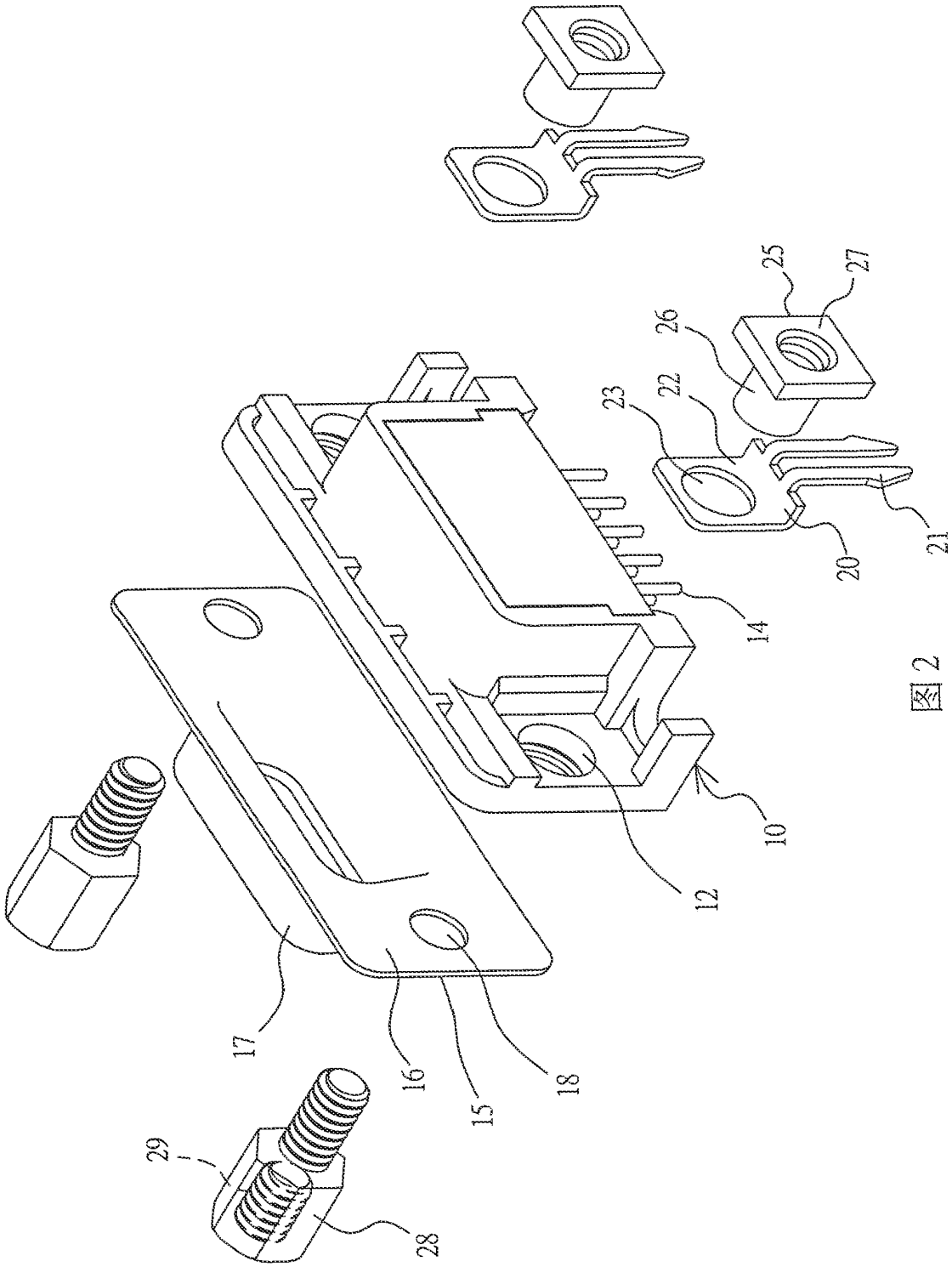


图 2

Samsung, EX1002, p. 2682

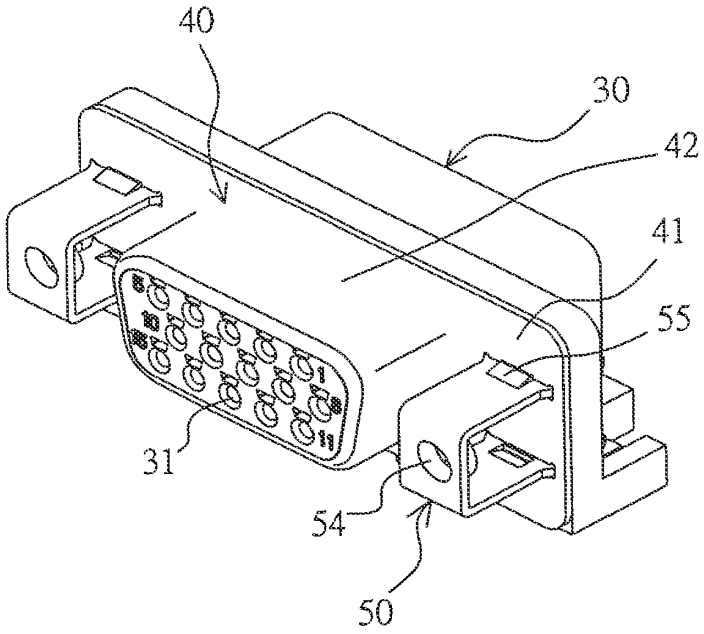


图 3

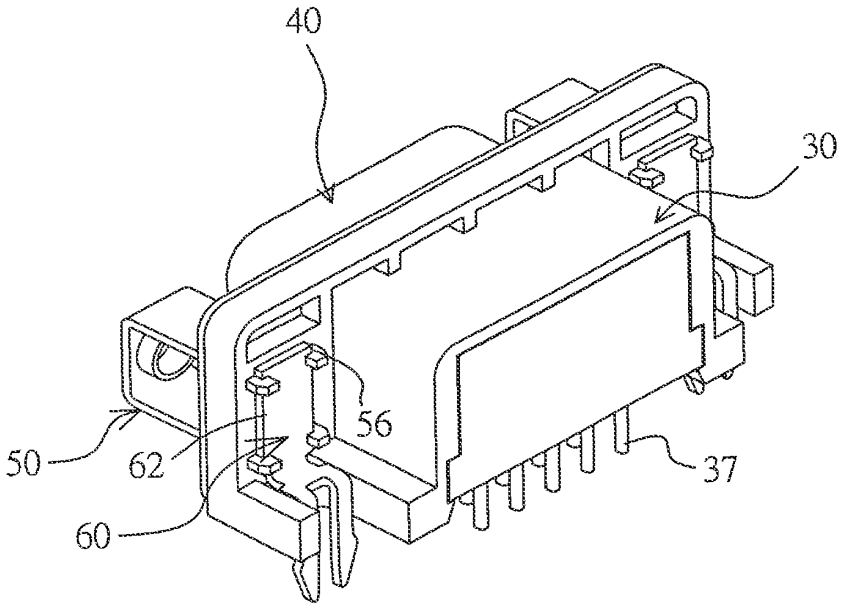


图 4

Samsung, EX1002, p. 2683

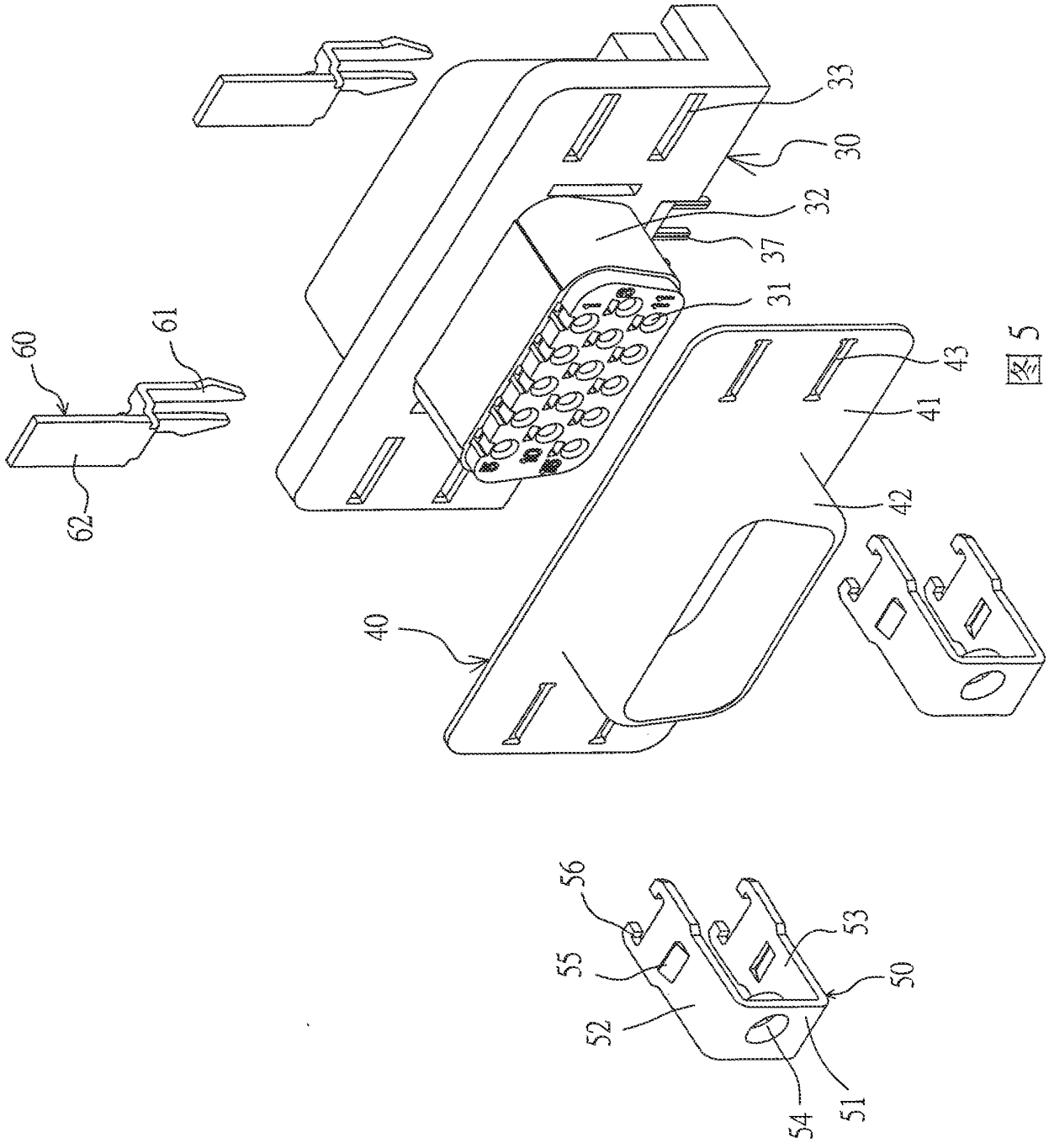


图 5

Samsung, EX1002, p. 2684

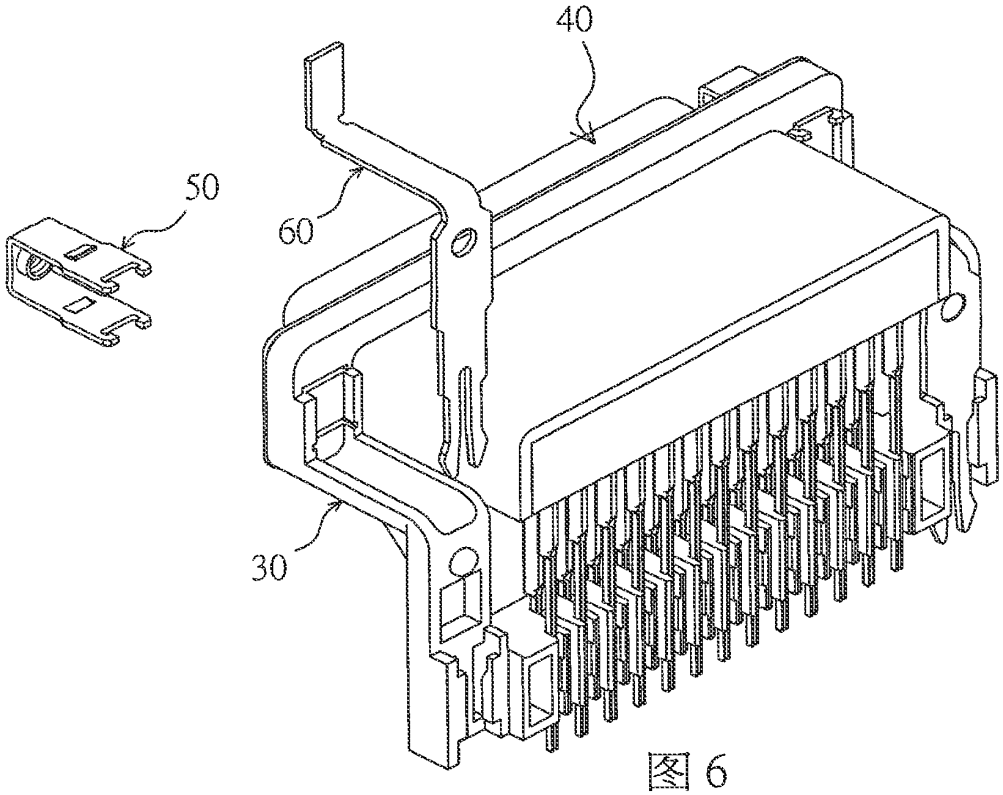


图 6

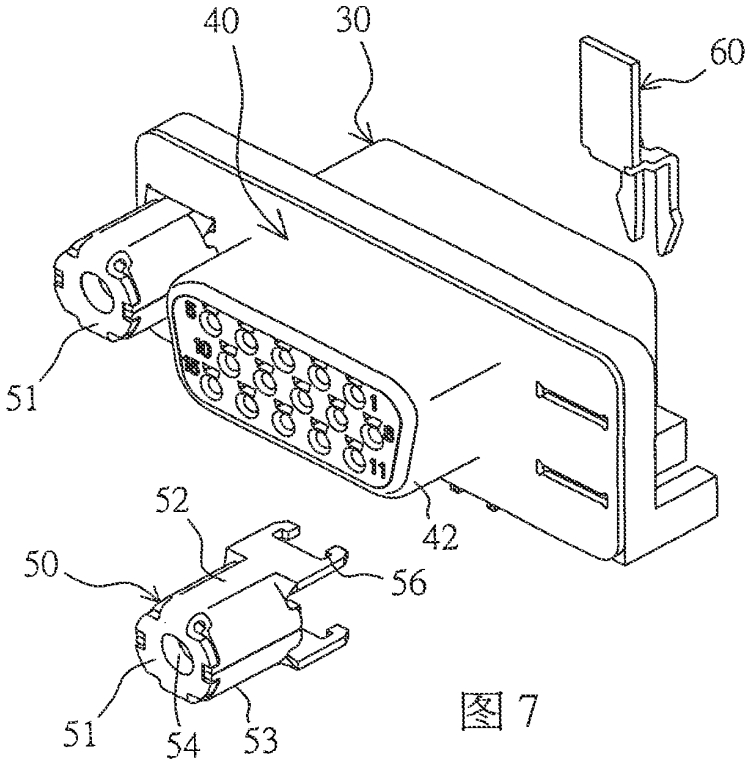


图 7

Samsung, EX1002, p. 2685

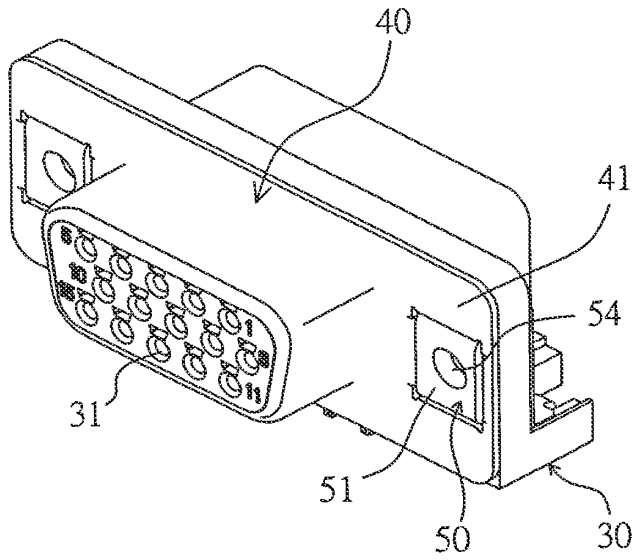


图 8

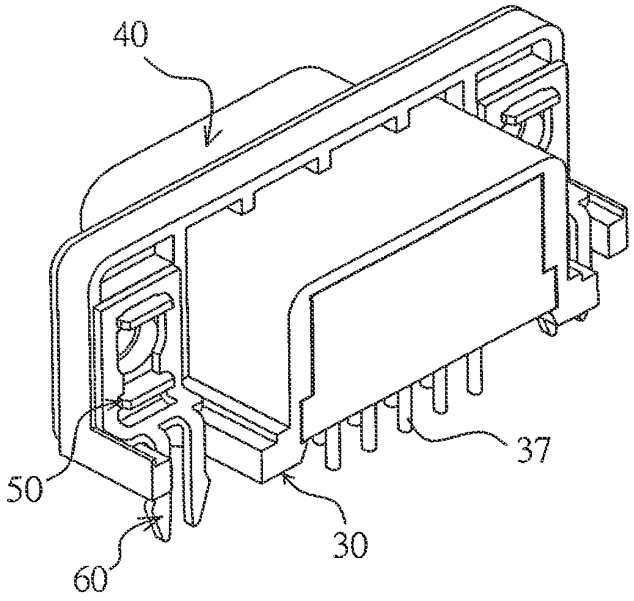


图 9

Samsung, EX1002, p. 2686

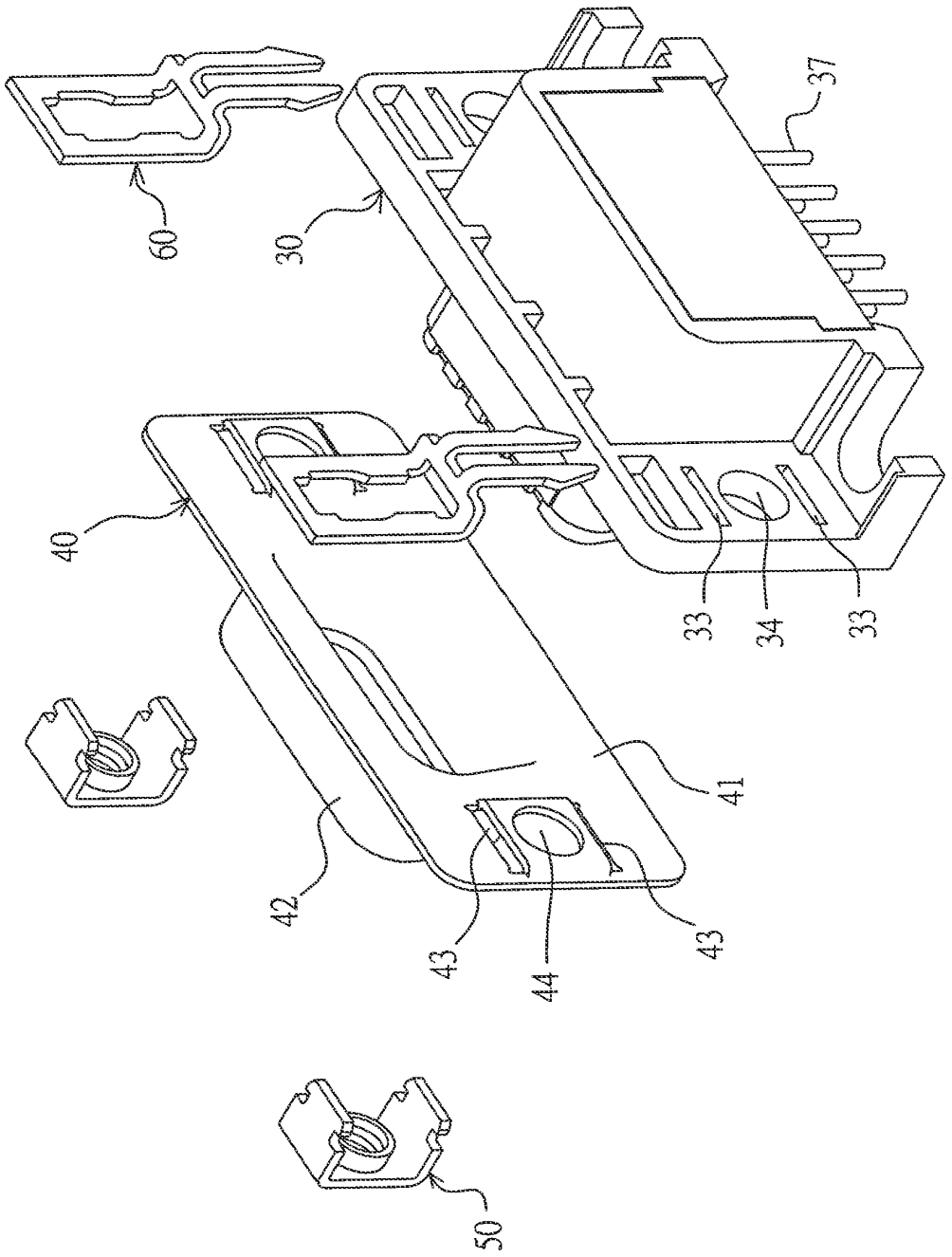


图 10

Samsung, EX1002, p. 2687

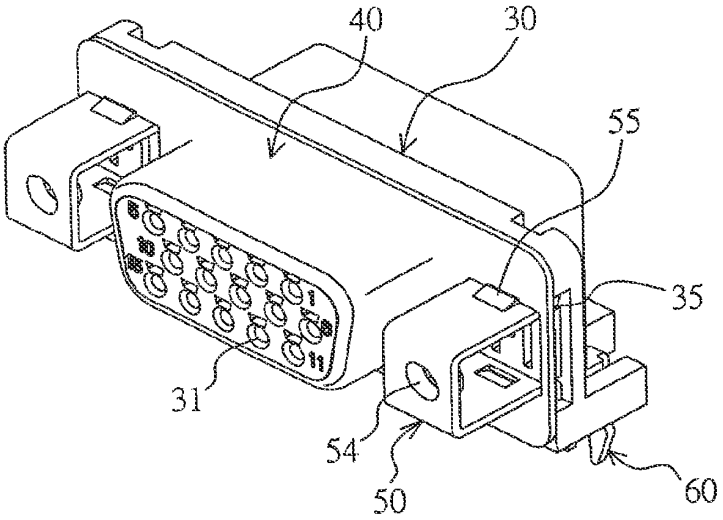


图 11

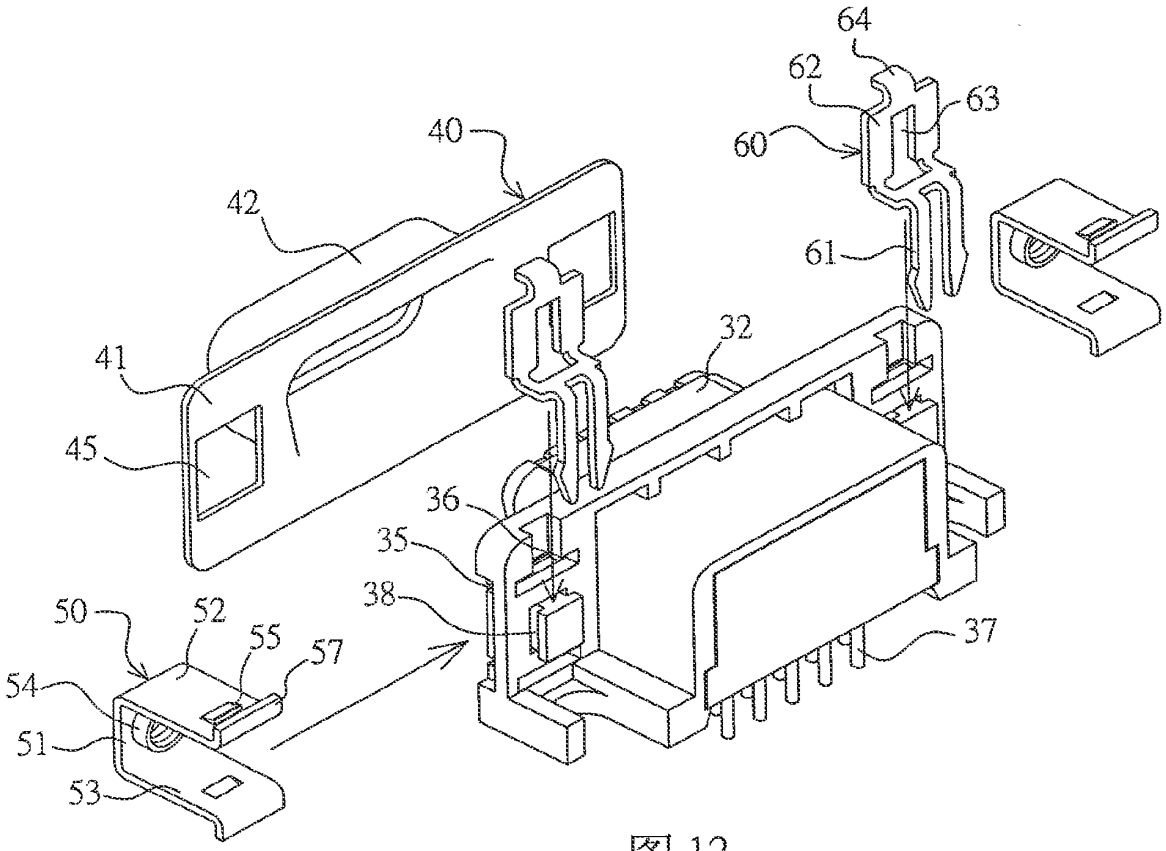


图 12

Samsung, EX1002, p. 2688

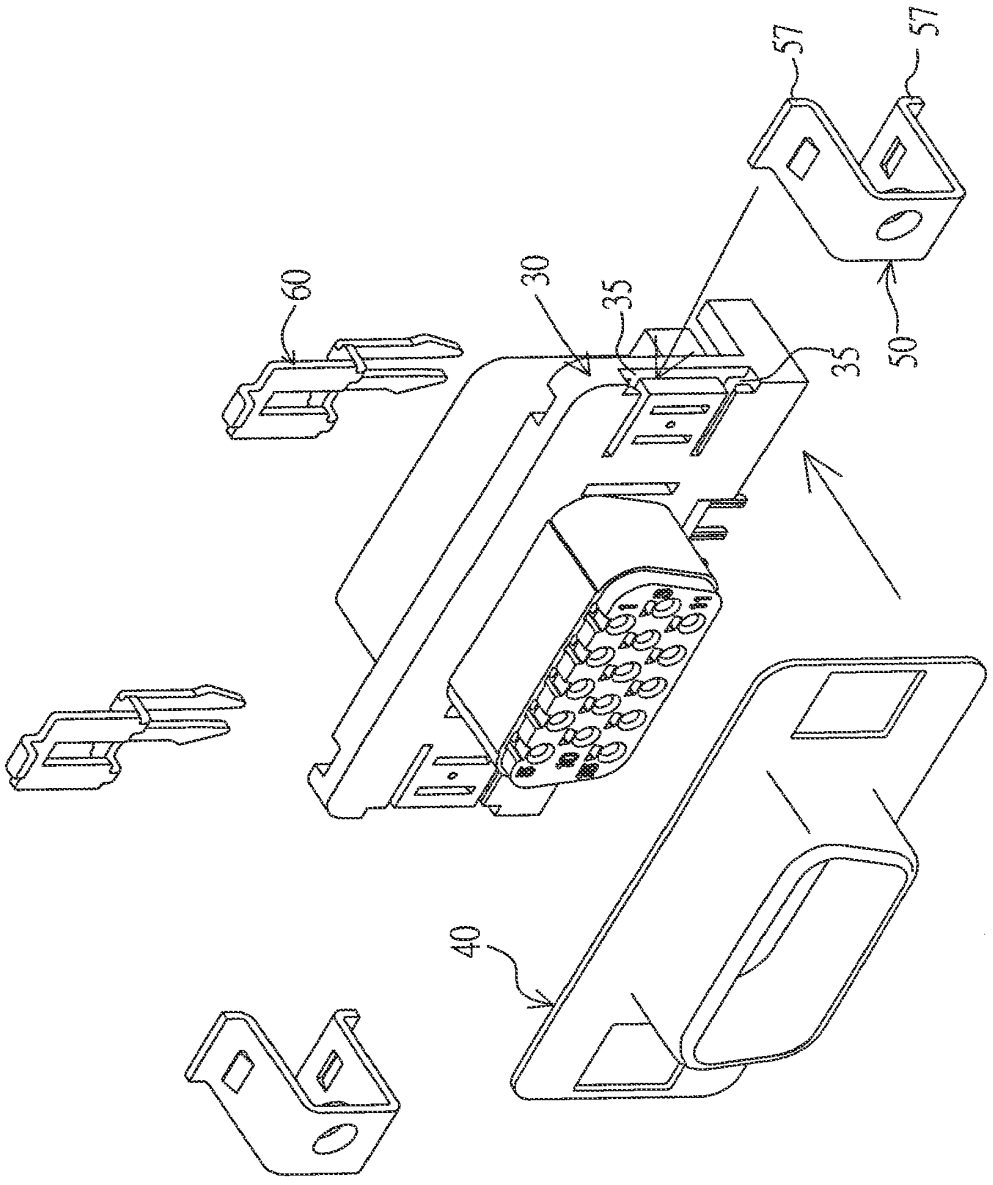


图 13

Samsung, EX1002, p. 2689

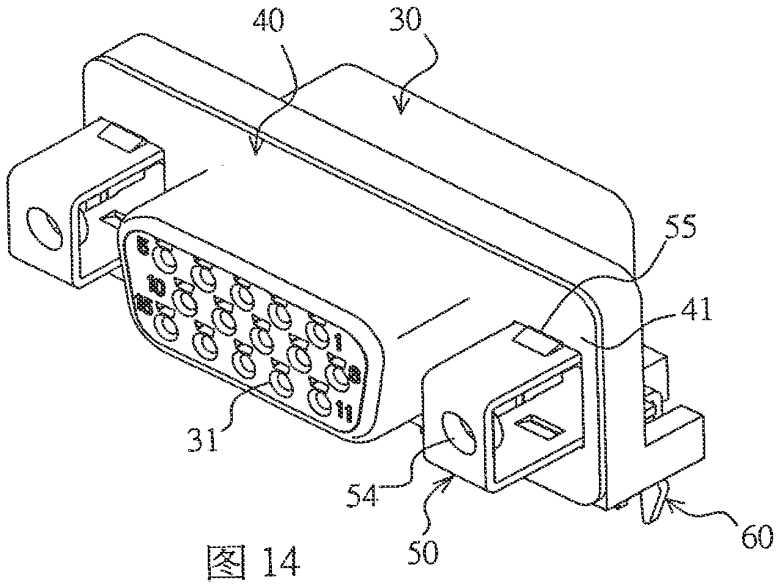


图 14

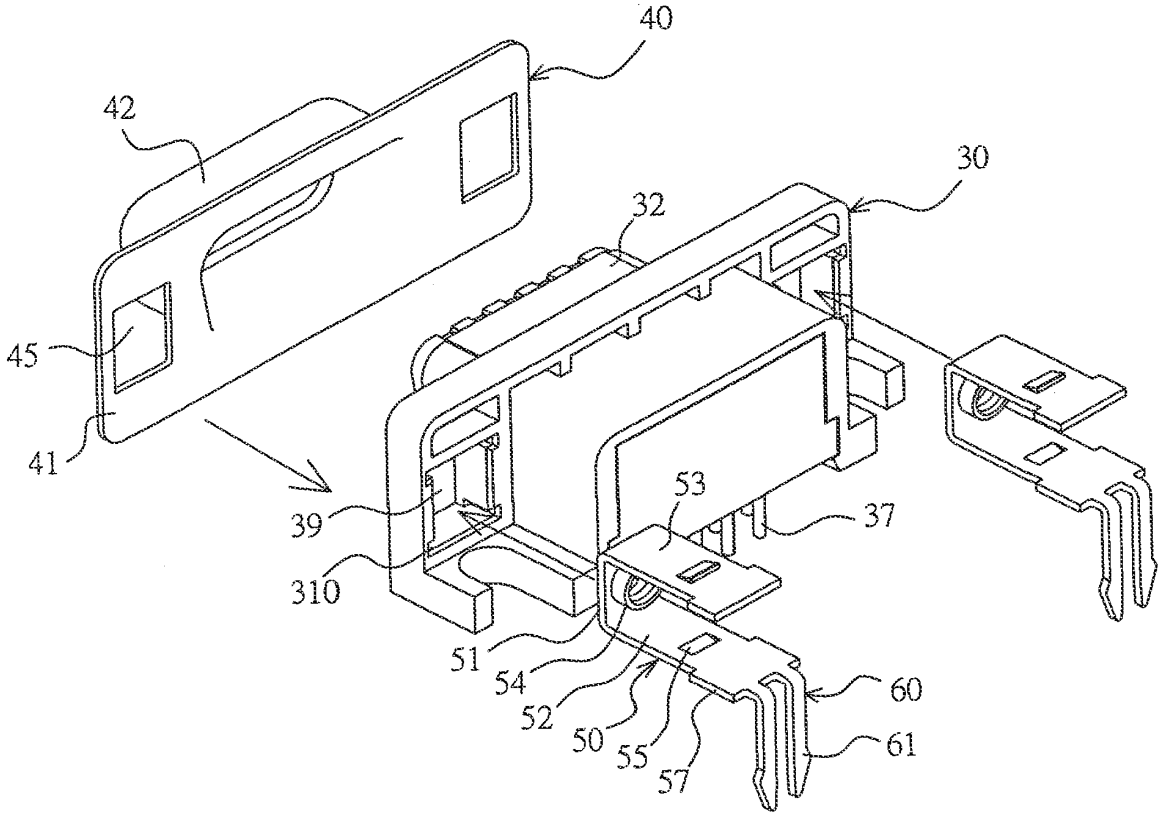


图 15

Samsung, EX1002, p. 2690

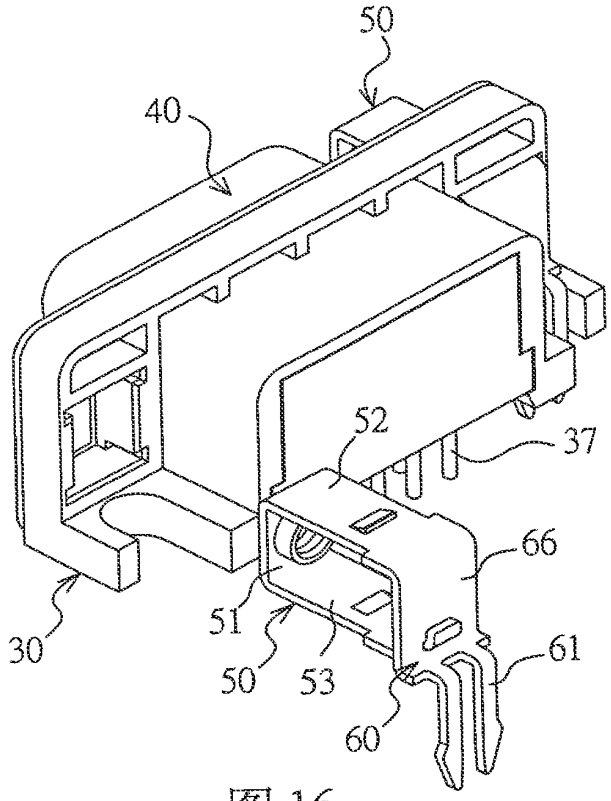


图 16

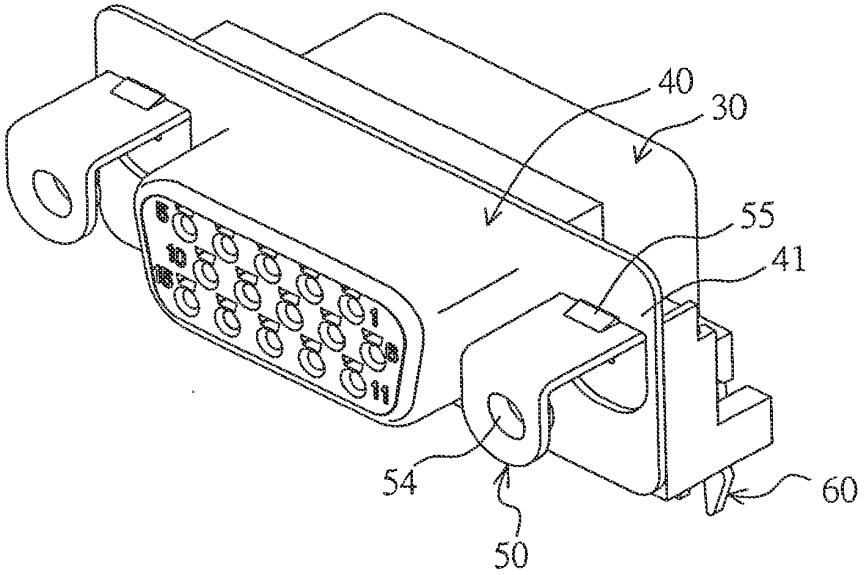


图 17

Samsung, EX1002, p. 2691

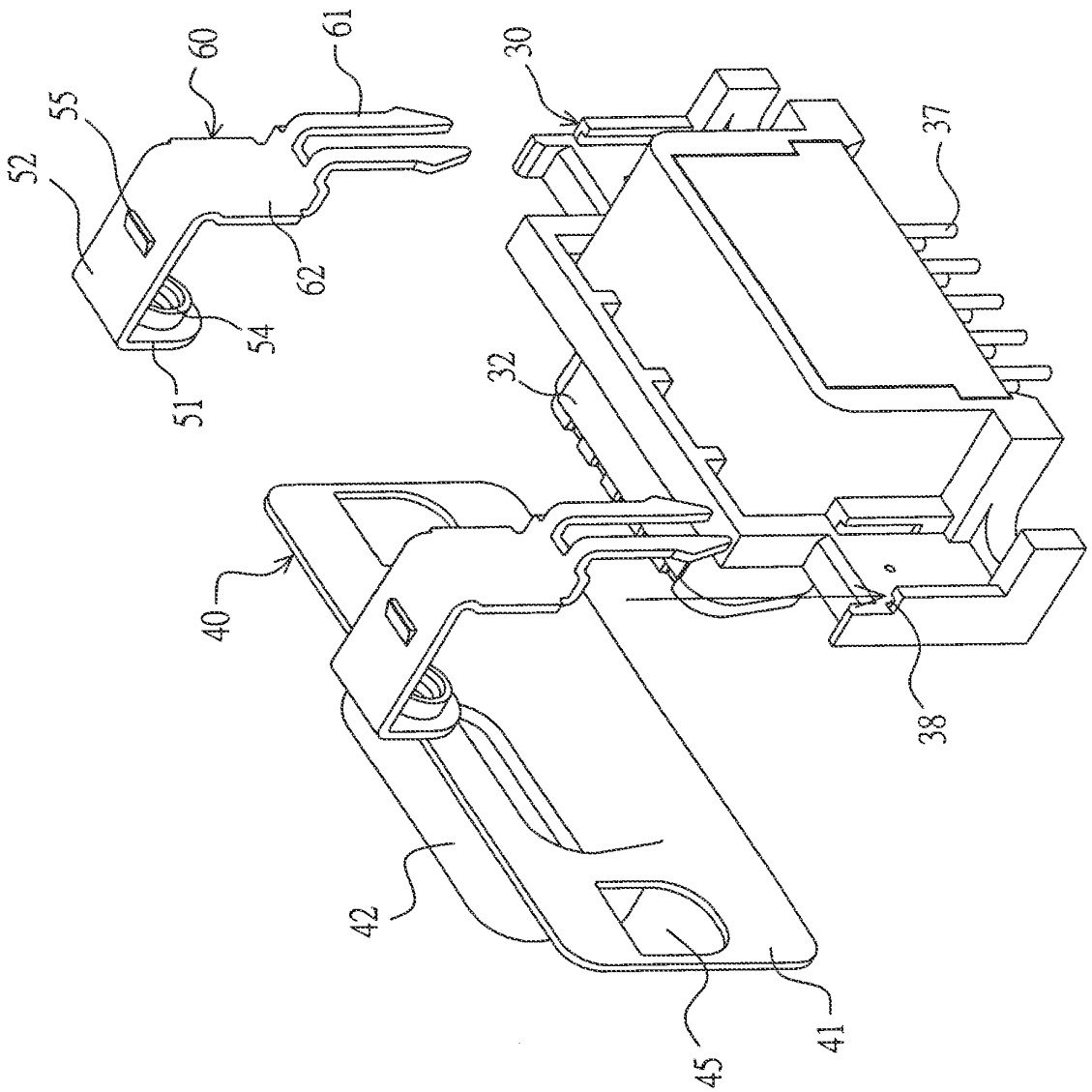


图 18

Samsung, EX1002, p. 2692

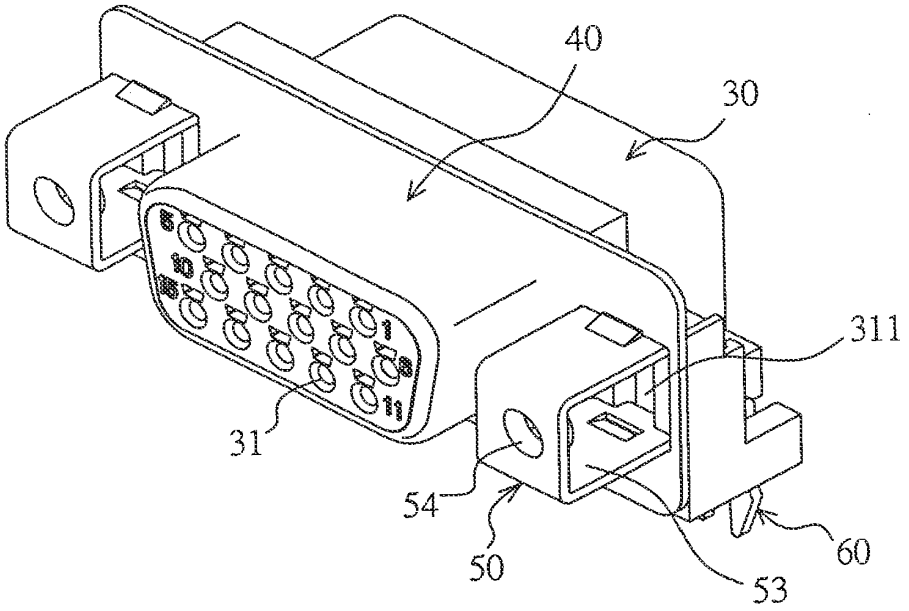


图 19

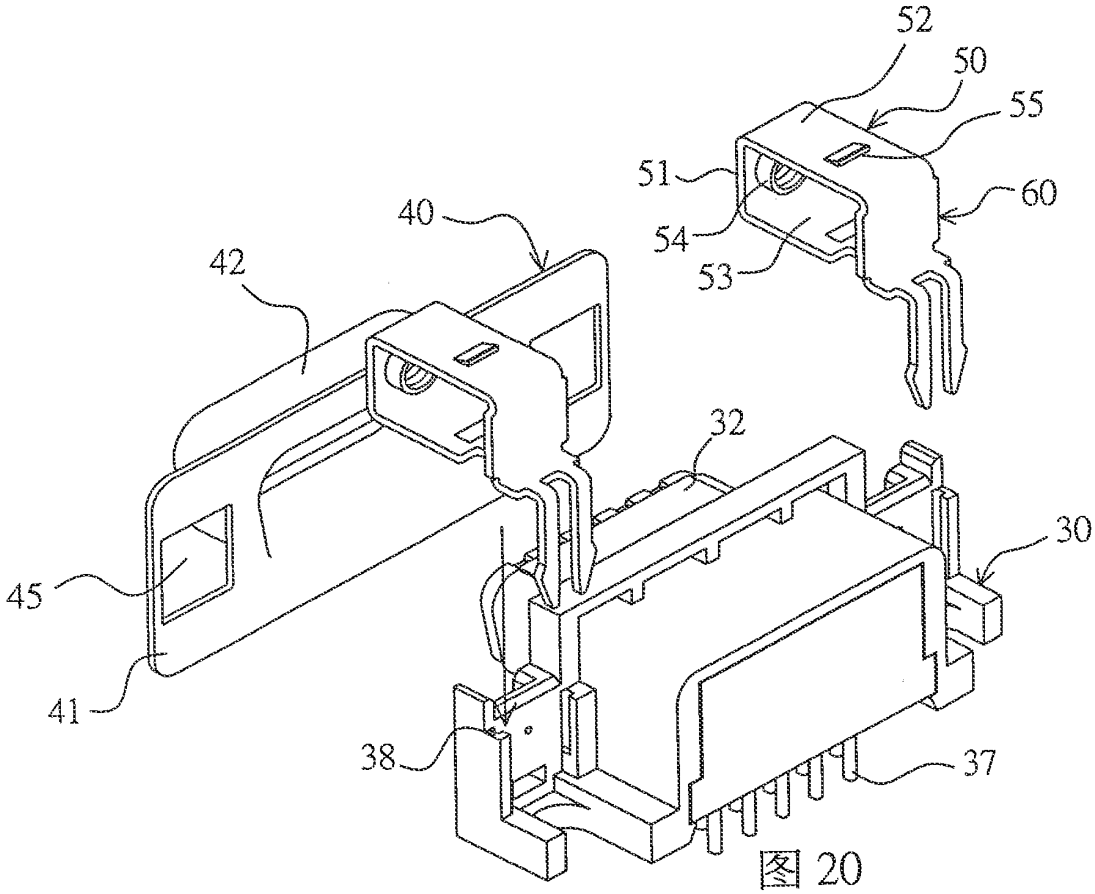


图 20

Samsung, EX1002, p. 2693

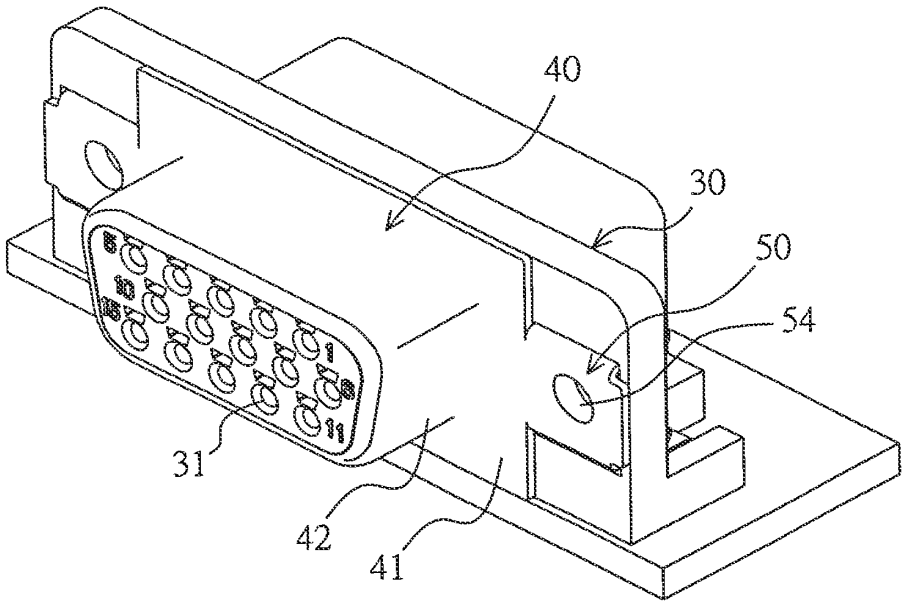


图 21

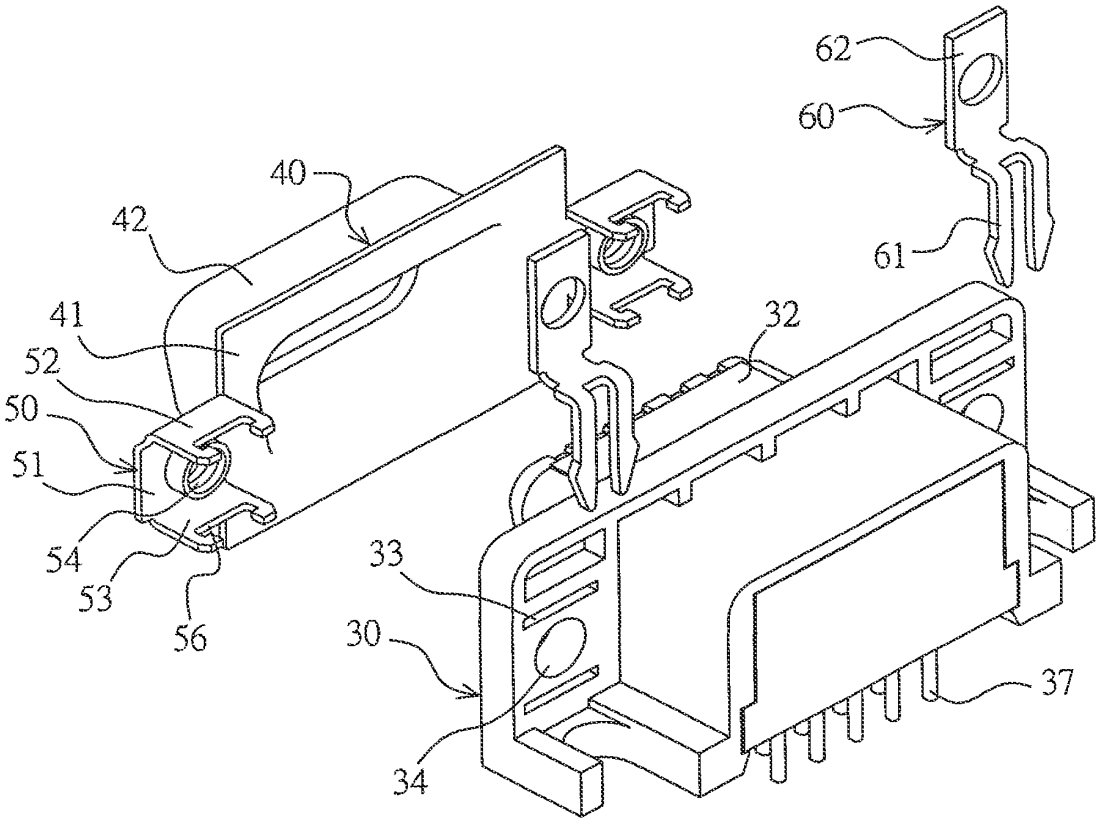


图 22

Samsung, EX1002, p. 2694

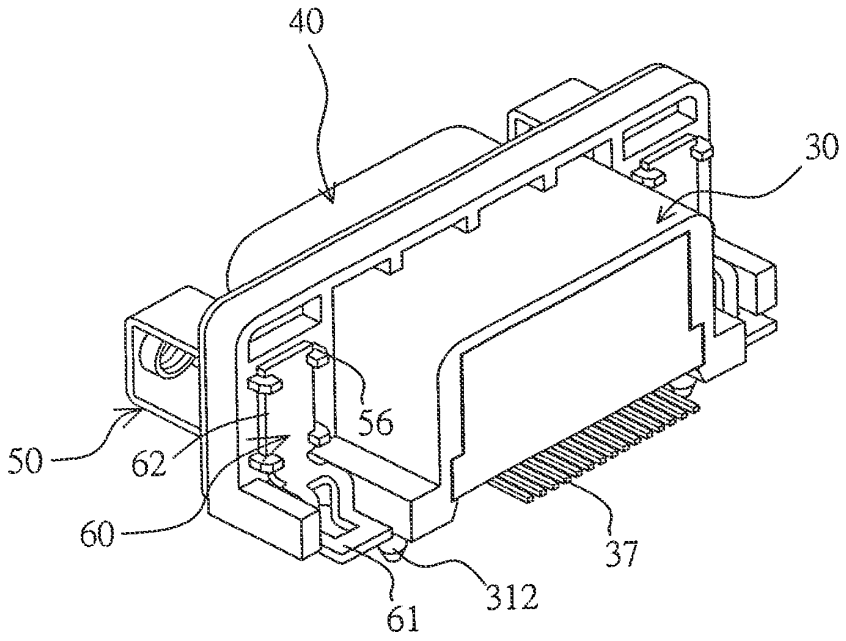


图 23

Samsung, EX1002, p. 2695

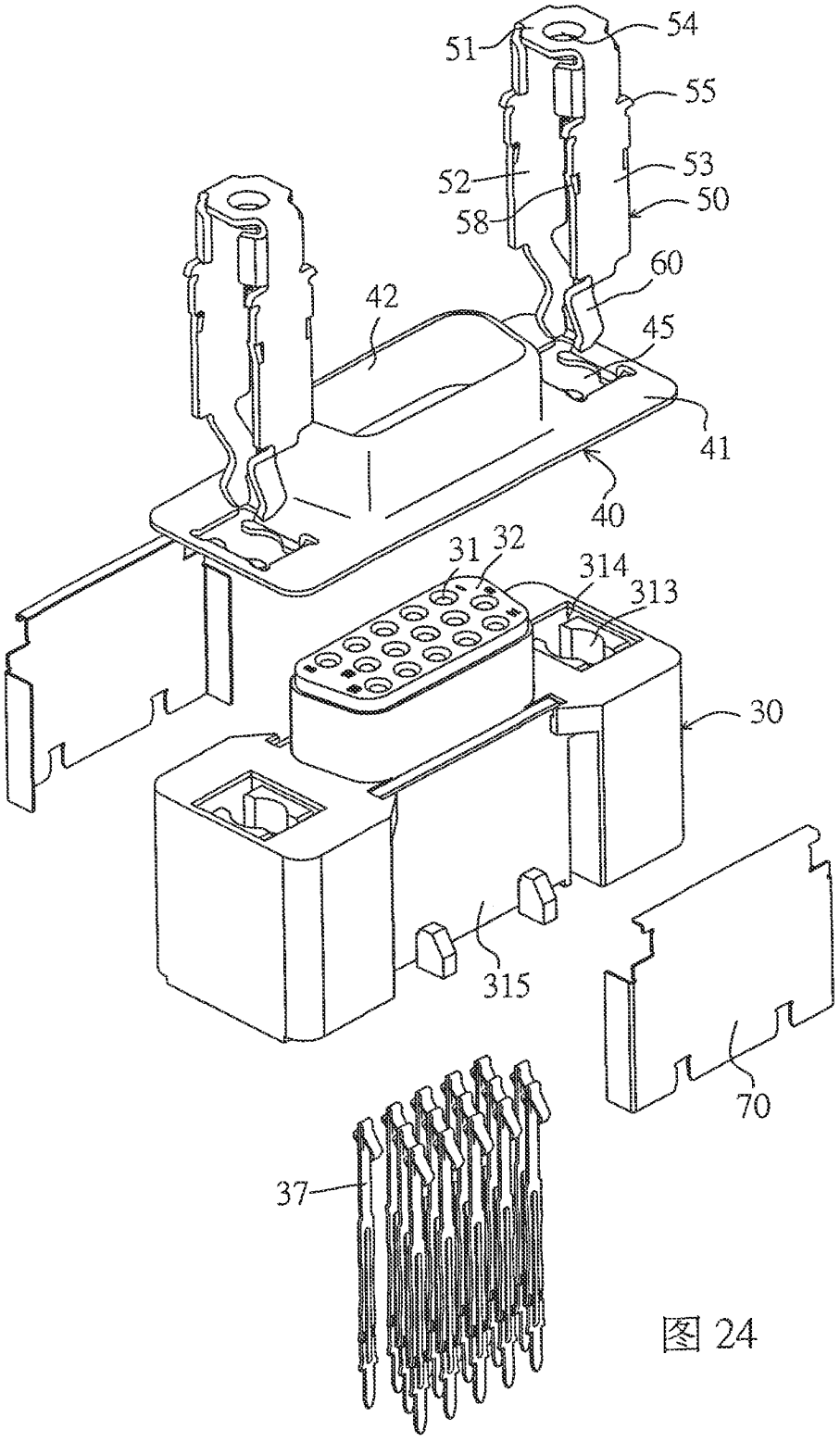


图 24

Samsung, EX1002, p. 2696

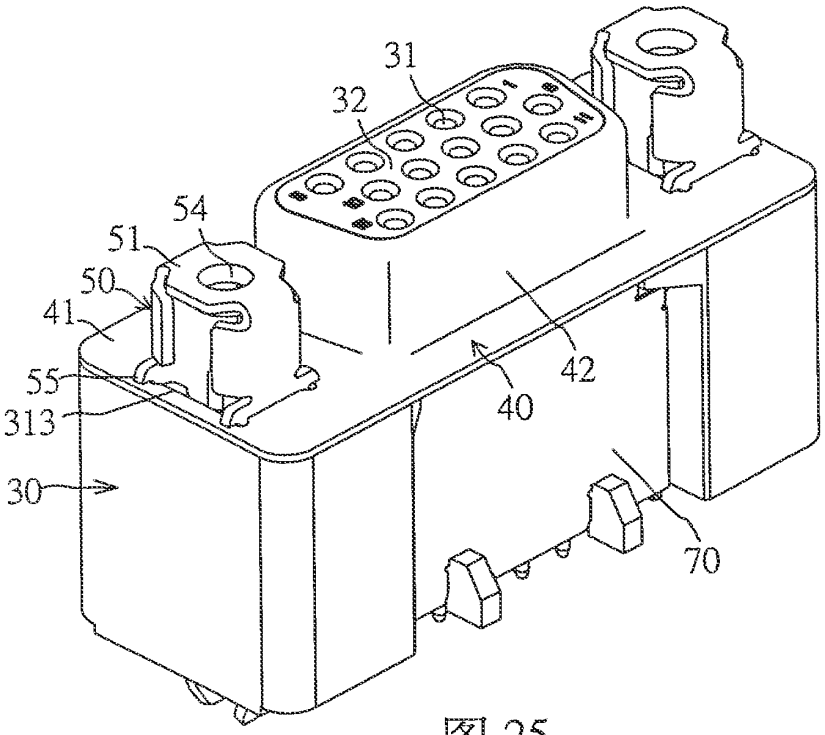


图 25

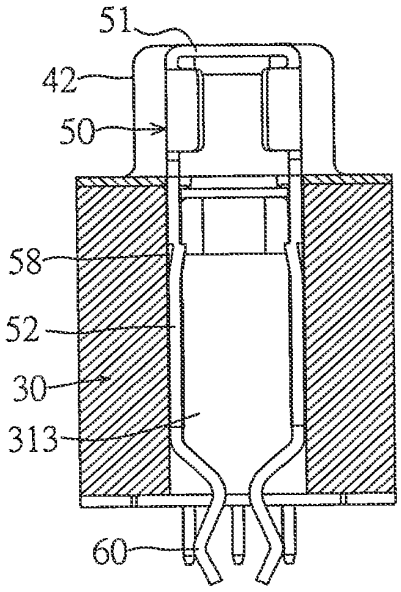


图 26

Samsung, EX1002, p. 2697

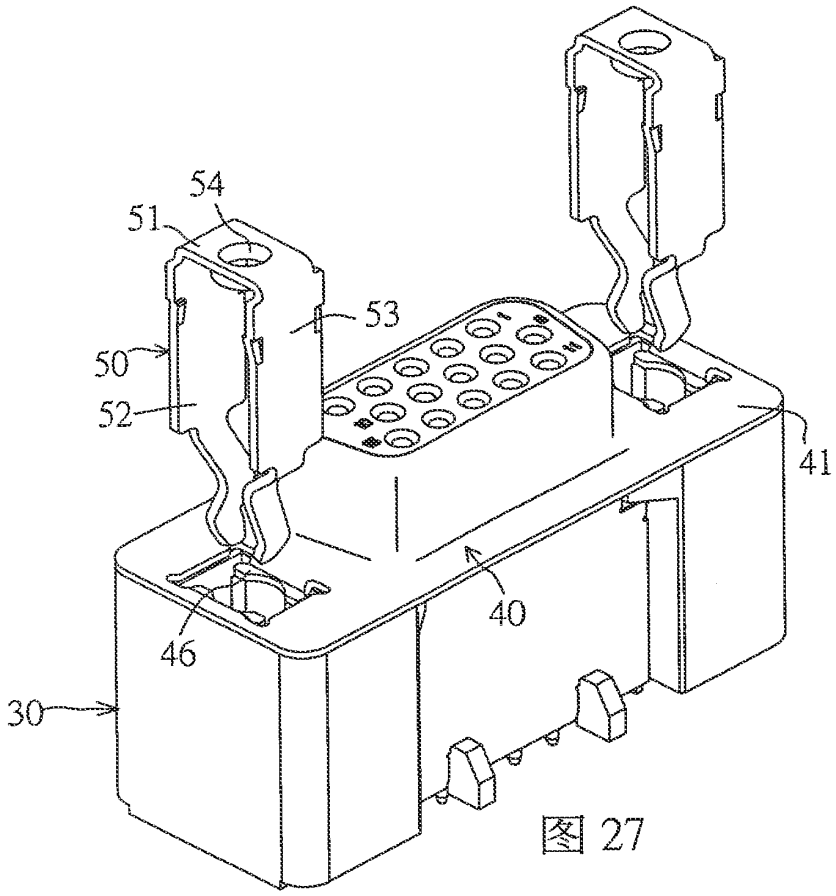


图 27

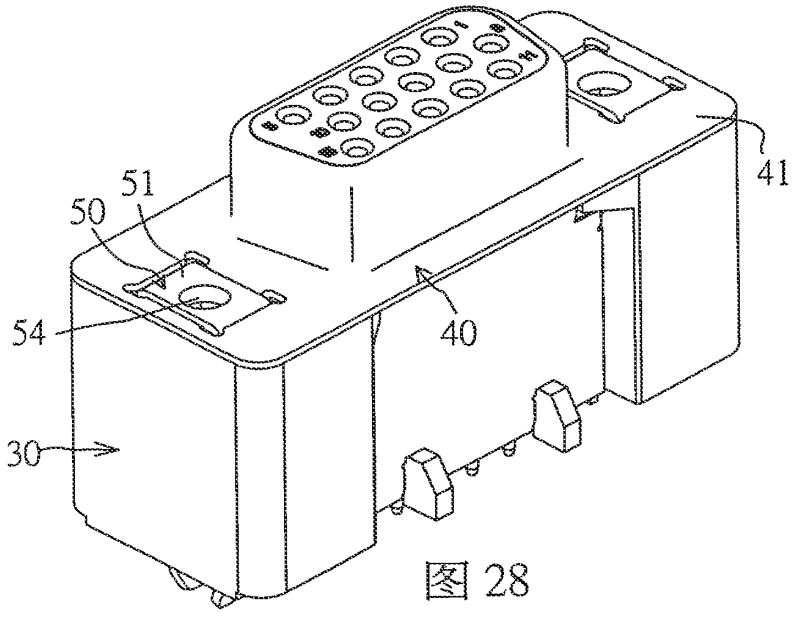


图 28

Samsung, EX1002, p. 2698

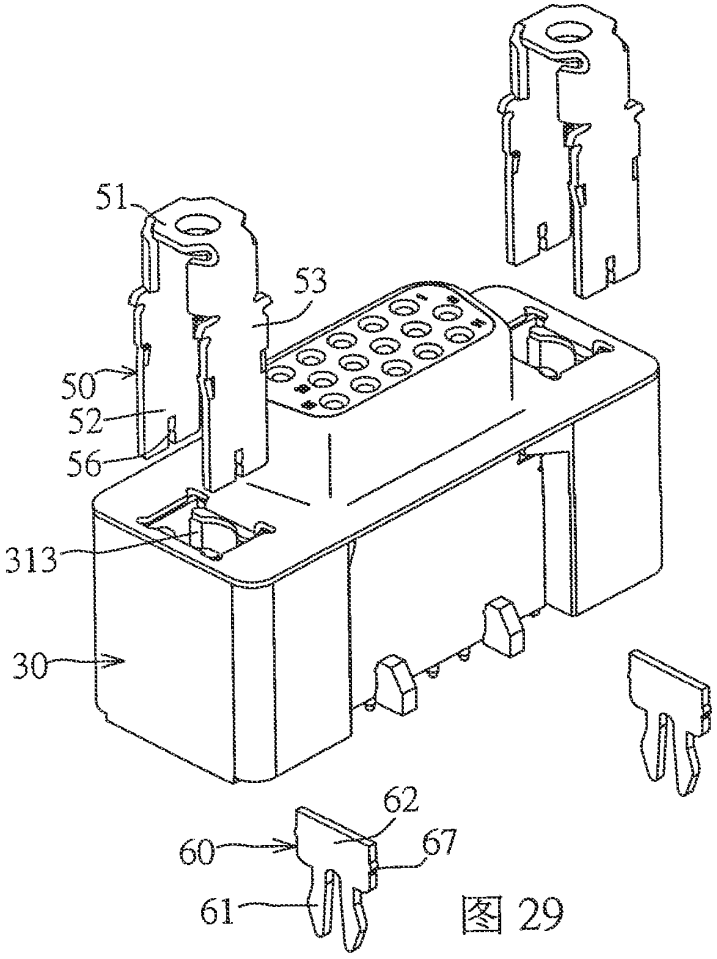


图 29

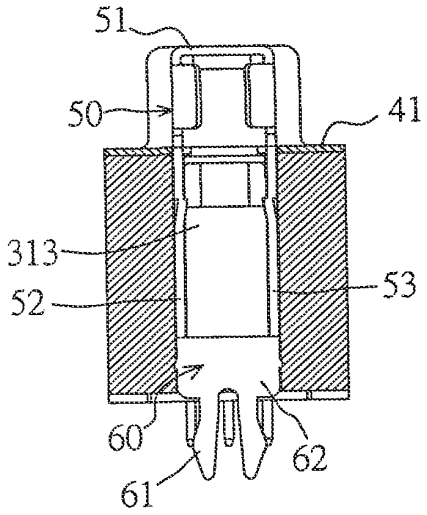


图 30

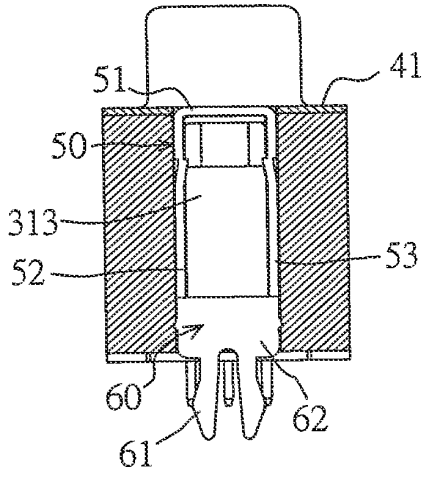


图 31

Samsung, EX1002, p. 2699

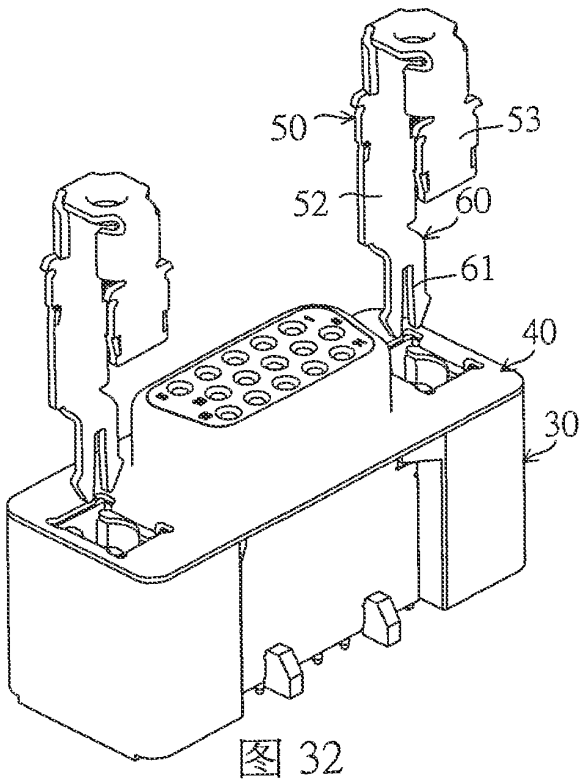


图 32

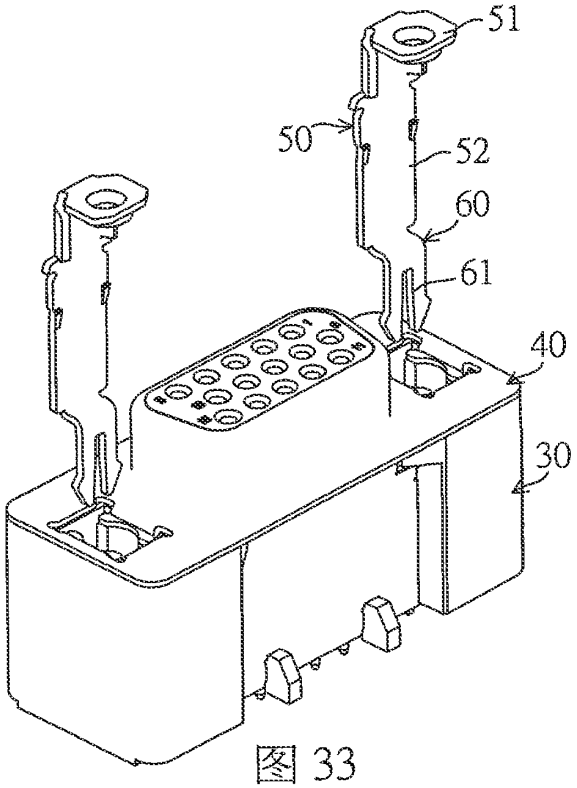


图 33

Samsung, EX1002, p. 2700

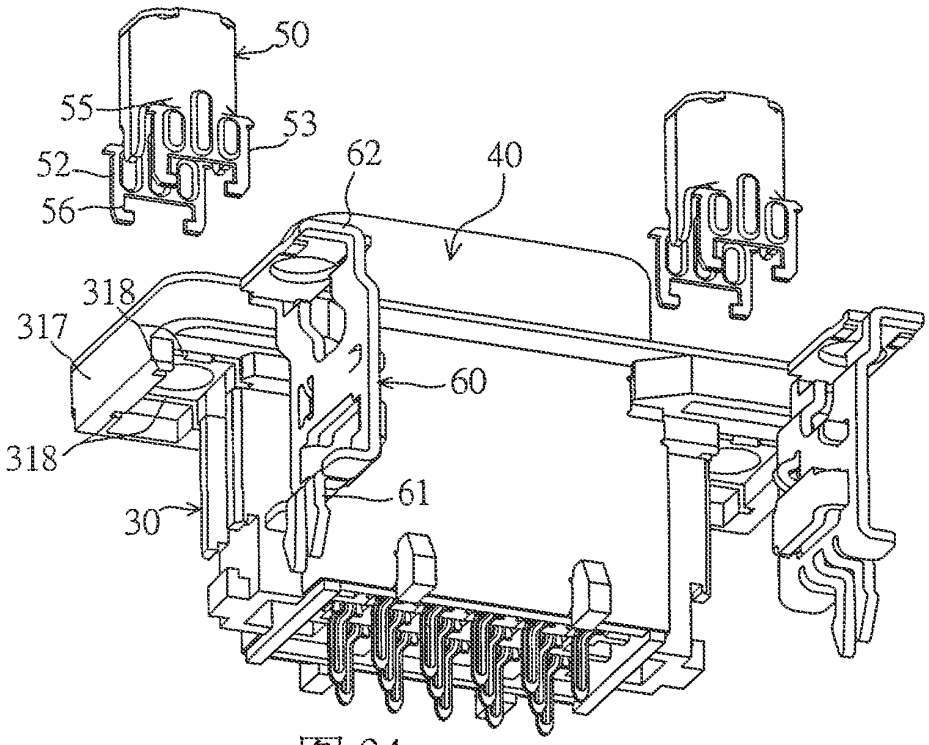


图 34

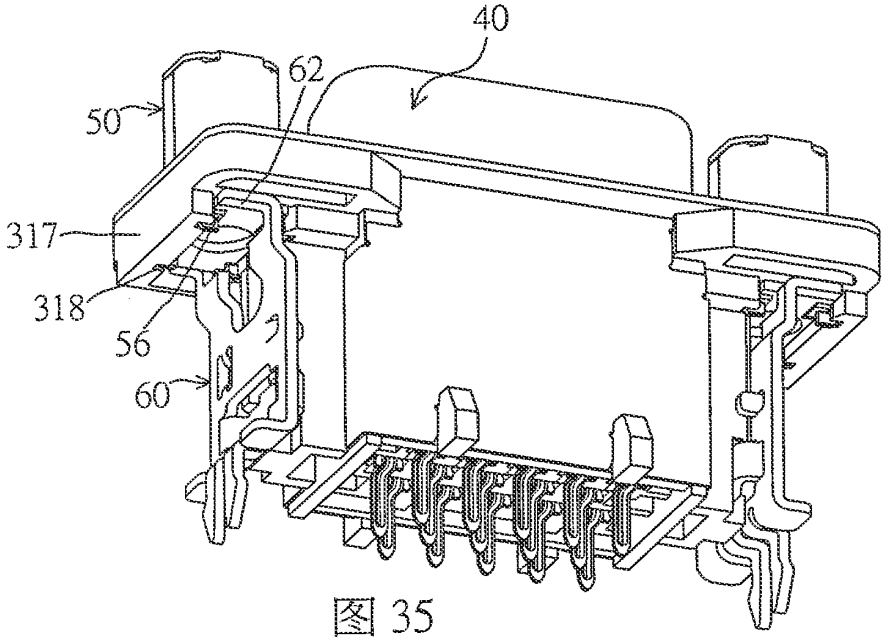


图 35

Samsung, EX1002, p. 2701

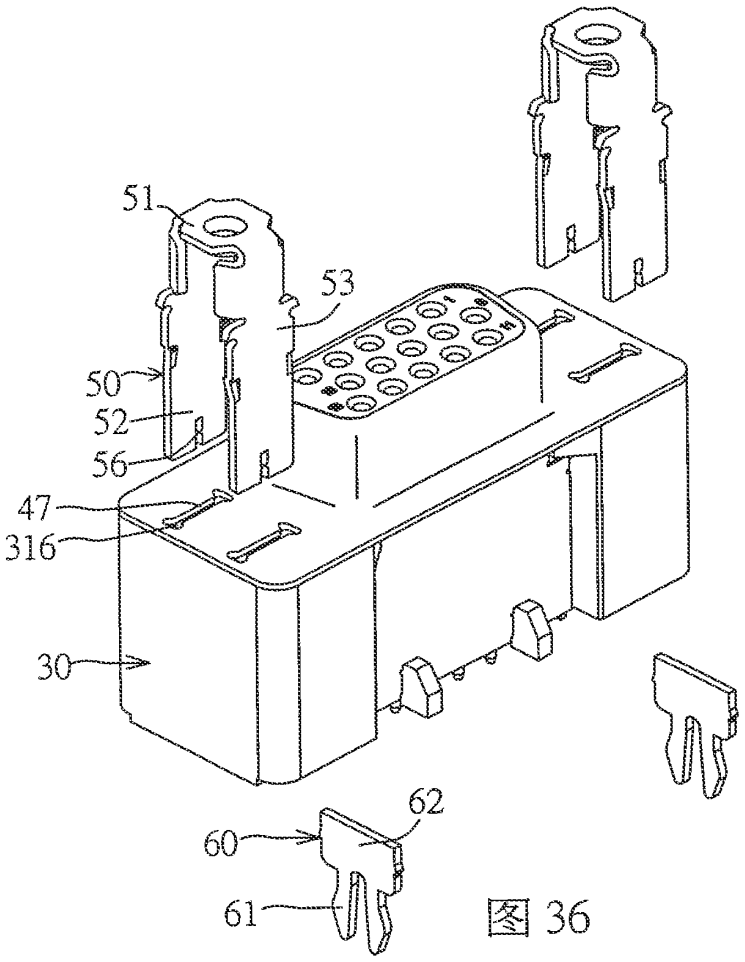


图 36

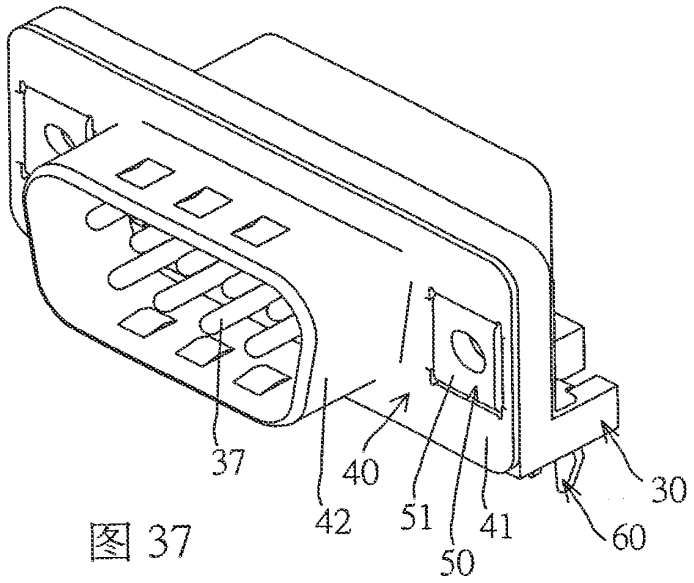


图 37

Samsung, EX1002, p. 2702

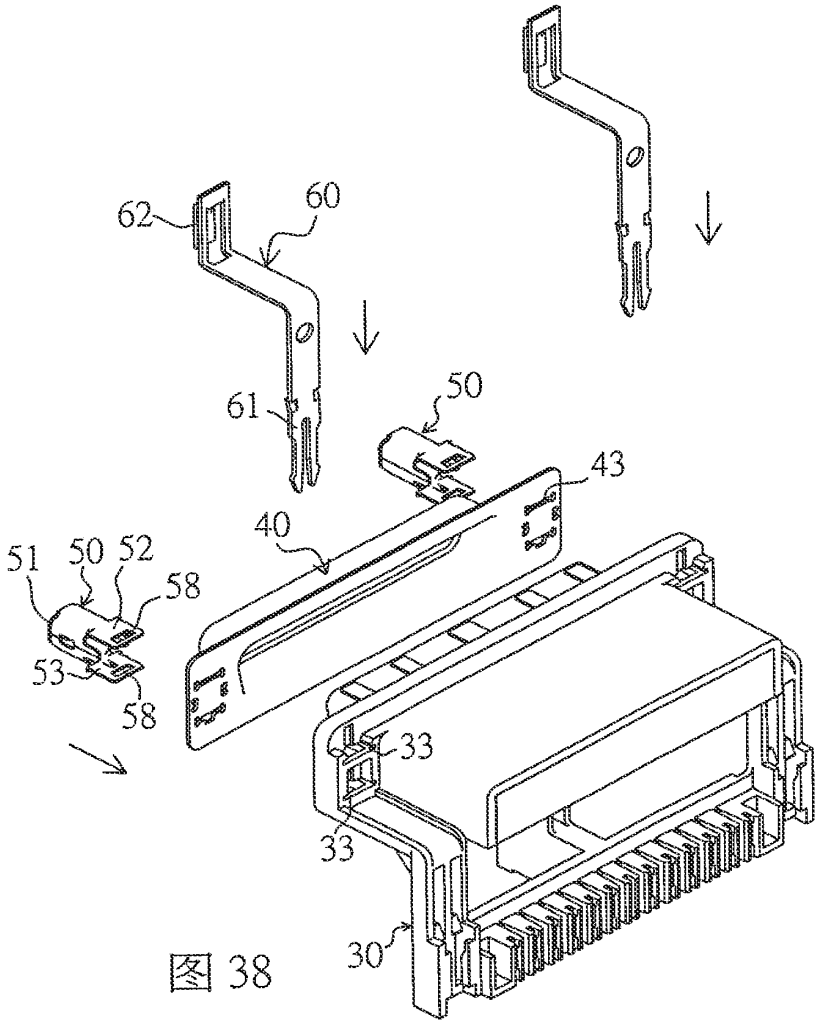


图 38

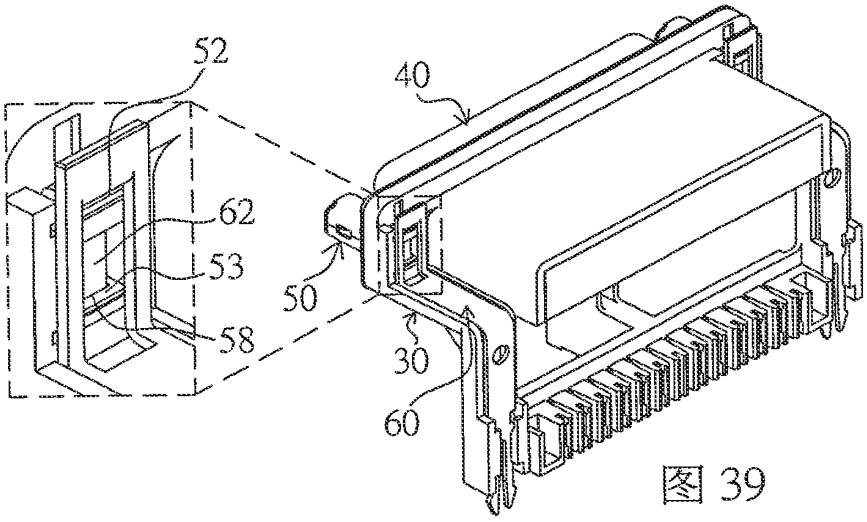


图 39

Samsung, EX1002, p. 2703

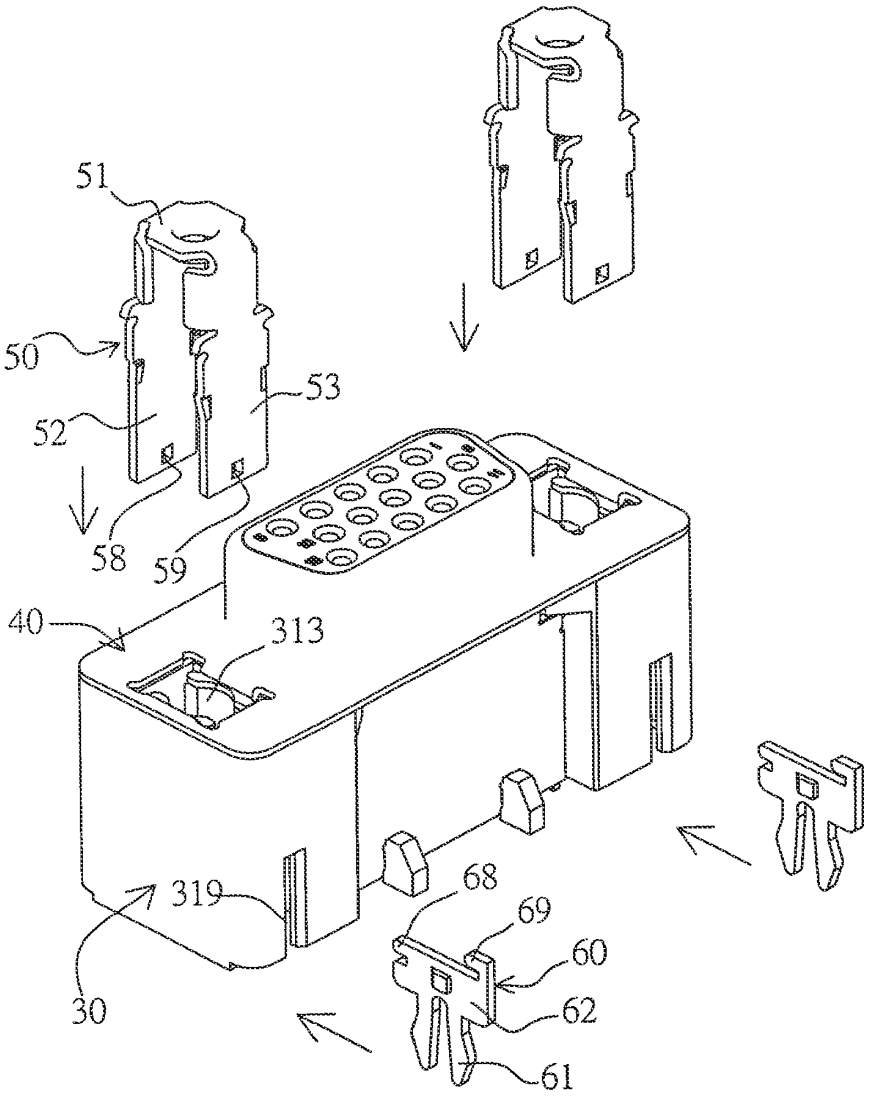


图 40

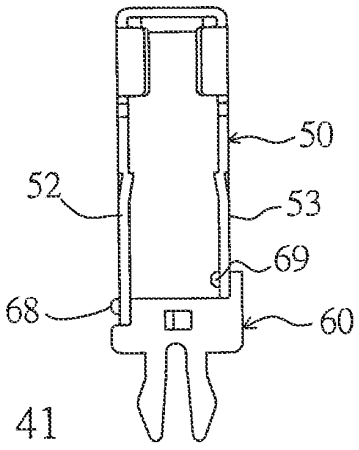


图 41

Samsung, EX1002, p. 2704

Espacenet

Bibliographic data: CN201478490 (U) — 2010-05-19

Electrical connector receptacle

Inventor(s): ZHOUXIAN CAI ± (CAI ZHOUXIAN)

Applicant(s): CAI ZHOUXI AN ± (CAI ZHOUXI'AN)

Classification: **- international:** ***H01R13/46; H01R13/64***
- cooperative:

Application number: CN200920155206U 20090526

Priority number(s): CN200920155206U 20090526

Abstract of CN201478490 (U)

An electrical connector receptacle comprises a plastic base, a tongue, a connecting groove, a first terminal, a second terminal, a third terminal and a fourth terminal. The first terminal is provided with a first extension portion and a first fixed portion, the first extension portion is connected with a first contact portion disposed on the tongue, the first terminal is electrically connected with a first pin, the second terminal which is arranged on the top surface of the connecting groove and opposite to the upper side of the tongue is provided with a second extension portion and a second fixed portion, the second extension portion is connected with a second contact portion, the second terminal is electrically connected with a second pin, the second contact portion faces towards the first terminal, the third terminal is provided with a third extension portion and a third fixed portion, the third extension portion is connected to a third contact portion disposed on the lower side of the tongue, the third terminal is electrically connected with a third pin, the fourth terminal which is arranged on the bottom surface of the connecting groove and opposite to the lower side of the tongue is provided with a fourth extension portion and a fourth fixed portion, the fourth extension portion is connected with a fourth contact portion, the fourth terminal is electrically connected with a fourth pin, and the fourth contact portion faces towards the third terminal. The electrical connector receptacle is convenient in use and multiple in function.

Samsung, EX1002, p. 2705

(19)中华人民共和国国家知识产权局

(12)实用新型专利

(10)授权公告号 CN 201478490 U
(45)授权公告日 2010.05.19

(21)申请号 200920155206.6
(22)申请日 2009.05.26
(66)本国优先权数据
200910132295.7 2009.04.30 CN
(73)专利权人 蔡周贤
地址 中国台湾台北县
(72)发明人 蔡周贤
(74)专利代理机构 永新专利商标代理有限公司 72002
代理人 李树明
(51)Int.Cl.
H01R 12/14(2006.01)
H01R 13/64(2006.01)
H01R 13/46(2006.01)

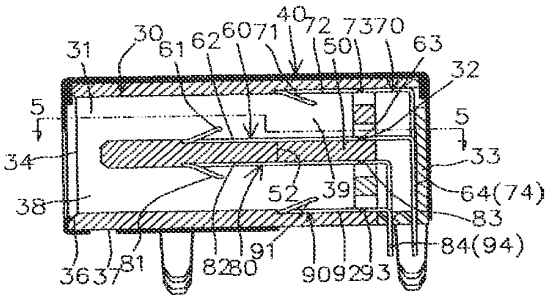
权利要求书 2 页 说明书 8 页 附图 13 页

(54)实用新型名称

电连接插座

(57)摘要

一种电连接插座，包括：塑胶座体；舌片；连接槽；第一端子，设有第一延伸部及第一固定部，第一延伸部连接第一接触部，第一接触部位于舌片上面，第一端子电连接第一接脚；第二端子，设于连接槽顶面相对于舌片上面，设有第二延伸部及第二固定部，第二延伸部连接第二接触部，第二端子电连接第二接脚，第二接触部朝向第一端子；第三端子，设有第三延伸部及第三固定部，第三延伸部连接第三接触部，第三接触部位于舌片下面，第三端子电连接第三接脚；第四端子，设于连接槽底面相对于舌片下面，设有第四延伸部及第四固定部，第四延伸部连接第四接触部，第四端子电连接第四接脚，第四接触部朝向第三端子。本实用新型可达到使用上的方便性及多元性。



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1. 一种电连接插座，其特征在于：包括有：

一塑胶座体；

一舌片，设于该塑胶座体前端；

一连接槽，位于该塑胶座体前端并将该舌片包覆于内，其前端为一插入口，该连接槽于舌片上、下方形成对称的轮廓；

至少一排第一端子，该第一端子一体设有一第一延伸部及一第一固定部，该第一延伸部连接一第一接触部，该第一延伸部延伸至该连接槽内，该至少一排第一端子的第一接触部呈间隔排列位于该舌片上面，该第一端子电连接一第一接脚伸出该塑胶座体外；

至少一排第二端子，设于该连接槽顶面相对于该舌片上面，该第二端子一体设有一第二延伸部及一第二固定部，该第二延伸部连接一第二接触部，该第二延伸部延伸于该连接槽内，该第二端子电连接一第二接脚伸出该塑胶座体外，该至少一排第二端子的第二接触部呈间隔排列且朝向该至少一排第一端子；

至少一排第三端子，该第三端子一体设有一第三延伸部及一第三固定部，该第三延伸部连接一第三接触部，该第三延伸部延伸至该连接槽内，该至少一排第三端子的第三接触部呈间隔排列位于该舌片下面，该第三端子电连接一第三接脚伸出该塑胶座体外；及

至少一排第四端子，其设于该连接槽底面相对于该舌片下面，该第四端子一体设有一第四延伸部及一第四固定部，该第四延伸部连接一第四接触部，该第四延伸部延伸于该连接槽内，该第四端子电连接一第四接脚伸出该塑胶座体外，该至少一排第四端子的第四接触部呈间隔排列且朝向该至少一排第三端子。

2. 如权利要求 1 所述的电连接插座，其特征在于：该一排第一端子的第一接触部是凸出该舌片上面并可弹动，其中该一排第三端子的第三接触部是凸出该舌片下面并可弹动，该第一端子的第一固定部后端一体连接该第一接脚，该第二端子的第二固定部后端一体连接该第二接脚，第三端子的第三固定部后端一体连接该第三接脚，第四端子的第四固定部后端一体连接该第四接脚。

3. 如权利要求 1 所述的电连接插座，其特征在于：还设有一金属外壳包覆该塑胶座体。

4. 如权利要求 1 所述的电连接插座，其特征在于：该连接槽能够连接一接头，该接头仅有一面设有至少一排接点与该至少一排第一接触部或至少一排第二接触部或至少一排第三接触部或至少一排第四接触部电连接。

5. 如权利要求 4 所述的电连接插座，其特征在于：该至少一排第一端子的第一接触部、至少一排第二端子的第二接触部、至少一排第三端子的第三接触部、及至少一排第四端子的第四接触部是包括有至少二种不相同的连接介面而能够分别电连接该接头及至少另一不同连接介面的接头。

6. 如权利要求 4 所述的电连接插座，其特征在于：该至少一排第一端子的第一接触部、至少一排第二端子的第二接触部、至少一排第三端子的第三接触部、及至少一排第四端子的第四接触部为相同的连接介面而皆可电连接该接头，该一排第一端子和一排第四端子为相同序号排列，该一排第二端子和一排第三端子为相同序号排列，该一排第一端子和一排第二端子为相反序号排列，该接头可正反双向插入该连接槽电连接。

7. 如权利要求 6 所述的电连接插座，其特征在于：其为一 USB 介面的电连接插座，其中一排第一端子、一排第二端子、一排第三端子、和一排第四端子各自有四个。

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8. 如权利要求 1 所述的电连接插座，其特征在于：该第一端子的第一延伸部板面平贴于该舌片一面，该第一端子的第一接触部一端连接于第一延伸部且由前而后渐凸出第一延伸部板面并延伸至另一端成开放；该第三端子的第三延伸部板面平贴于该舌片另一面，该第三端子的第三接触部一端连接于第三延伸部且由前而后渐凸出第三延伸部板面并延伸至另一端成开放。

9. 如权利要求 1 所述的电连接插座，其特征在于：该舌片的两侧设有凹口而形成一挡面，该连接槽于该舌片二面由该挡面更往后延伸至该塑胶座体内，该挡面前方为连接槽前段，该挡面后方为连接槽后段；且其中该一排第二端子的第二接触部是凸出第二延伸部并可弹动，该第二接触部位于该连接槽后段，该一排第四端子的第四接触部是凸出第四延伸部并可弹动，该第四接触部位于该连接槽后段。

10. 如权利要求 9 所述的电连接插座，其特征在于：该一排第一端子的第一延伸部还连接设有至少一凸出该舌片上面的另一第一接触部，该一排第三端子的第三延伸部还连接设有至少一凸出该舌片上面的另一第三接触部。

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电连接插座

【技术领域】

[0001] 本实用新型是关于一种电连接器，特别是关于一种电连接插座。

【背景技术】

[0002] 现今电脑设备最普及的讯号传输规格莫过于通用串行总线 (UniversalSerial Bus，简称 USB)，以此规格制作的连接器插座及传输线可使外接于电脑的周边设备，如滑鼠、储存卡、键盘等，即时为电脑所测得并立即使用。

[0003] 目前普遍使用的随身碟亦属于一种储存卡，此种储存卡的接头分成无金属外壳和有金属外壳二种。

[0004] 请参阅图 1，为一种储存卡 20 的三视图，其一端设有一接头 21，该接头 21 为 USB2.0 型式且无金属外壳，该接头 21 一面设有 4 个间隔排列且不弹动的接点 22。

[0005] 此种随身碟 20 可以配合一 USB 插座作电连接，由于目前 USB 插座是于其内的舌片一面设有一排接点，在使用上，随身碟 20 需插入方向正确才能使两者的接点对上电连接；为了确保储存卡插入时能电连接，两者在对接上具有防呆设计，即当随身碟的接头反向插入时则无法插入，使用者即会再换另一个方向插入，方向正确了才能插入，如此即可确保插入后具有电连接。

[0006] 使用者通常是随机插入，故插不进去的机率是 1/2，故常常是插两次，造成使用上的不便。

[0007] 请参阅图 2 及图 3，为一种讯号线的接头，其为 USB2.0 接头 10，其设有一塑胶座体 12 及一金属外壳 13，该金属外壳 13 包覆该塑胶座体 12，该金属外壳 13 和该塑胶座体 12 间形成一空间 14，该塑胶座体 12 一面设有一排接点 11。

[0008] 在使用上，USB2.0 接头 10 亦需插入方向正确才能与 USB2.0 插座的接点对上电连接，同样为了确保 USB2.0 接头插入时能电连接，两者在对接上具有防呆设计，即当 USB2.0 接头反向插入时则无法插入，使用者即会再换另一个方向插入，方向正确了才能插入，如此即可确保插入后具有电连接，使用者通常是随机插入，故插不进去的机率是 1/2，故亦造成使用上的不便。

[0009] 再者，接头的种类日益增加，亦有相同外形然而连接介面不同者，若两种相同外形然而连接介面不同的接头若能皆以同一插座来电连接，则能达到使用上的多元性。

【实用新型内容】

[0010] 本实用新型的主要目的在于提供一种电连接插座，其是于舌片上设有至少一排端子的一相对面另设有至少一排端子，使达到使用上的方便性及多元性，且整体电连接插座的长度和高度均能合乎标准规格。

[0011] 本实用新型的另一主要目的在于提供一种电连接插座，其是于舌片的挡面向后延伸设有连接槽后段，并于该连接槽后段的顶面或底面设有至少一排端子，该至少一排端子是采用弹片式的接触部且由前往后延伸渐凸出，当受挤压时即贴平于连接槽后段的顶、底

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面，故，几乎不占用到塑胶座体高度的空间，不会过量增加了整体插座的高度，且亦不增加长度，并能达到使用上的方便性及多元性。

[0012] 本实用新型的再一主要目的在于提供一种电连接插座，其是于舌片的挡面向后延伸设有连接槽后段，并于该连接槽后段另设有至少一排端子对应舌片的至少一排端子，其中该舌片上于一排端子的接触部后方设有至少一排另一接触部，借此达到确保电连接。

[0013] 本实用新型的再一主要目的在于提供一种电连接插座，其舌片设于其连接槽内高度的中间，使连接槽于舌片上、下方形成对称的轮廓，舌片两面皆设有至少一排端子，对应舌片两面的两对应面亦各有至少一排端子，借此达到使用上的方便性及多元性。

[0014] 为达上述目的，本实用新型电连接插座，包括有：

[0015] 一塑胶座体；

[0016] 一舌片，设于该塑胶座体前端；

[0017] 一连接槽，位于该塑胶座体前端并将该舌片包覆于内，其前端为一插入口，该连接槽于舌片上、下方形成对称的轮廓；

[0018] 至少一排第一端子，该第一端子一体设有一第一延伸部及一第一固定部，该第一延伸部连接一第一接触部，该第一延伸部延伸至该连接槽内，该至少一排第一端子的第一接触部呈间隔排列位于该舌片上面，该第一端子电连接一第一接脚伸出该塑胶座体外；

[0019] 至少一排第二端子，设于该连接槽顶面相对于该舌片上面，该第二端子一体设有一第二延伸部及一第二固定部，该第二延伸部连接一第二接触部，该第二延伸部延伸于该连接槽内，该第二端子电连接一第二接脚伸出该塑胶座体外，该至少一排第二端子的第二接触部呈间隔排列且朝向该至少一排第一端子；

[0020] 至少一排第三端子，该第三端子一体设有一第三延伸部及一第三固定部，该第三延伸部连接一第三接触部，该第三延伸部延伸至该连接槽内，该至少一排第三端子的第三接触部呈间隔排列位于该舌片下面，该第三端子电连接一第三接脚伸出该塑胶座体外；及

[0021] 至少一排第四端子，其设于该连接槽底面相对于该舌片下面，该第四端子一体设有一第四延伸部及一第四固定部，该第四延伸部连接一第四接触部，该第四延伸部延伸于该连接槽内，该第四端子电连接一第四接脚伸出该塑胶座体外，该至少一排第四端子的第四接触部呈间隔排列且朝向该至少一排第三端子。

[0022] 综上所述，本实用新型的电连接插座可达到使用上的方便性及多元性。

[0023] 本实用新型的上述及其他目的、优点和特色由以下较佳实施例的详细说明中并参考图式当可更加明白。

【附图说明】

[0024] 图 1 是习知储存卡的三视图。

[0025] 图 2 是习知的 USB2.0 接头的前视图。

[0026] 图 3 是习知的 USB2.0 接头的侧视图。

[0027] 图 4 是本实用新型第一实施例的侧视剖面图。

[0028] 图 5 是本实用新型第一实施例的上视剖面图。

[0029] 图 6 是本实用新型第一实施例的前视图。

[0030] 图 7 是本实用新型第一实施例正向插入 USB2.0 接头的使用状态图。

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[0031] 图 7A 是本实用新型第一实施例的前视图及 USB2.0 接头正向的前视图。

[0032] 图 8 是本实用新型第一实施例反向插入 USB2.0 接头的使用状态图。

[0033] 图 8A 是本实用新型第一实施例的前视图及 USB2.0 接头反向的前视图。

[0034] 图 9 是本实用新型第一实施例反向插入储存卡的使用状态图。

[0035] 图 10 是本实用新型第一实施例正向插入储存卡的使用状态图。

[0036] 图 11 是本实用新型第二实施例的侧视剖面图。

[0037] 图 12 是本实用新型第三实施例的侧视剖面图。

[0038] 图 13 是本实用新型第四实施例的侧视剖面图。

[0039] 图 14 是本实用新型第五实施例的侧视剖面图。

[0040] 图 15 是本实用新型第六实施例的侧视剖面图。

[0041] 图 16 是本实用新型第七实施例的侧视剖面图。

[0042] 图 17 是本实用新型第七实施例的上视剖面图。

[0043] 图 18 是本实用新型第八实施例的侧视剖面图。

[0044] 图 19 是本实用新型第八实施例的上视剖面图。

[0045] 图 20 是本实用新型第八实施例的底视剖面图。

[0046] 图 21 是习知储存卡的三视图。

[0047] 图 22 是本实用新型第八实施例插入 USB2.0 接头的使用状态图。

[0048] 图 23 是本实用新型第八实施例插入储存卡的使用状态图。

[0049] 图 24 是本实用新型第九实施例的侧视剖面图。

[0050] 图 25 是本实用新型第九实施例插入接头的使用状态图。

[0051] 图 26 是本实用新型第九实施例插入储存卡的使用状态图。

[0052] 图 27 是本实用新型第十实施例的前视图。

[0053] 图 28 是本实用新型第十实施例的侧视剖面图。

[0054] 图 29 是本实用新型第十实施例的上视剖面图。

[0055] 图 30 是本实用新型第十实施例的底视剖面图。

[0056] 图 31 是本实用新型第十一实施例的前视图。

[0057] 图 32 是本实用新型第十二实施例的前视图。

[0058] 图 33 是本实用新型第十二实施例的侧视剖面图。

[0059] USB2.0 接头 10 接点 11 塑胶座体 12 金属外壳 13

[0060] 空间 14 15 接头 接点 16 储存卡 20 接头 21

[0061] 接点 22 储存卡 25 接头 26

[0062] 接点 27

[0063] 塑胶座体 30 连接槽 31 端子卡槽 32 后盖 33

[0064] 插入口 34 连接槽底部 36 底面 37 连接槽前段 38

[0065] 连接槽前段 39 宽槽 310 窄槽 311

[0066] 金属外壳 40 舌片 50 第一端子 60 第一接触部 61

[0067] 延伸部 62 固定部 63 接脚 64 缺口 65

[0068] 第一端子 66 第一接触部 67 延伸部 68 固定部 69 接脚 610

[0069] 第二端子 70 第二接触部 71 延伸部 72

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[0070]	固定部 73	接脚 74	第二端子 76	第二接触部 77
[0071]	第三端子 80	第三接触部 81	延伸部 82	固定部 83
[0072]	接脚 84	第三端子 86	第三接触部 87	
[0073]	第四端子 90	第四接触部 91	延伸部 92	固定部 93
[0074]	接脚 94	第四端子 96	第四接触部 97	

【具体实施方式】

[0075] 请参阅图 4、图 5 及图 6，本实施例为一 USB2.0 插座，其包括一塑胶座体 30、一金属外壳 40、一舌片 50、一排第一端子 60、及一排第二端子 70，其中：

[0076] 该塑胶座体 30 一体成型有一连接槽 31，其后端设有四排端子卡槽 32，另设有一后盖 33 由下面上盖合，该连接槽 31 位于该塑胶座体 30 前段且前端设有一插入口 34，该连接槽 31 的底部 36 不低于该整体连接槽 31 下方的塑胶座体的底面 37。

[0077] 该金属外壳 40 包覆该塑胶座体 30。

[0078] 该舌片 50 是与该塑胶座体 30 一体射出成型，该舌片 50 呈水平设于该塑胶座体 30 前端并位于该连接槽 31 内正中间，使该连接槽 31 于舌片 50 上、下方形成对称的轮廓且于舌片 50 左、右侧亦形成对称的轮廓，如此可使同一接头正反双向均可插入定位于该连接槽 31 内，该舌片 50 的两侧设有凹口 51 而形成一挡面 52，该连接槽 31 于该舌片 50 两面由该挡面 52 更往后延伸至该塑胶座体 30 内，该挡面 52 前方为连接槽前段 38，该挡面 52 后方为连接槽后段 39，该连接槽后段 39 设有与该舌片 50 上、下两面齐平的二面。

[0079] 该一排第一端子 60 共计 4 支呈间隔排列固定于该塑胶座体 30，其由左至右端子的序号为 4,3,2,1（参阅图 6）该第一端子 60 由前而后一体设有一第一接触部 61、一第一延伸部 62、一第一固定部 63 及一第一接脚 64，该第一固定部 63 与该塑胶座体 30 的舌片上面的端子卡槽 32 固定，该第一延伸部 62 向舌片 50 前端延伸，该第一延伸部 62 板面平贴于该舌片 50 上面且与该舌片 50 上面齐平，该第一延伸部 62 前段板面设有一较该第一接触部 61 板面大的缺口 65，该第一接触部 61 一端连接于该第一延伸部 62 且由前而后渐凸出该第一延伸部 62 板面并延伸至另一端成开放，如此该第一接触部 61 凸出该舌片 50 上面并可上下弹动，当第一接触部 61 被压平时则可平贴于该缺口 65，该第一接脚部 64 伸出该塑胶座体 30 外。

[0080] 该一排第二端子 70 共计 4 支呈间隔排列位于该连接槽 31 顶面，其由前而后一体设有一第二接触部 71、一第二延伸部 72、一第二固定部 73 及一第二接脚 74，该第二固定部 73 与该塑胶座体 30 上端的端子卡槽 32 固定，该一排第二端子 70 与该一排第一端子 60 构造是相同的且呈相同连接介面，然而该一排第二端子 70 由左至右端子的序号为 1,2,3,4 恰与一排第一端子 60 的序号排列相反，该一排第二接触部 71 呈间隔排列位于该连接槽后段 39，第二接触部 71 是凸出第二延伸部 72 并可弹动且朝向该一排第一端子 60。

[0081] 该一排第三端子 80 共计 4 支呈间隔排列固定于该塑胶座体 30，其由前而后一体设有一第三接触部 81、一第三延伸部 82、一第三固定部 83 及一第三接脚 84，该第三固定部 83 与该塑胶座体 30 于舌片下面的端子卡槽 32 固定，该一排第三端子 80 与该一排第一端子 60 构造是相同的且呈相同连接介面，该一排第三端子 80 的序号排列为 1,2,3,4 与该一排第二端子 70 相同，该一排第三接触部 81 呈间隔排列位于该舌片 50 下面并由前而后渐凸出舌片

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50 下面。

[0082] 该一排第四端子 90 共计 4 支呈间隔排列位于该连接槽 31 底面，其一体设有一第四接触部 91、一第四延伸部 92、一第四固定部 93 及一第四接脚 94，该第四固定部 93 与该塑胶座体 30 下端的端子卡槽 32 固定，该一排第四端子 90 与该一排第一端子 60 构造是相同的且呈相同连接介面，该一排第四端子 90 的序号排列为 4,3,2,1 与该一排第一端子 60 相同，该一排第四接触部 91 呈间隔排列位于该连接槽 31 后段底面并朝向该一排第三端子 80。

[0083] 借由以上构造，请参阅图 7 及图 7A，是为一讯号线的 USB2.0 接头使用状态图，图 7A 为本创作插座和接头 10 正向的前视图，该 USB2.0 接头 10 设有一塑胶座体 12 及一金属外壳 13，该金属外壳 13 包覆该塑胶座体 12，该金属外壳 13 和该塑胶座体 12 间形成一空间 14，该塑胶座体 12 一面设有一排接点 11，由前视时该一排接点 11 由左至右的序号为 4,3,2,1 当 USB2.0 接头 10 的接点 11 朝上呈正向转向该连接槽 45 插入时，其空间 14 为该舌片 50 所套入，其一排接点 11 即转向成由左至右的序号为 1,2,3,4 与舌片 50 下方的第三端子 80 的第三接触部 81 电连接（同样由左至右的序号为 1,2,3,4），由于 USB2.0 接头 10 可为该舌片 50 的挡面 52 所挡止，故不会继续插入而使其金属外壳 13 碰触该第四接触部 91；请参阅图及图 8A，USB2.0 接头 10 反向插入时，其空间 14 亦为该舌片 50 所套入，其一排接点 11 即转向成由左至右的序号为 4,3,2,1 与舌片 50 上方的该第一端子 60 的第一接触部 61 电连接，其金属外壳 13 同样不会碰触该第二接触部 71，借由以上的说明，可知本实用新型可供 USB2.0 接头 10 正、反双向插入电连接，达到使用上的方便性。

[0084] 请参阅图 9，是为储存卡 20 的使用状态，当该接头 21 的一排接点 22 是朝下呈反向插接于该舌片 50 上方时是与舌片上方的一排第一端子 60 的第一接触部 61 电连接，若插接于该舌片 50 下方则与一排第四端子 90 的第四接触部 91 电连接；请参阅图 10，当该接头 21 的一排接点 22 是朝上呈正向插接于该舌片 50 下方时是与舌片下方的一排第三端子 80 的第三接触部 81 电连接，若插接于该舌片 50 上方则与一排第二端子 70 的第二接触部 71 电连接；由以上的说明可知本实用新型当连接此种不具金属外壳的储存卡时可作为双槽使用而能同时连接二个储存卡，且该储存卡正反双向插接于任一槽均可电连接。

[0085] 本实用新型是在 USB 插座的标准高度及长度下作设计，即本实用新型的连接槽 31 是直接自舌片 50 的挡面 52 往塑胶座体 30 内延伸而形成连接槽后段 39，本实用新型仅是善用原本的塑胶座体 30 的空间，故不会增加整体插座的长度，再者，本实施例的第二、四端子 70、90 是采用弹片式的接触部且由前往后延伸渐凸出，当受挤压时即贴平于连接槽后段的顶、底面，故，几乎不占用到塑胶座体高度的空间，不会过量增加了整体插座的高度。

[0086] 请参阅图 11，是本实用新型第二实施例，其大致与第一实施例相同，其差异在于本实施例的第一端子 60 设有一前一后的两凸出的第一接触部 61，该第三端子 80 亦设有一前一后的两凸出的第三接触部 81，如此第一端子 60 及第三端子 80 均可较为对正连接 USB2.0 接头 10 的接点 11 和储存卡的接点 22，并能确保电连接，再者，当储存卡的接点 22 朝下插入舌片上方时，其接点会先与第一端子 60 前段的第一接触部 61 导通，接着再与后段的第一接触部 61 导通时仍与前段的第一接触部 61 导通，最后插至定位时才脱离前段的第一接触部 61。

[0087] 请参阅图 12，是本实用新型第三实施例，其大致与第二实施例相同，其差异在于本实施例仅于舌片上面设有第一端子 60 及对应该第一端子 60 的第二端子 70，在使用上，

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USB2.0 接头只能接点朝下插入连接槽 31 与舌片 50 上方的第一接触部 61 电连接，然而储存卡仍可插于舌片 50 上方，正反双向皆可电连接。

[0088] 请参阅图 13，是本实用新型第四实施例，其大致与第一实施例相同，其差异在于本实施例仅于舌片上面设有第一端子 60 及对应该第一端子 60 的第二端子 70。

[0089] 请参阅图 14，是本实用新型第五实施例，其大致与第一实施例相同，其差异在于本实施例的第二端子 70 的第二接触部 71 连接于第二延伸部 72 前端并向前呈一凸出接点，如此第一、二接触部 61、71 可较为接近，而该第四端子 90 的第四接触部 91 亦同。

[0090] 请参阅图 15，是本实用新型第六实施例，其大致与第四实施例相同，其差异在于本实施例的连接槽后段 39 由塑胶座体 30 一体设成，而连接槽前段 38 则由金属外壳 40 形成。

[0091] 请参阅图 16 及图 17，是本实用新型第七实施例，其为一 USB3.0 插座，其大致与第一实施例相同，由于 USB3.0 接头的接点有两排，除了 USB2.0 的一排 4 个不弹动的接点外另设有一排 5 个可弹动的接点，故本实施例除了与第一实施例相同设有一排第一端子 60、一排第二端子 70、一排第三端子 80 及一排第四端子 90 外，需另设有 5 个成一排相同介面的一排第一端子 66、一排第二端子 76、一排第三端子 86 及一排第四端子 96。

[0092] 该一排第一端子 66 一体设有一第一接触部 67、一第一延伸部 68、一第一固定部 69 及一第一接脚 610，该第一固定部 69 与该塑胶座体 30 固定，该第一延伸部 68 向舌片 50 前端延伸，该第一接触部 67 连接于第一延伸部 68 前端，该第一延伸部 68 板面与第一接触部 67 板面平贴于该舌片 50 上面且与该舌片 50 上面齐平，该第一接触部 67 不弹动且位于该第一端子 60 的第一接触部 61 前方。

[0093] 该一排第二端子 76、一排第三端子 86 及一排第四端子 96 在构造上则与该一排第一端子 66 相同，该第二端子 76 的第二接触部 77 位于该第二端子 70 的第二接触部 71 前方，该第三端子 86 的第三接触部 87 位于该第三端子 80 的第三接触部 81 前方，该第四端子 96 的第四接触部 97 位于该第四端子 90 的第四接触部 91 前方。

[0094] 请参阅图 18、图 19 及图 20，是本实用新型第八实施例，本实施例为一 USB2.0 和一储存卡的共用插座，其包括一塑胶座体 30、一金属外壳 40、一舌片 50、一排第一端子 60、及一排第二端子 70，其中：

[0095] 该塑胶座体 30 一体成型有一连接槽 31，其后端设有二排端子卡槽 32，另设有一后盖 33 由下面上盖合，该连接槽 31 位于该塑胶座体 30 前段且前端设有一插入口 34，该连接槽 31 的底部 36 不低于该整体连接槽 31 下方的塑胶座体的底面 37。

[0096] 该金属外壳 40 包覆该塑胶座体 30。

[0097] 该舌片 50 是与该塑胶座体 30 一体射出成型，该舌片 50 呈水平设于该塑胶座体 30 前端并位于该连接槽 31 内略偏下。

[0098] 该一排第一端子 60 共计 4 支呈间隔排列固定于该塑胶座体 30，其与第一实施例完全相同，该第一端子 60 亦一体设有一第一接触部 61、一第一延伸部 62、一第一固定部 63 及一第一接脚 64。

[0099] 该一排第二端子 70 与该一排第一端子 60 是为不相同连接介面，该一排第二端子 70 共计 5 支呈间隔排列固定于该塑胶座体 30，其一体设有一第二接触部 71、一第二延伸部 72、一第二固定部 73 及一第二接脚 74，该第二固定部 73 与该塑胶座体 30 上端的端子卡槽 32 固定，第二接触部 71 和第二延伸部 72 平贴于该连接槽 31 顶面，该一排第二接触部 71 不

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会弹动并呈间隔排列位于该连接槽 31 顶面，该一排第二接触部 71 朝向该一排第一接触部 61。

[0100] 请参阅图 21，是为另一种储存卡 25 的三视图，其一端设有一接头 26，该接头 26 与图 1 所示的储存卡 20 的接头 21 是为相同外型然连接介面不同，该接头 26 一面设有 5 个间隔排列且会弹动的接点 27。

[0101] 请参阅图 22，该 USB2.0 接头 10 的一排接点 11 朝下插入时，其空间 14 为该舌片 50 所套入，该一排接点 11 与舌片 50 上方的第一端子 60 的第一接触部 61 电连接，由于该第二接触部 71 是平贴于连接槽 31 的顶面并未凸出，故 USB2.0 接头 10 的金属外壳 13 不会碰触。

[0102] 请参阅图 23，是为该储存卡 25 的使用状态，当该接头 26 的一排接点 27 是朝上插接于该舌片 50 上方时是与该一排第二端子 70 的第二接触部 71 电连接。

[0103] 再者，储存卡 20 的接点 22 朝下插接于该舌片 50 上方时则与该一排第一端子 60 的第一接触部 61 电连接。

[0104] 由以上的说明可知本实施例除了可连接 USB2.0 接头 10 外，更可连接二种相同外型然连接介面不同相的储存卡 20、25，达到使用上的多元性。

[0105] 请参阅图 24，是本实用新型第九实施例，其大致与第八实施例相同，其差异在于本实施例的舌片 50 位于该连接槽 31 内略偏上，该舌片 50 的下面设有一排第一端子 60，该连接槽 31 的底面设有一排第二端子 70，该一排第一端子 60 和一排第二端子 70 是为相同连接介面，两者皆为一排 5 个间隔排列且与第八实施例的一排第二端子 70 是为相同构造，该第一接触部 61 和该第二接触部 71 相面对。

[0106] 请参阅图 25，本实施例可连接一与 USB2.0 接头 10 相同外型然不同连接介面的接头 15，该接头 15 是设有一排 5 个可弹动的接点 16，该接头 15 的接点 16 朝上插入该连接槽 31，该接点 16 与与舌片 50 下方的第一端子 60 的第一接触部 61 电连接。

[0107] 请参阅图 26，是为储存卡 25 的使用状态，当该接头 26 的一排接点 27 朝上插接于该舌片 50 下方时是与该一排第一端子 60 的第一接触部 61 电连接；当该接头 26 的一排接点 27 朝下插接于该舌片 50 下方时则与该一排第二端子 70 的第二接触部 71 电连接，如此可达到正反双向电连接该储存卡 25。

[0108] 请参阅图 27、图 28、图 29 及图 30，是为本实用新型第十实施例，其大致与第一实施例相同，其差异在于本实施例的位于舌片 50 上、下面的一排第一、三端子 60、80 是为相同连接介面，两者皆为一排 4 个，而位于连接槽 31 的顶、底面的一排第二、四端子 70、90 是为相同连接介面，两者皆为一排 9 个。

[0109] 借由以上构造，本实施例可正反双向电连接该 USB2.0 接头 10，且可电连接一 9 个接点的储存卡及一 4 个接点的储存卡。

[0110] 请参阅图 31，是本实用新型第十一实施例，其大致与第十实施例相同，其差异在于本实施例的连接槽 31 的上、下段设有宽度较大的宽槽 310，而连接槽 31 的中段则设有宽度较小的窄槽 311，如此可借以增加连接一种 9 个接点且宽薄型的储存卡。

[0111] 请参阅图 32 及图 33，是本实用新型第十二实施例，其大致与第十实施例相同，其差异在于本实施例的一排第一、四端子 60、90 是为相同连接介面，两者皆为一排 4 个，而一排第二、三端子 70、80 是为相同连接介面，两者皆为一排 9 个。

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[0112] 本实施例在使用上则较第十实施例更为多元性，除了第十实施例所述的三种外更可连接一与 USB2.0 接头 10 相同外型然而不同连接介面的接头，该接头为 9 个接点者。

[0113] 在较佳实施例的详细说明中所提出的具体的实施例仅为了易于说明本实用新型的技术内容，而并非将本实用新型狭义地限制于该实施例，在不超出本实用新型的精神及申请专利范围的情况，可作种种变化实施。

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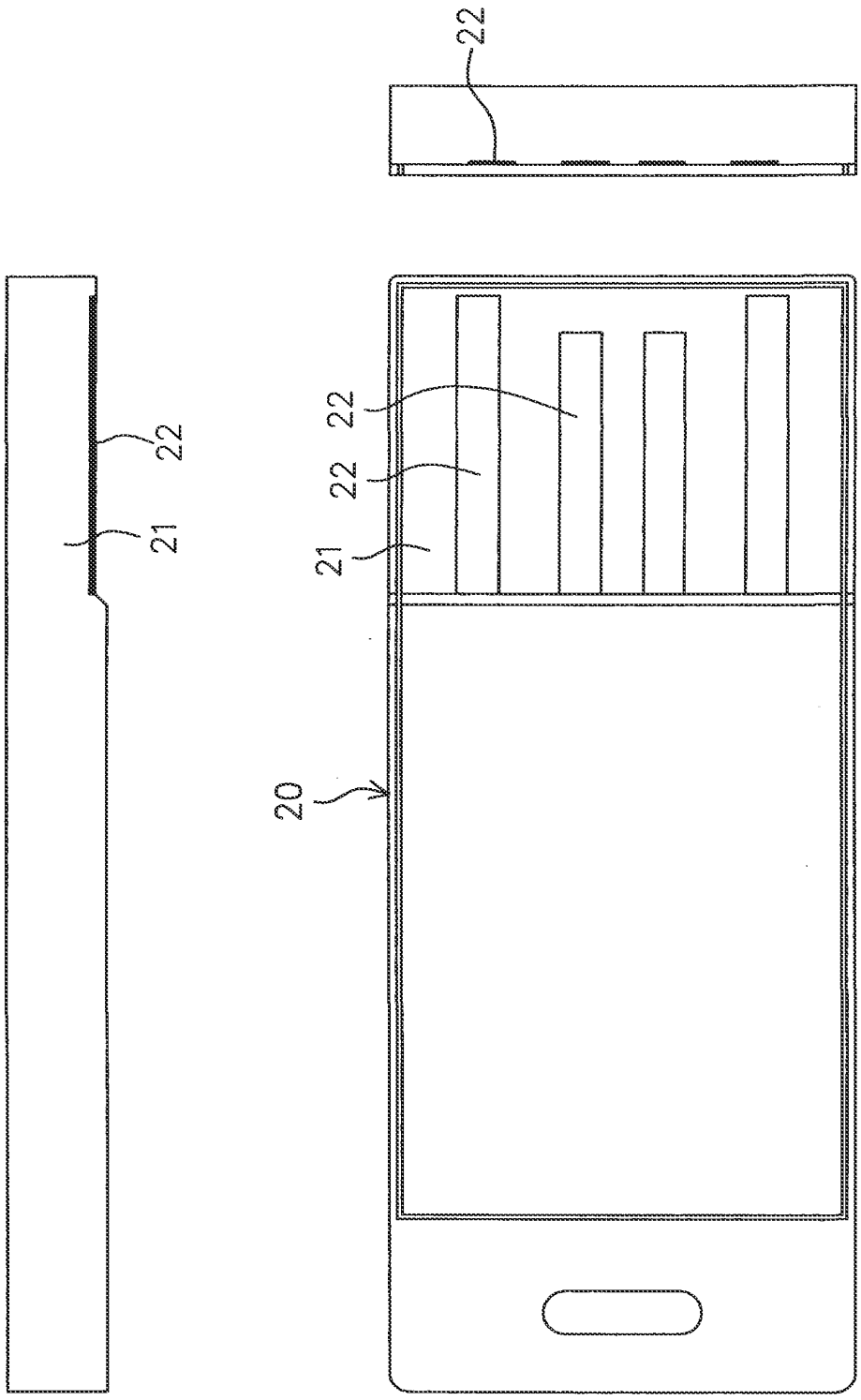


图 1

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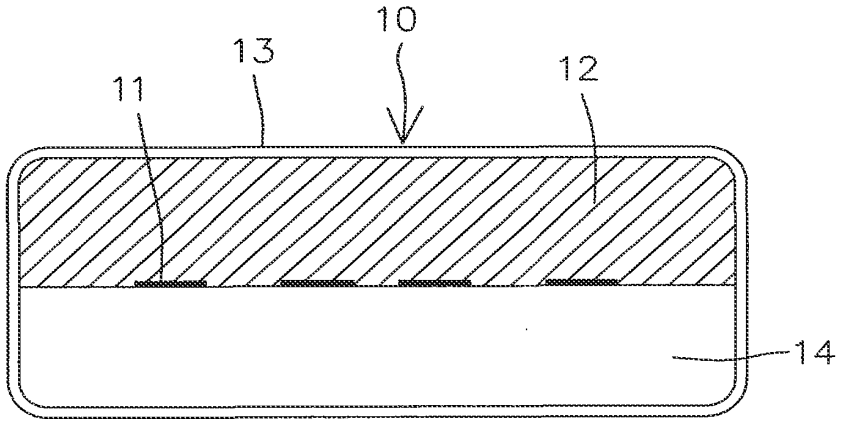


图 2

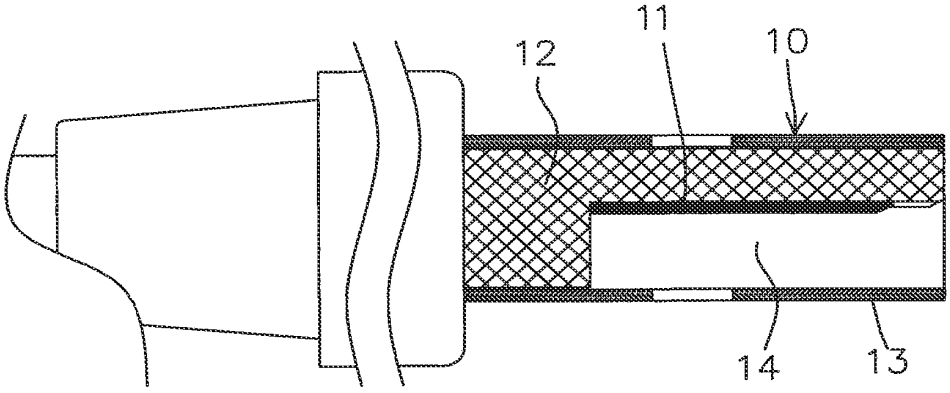


图 3

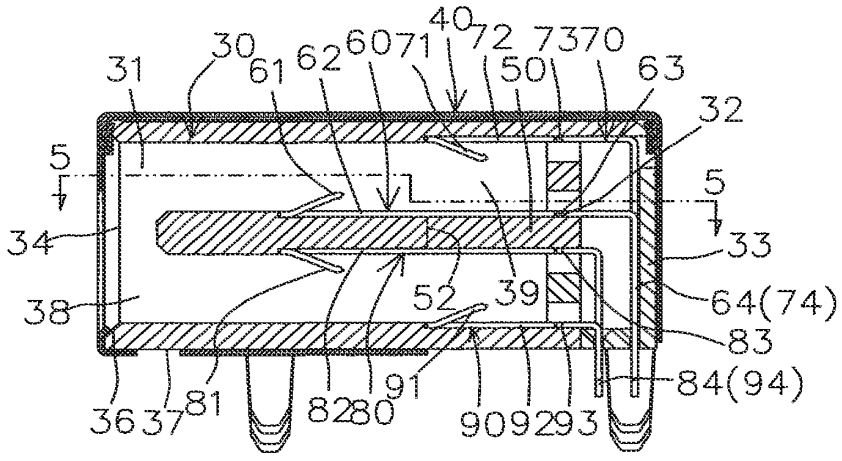


图 4

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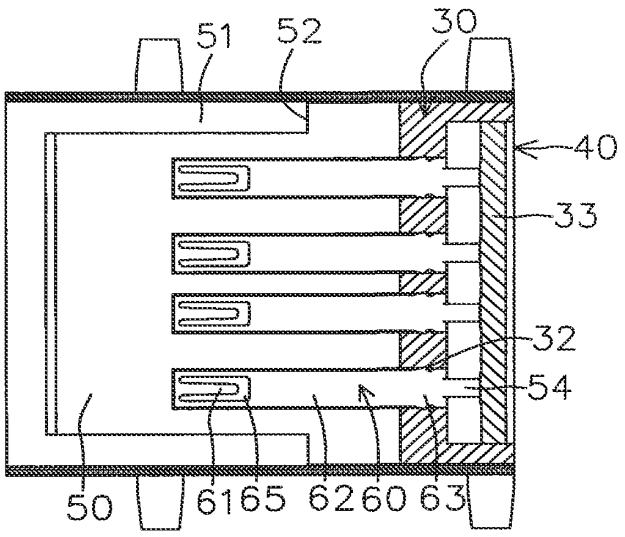


图 5

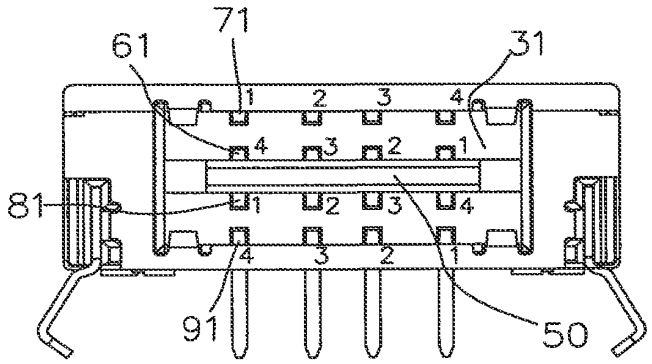


图 6

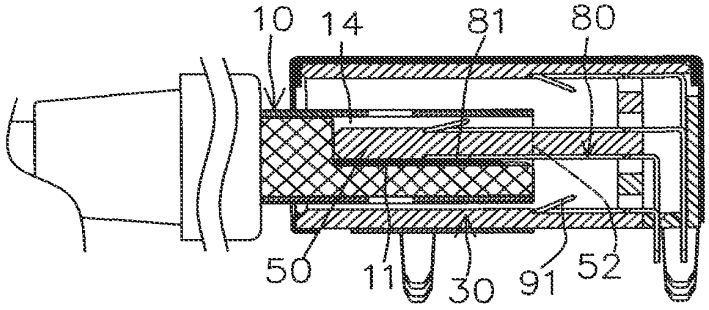


图 7

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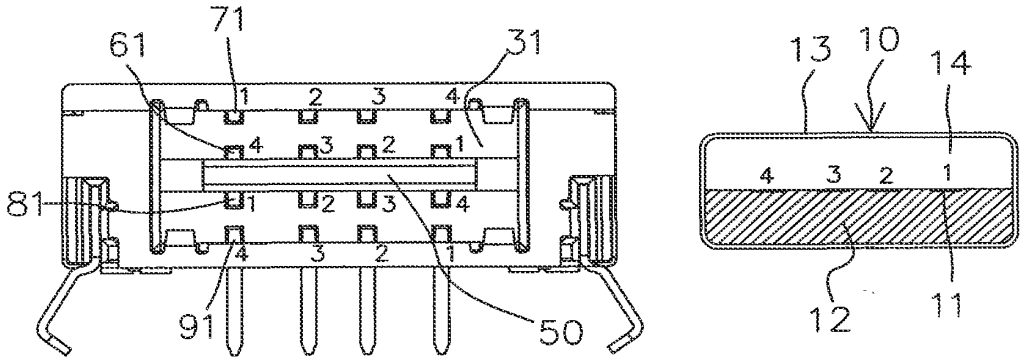


图 7A

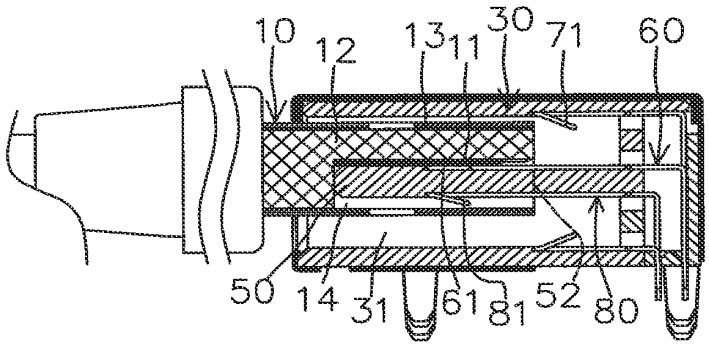


图 8

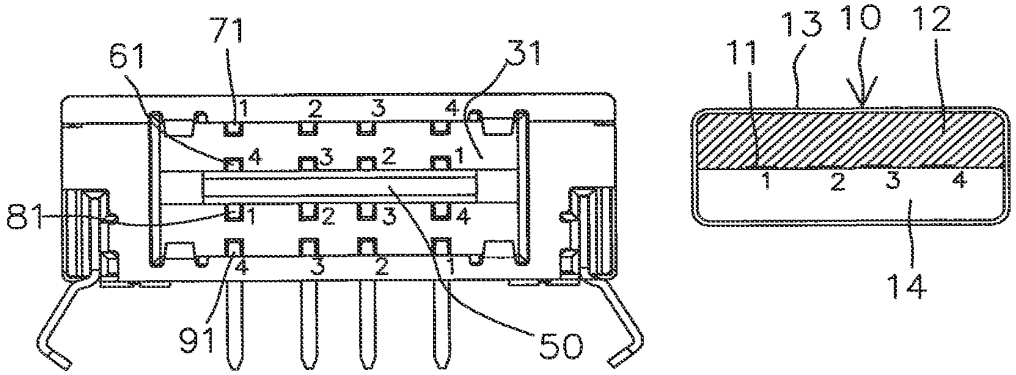


图 8A

Samsung, EX1002, p. 2720

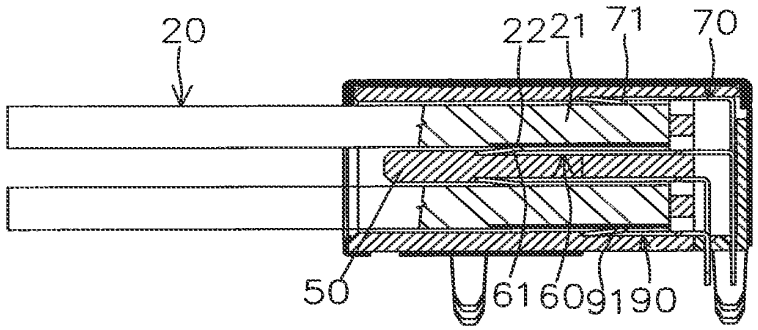


图 9

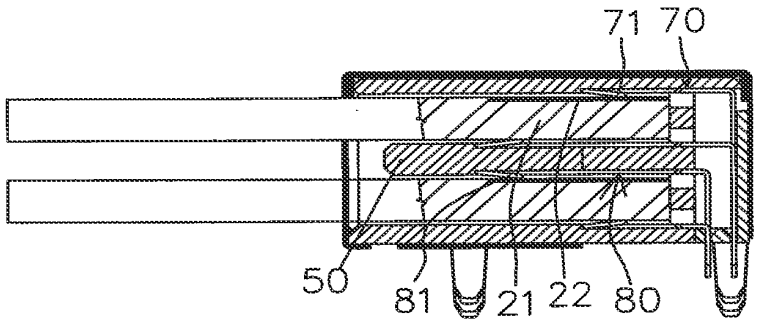


图 10

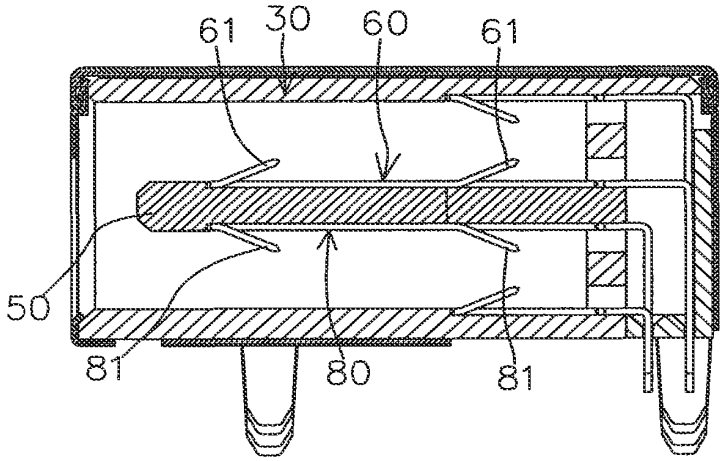


图 11

Samsung, EX1002, p. 2721

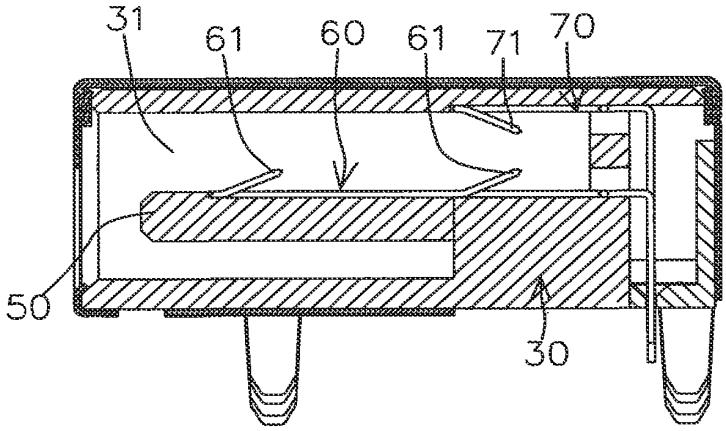


图 12

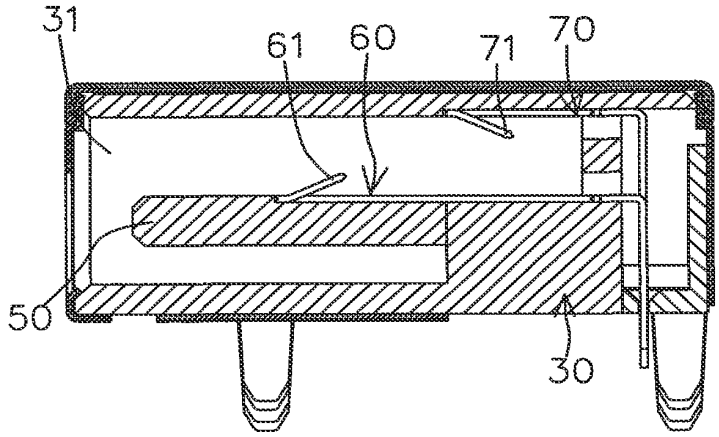


图 13

Samsung, EX1002, p. 2722

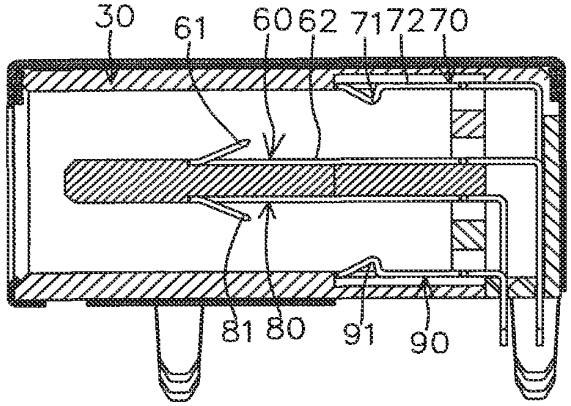


图 14

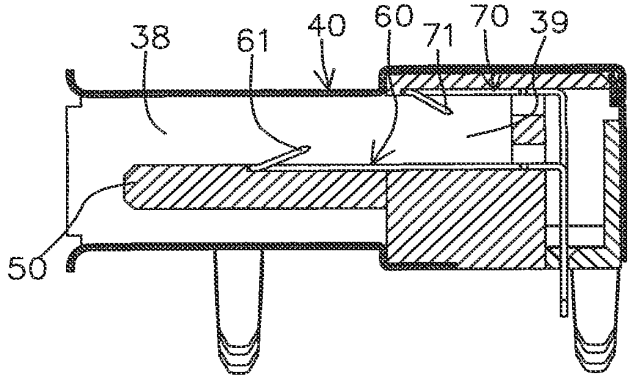


图 15

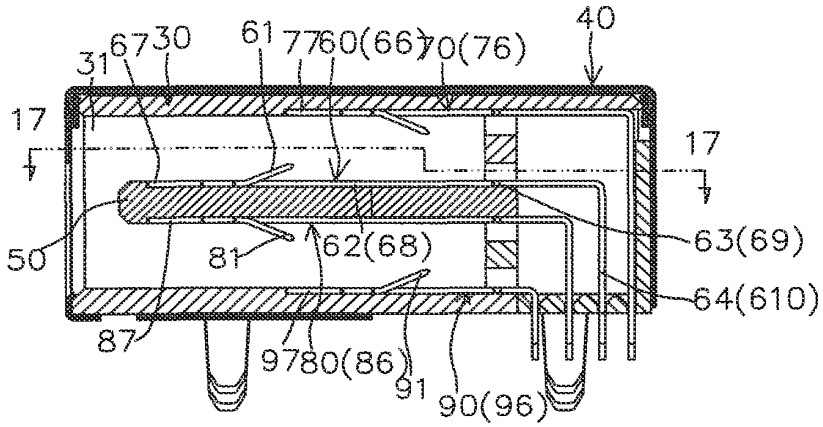


图 16

Samsung, EX1002, p. 2723

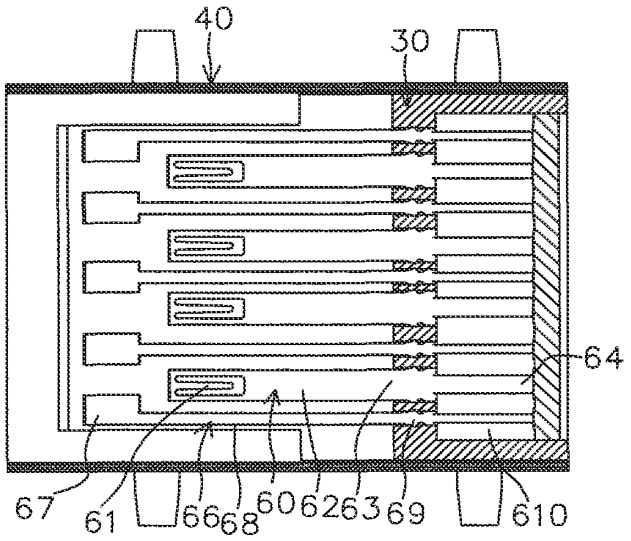


图 17

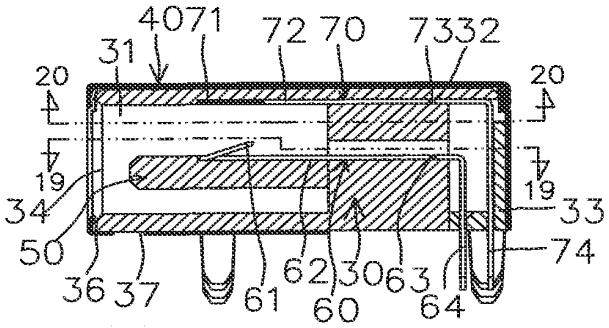


图 18

Samsung, EX1002, p. 2724

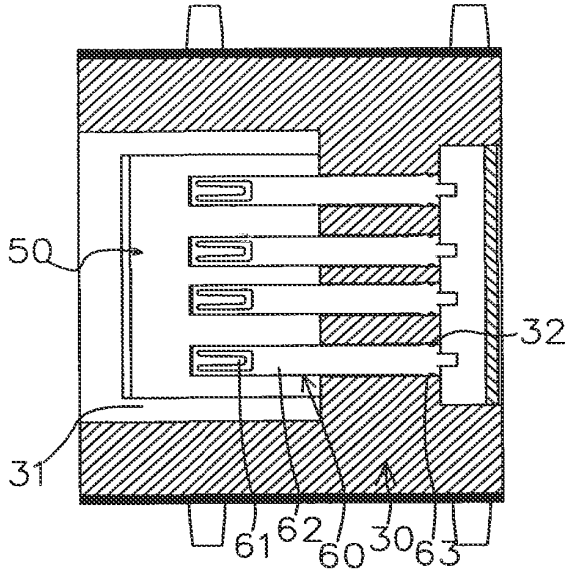


图 19

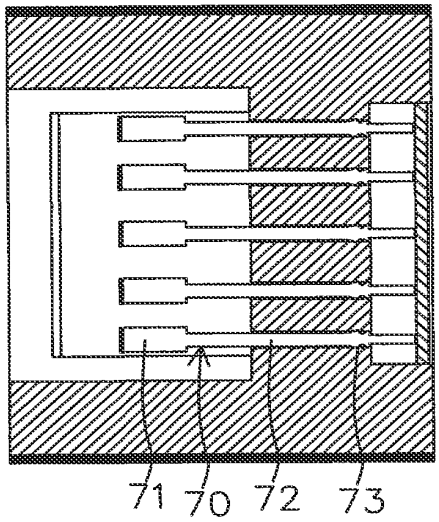


图 20

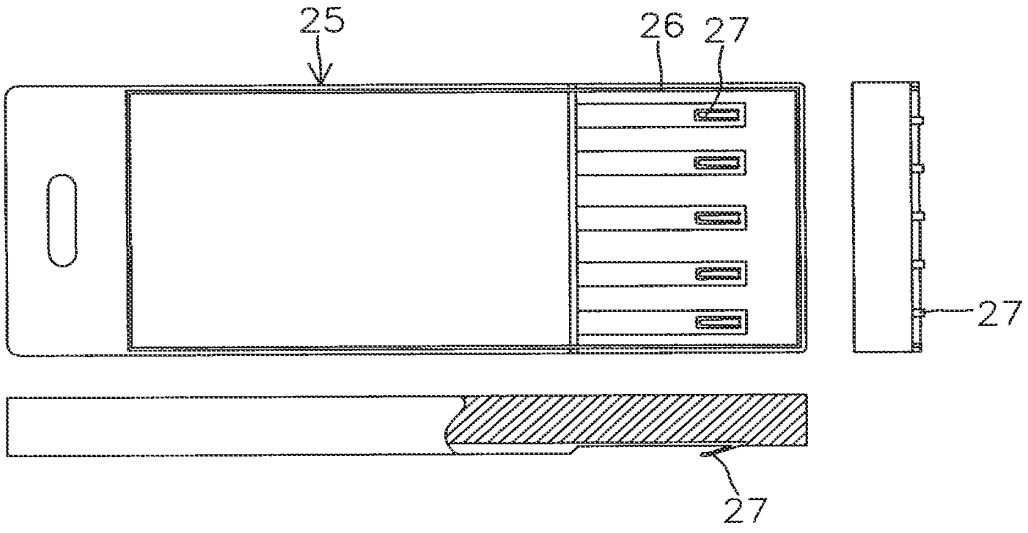


图 21

Samsung, EX1002, p. 2725

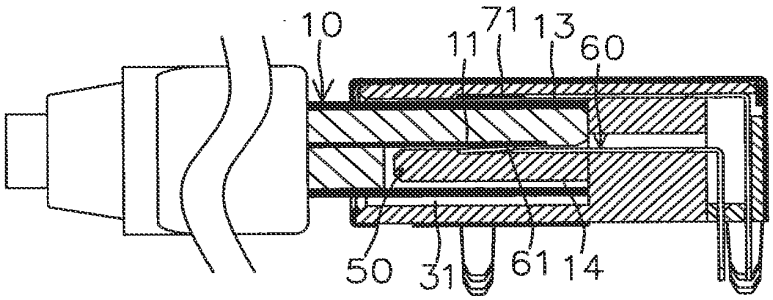


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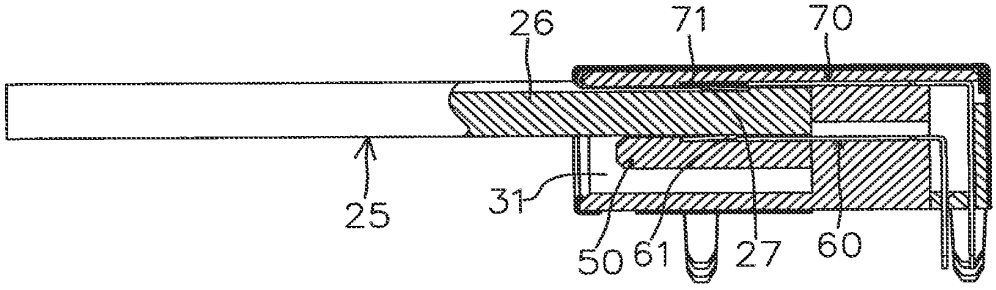


图 23

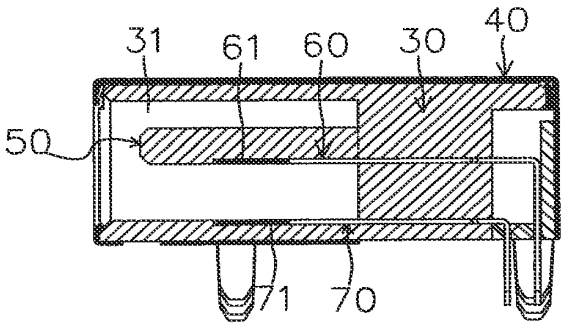


图 24

Samsung, EX1002, p. 2726

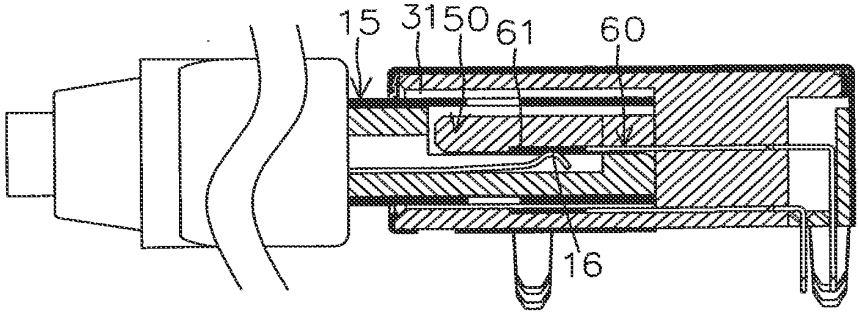


图 25

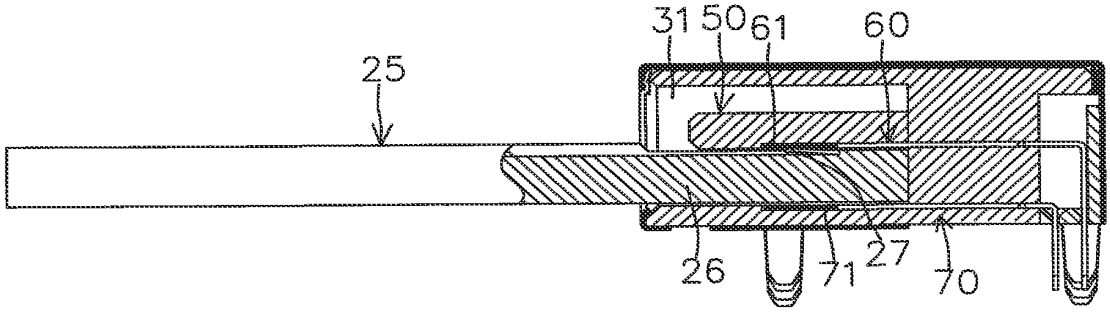


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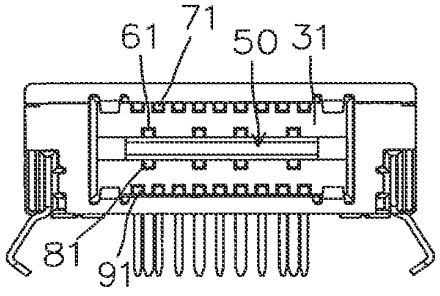


图 27

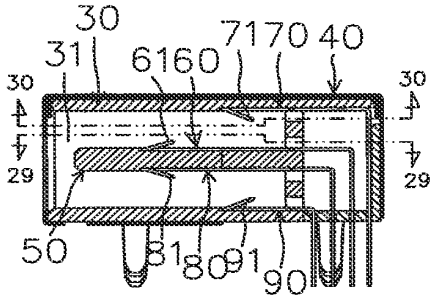


图 28

Samsung, EX1002, p. 2727

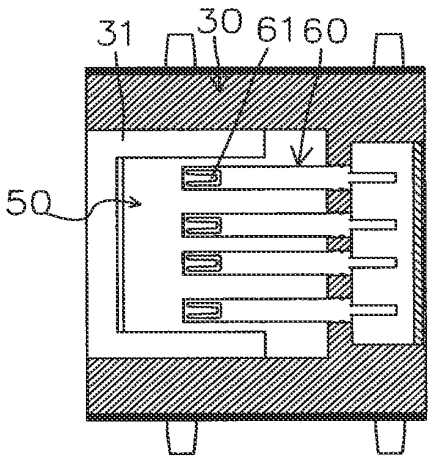


图 29

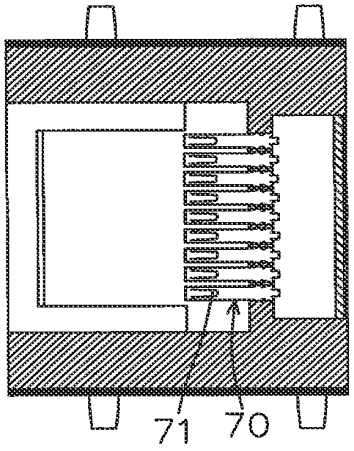


图 30

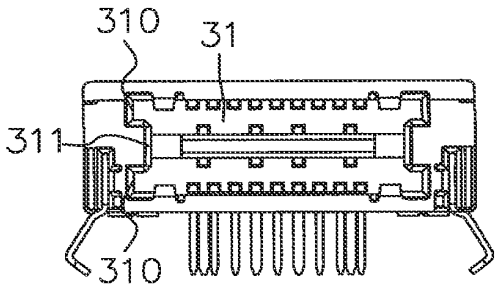


图 31

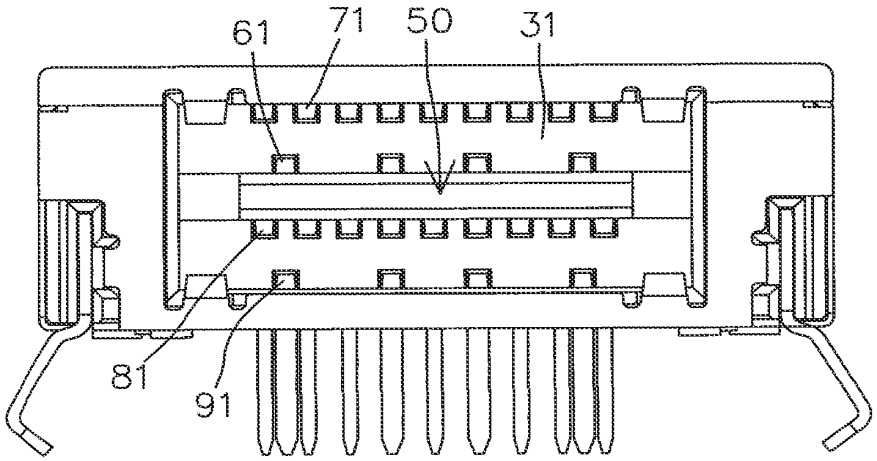


图 32

Samsung, EX1002, p. 2728

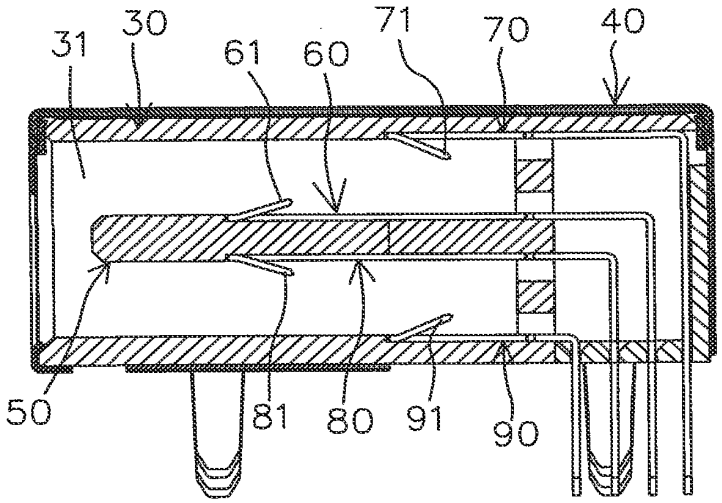


图 33

Samsung, EX1002, p. 2729

Espacenet

Bibliographic data: CN201540989 (U) — 2010-08-04

Electric connector

Inventor(s): ZHOUXIAN CAI ± (CAI ZHOUXIAN)

Applicant(s): ZHOUXIAN CAI ± (CAI ZHOUXIAN)

Classification: **- international:** ***H01R13/639***
- cooperative:

Application number: CN200920156922U 20090609

Priority number(s): CN200920156922U 20090609

Abstract of CN201540989 (U)

The utility model relates to an electric connector comprising a plastic seat body, two rows of terminals and a fastening element, wherein the plastic seat body is shaped like a longitudinal long strip and is provided with two rows of terminal grooves which are arranged at intervals; a connecting groove taking the shape of the longitudinal long strip is formed between the two rows of terminal grooves; one side of the connecting groove is provided with a pivoting groove; the connecting groove can be connected with a circuit board; one side of the circuit board is provided with a concave opening and a clamping block; the two rows of terminals are arranged at the two rows of terminal grooves of the plastic seat body; the fastening element is provided with a pivoting part, a fastening part, a jacking part and a pressing part; the pivoting part is pivoted with the pivoting groove of the plastic seat body; the fastening part can fasten the clamping block of the circuit board; the jacking part props against the lower edge of the clamping block of the circuit board, and the lower edge of the fastening part is provided with a clamping surface; when the fastening element clamps the circuit board, the center of the pivoting part of the fastening element corresponds to the clamping surface of the fastening part vertically; and the position of the center of the pivoting part of the fastening element in an X-axis coordinate is within the clamping edge of the clamping block of the circuit board. The electric connector can fasten the circuit board firmly.

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(19)中华人民共和国国家知识产权局

(12)实用新型专利

(10)授权公告号 CN 201540989 U
(45)授权公告日 2010.08.04

(21)申请号 200920156922.6

(22)申请日 2009.06.09

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(74)专利代理机构 永新专利商标代理有限公司 72002
代理人 李树明

(51)Int.Cl.
H01R 12/18(2006.01)
H01R 13/639(2006.01)

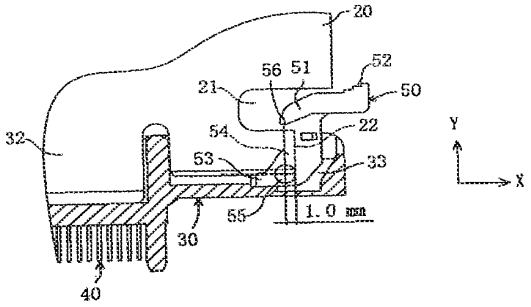
权利要求书 2 页 说明书 4 页 附图 6 页

(54)实用新型名称

电连接器

(57)摘要

一种电连接器，包括：一塑胶座体，呈纵长条形状，设有二排间隔排列的端子槽，该两排端子槽之间形成一纵长条形状的连接槽，其于一侧设有一枢接槽，该连接槽可连接一电路板，该电路板一侧设有一凹口及一卡块；二排端子，设于该塑胶座体的二排端子槽；及一卡扣元件，设有一枢接部、一卡扣部、一顶起部及一按压部，该枢接部枢接于该塑胶座体的枢接槽，该卡扣部可卡扣该电路板的卡块，该顶起部抵于该电路板的卡块下缘，卡扣部下缘设有一卡面；其中，卡扣元件卡定电路板时，该卡扣元件的枢接部中心垂直对应该卡扣部的卡面，且该卡扣元件的枢接部中心在X轴坐标的位置在该电路板的卡块的卡缘以内。本实用新型可稳固的卡扣电路板。



CN 201540989 U

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1. 一种电连接器，包括：

一塑胶座体，呈纵长条形状，其设有二排间隔排列的端子槽，该两排端子槽之间形成一纵长条形状的连接槽，其于一侧设有一枢接槽，该连接槽能够连接一电路板，该电路板一侧设有一凹口及一卡块；

二排端子，设于该塑胶座体的二排端子槽；及

一卡扣元件，设有一枢接部、一卡扣部、一顶起部及一按压部，该枢接部枢接于该塑胶座体的枢接槽，该卡扣部能够卡扣该电路板的卡块，该顶起部抵于该电路板的卡块下缘，卡扣部下缘设有一卡面；

其特征在于：卡扣元件卡定电路板时，该卡扣元件的枢接部中心垂直对应该卡扣部的卡面，且该卡扣元件的枢接部中心在 X 轴座标的位置在该电路板的卡块的卡缘以内。

2. 如权利要求 1 所述的电连接器，其特征在于：该卡扣元件的枢接部中心

在 Y 轴座标的位置位于该电路板的卡块一半高度以下。

3. 如权利要求 1 所述的电连接器，其特征在于：该卡扣元件的枢接部为一枢轴，该塑胶座体的枢接槽设有枢接孔与该枢轴枢接。

4. 如权利要求 1 所述的电连接器，其特征在于：该卡扣元件的枢接部中心在 X 轴座标的位置与该电路板的卡块的卡缘间距不小于 1.5mm。

5. 如权利要求 1 所述的电连接器，其特征在于：该卡扣元件的枢接部中心在 X 轴座标的位置与该电路板的卡块的卡缘间距不小于 1mm。。

6. 如权利要求 1 所述的电连接器，其特征在于：该卡扣元件的枢接部中心在 X 轴座标的位置与该电路板的卡块的卡缘间距不小于 0.5mm。

7. 如权利要求 1 所述的电连接器，其特征在于：该卡扣元件的枢接部中心在 Y 轴座标的位置不高于该电路板的卡块下缘上方 1.5mm。

8. 如权利要求 1 所述的电连接器，其特征在于：该卡扣元件的枢接部中心在 Y 轴座标的位置不高于该电路板的卡块下缘。

9. 如权利要求 1 所述的电连接器，其特征在于：该卡扣元件的按压部凸出该塑胶座体宽度一侧。

10. 如权利要求 1 所述的电连接器，其特征在于：该卡扣元件的按压部凸出该塑胶座体宽度二侧。

11. 如权利要求 1 所述的电连接器，其特征在于：该卡扣元件的枢接部中心垂直对应该卡扣部的卡面中心。

12. 如权利要求 1 所述的电连接器，其特征在于：其是一显示卡连接器，该塑胶座体仅于一侧设有该枢接槽。

13. 如权利要求 1 所述的电连接器，其特征在于：该塑胶座体的另一侧亦设有一枢接槽，还设有另一卡扣元件枢接该枢接槽。

14. 一种电连接器，包括：

一塑胶座体，呈纵长条形状，其设有二排间隔排列的端子槽，该两排端子槽之间形成一纵长条形状的连接槽，其于一侧设有一枢接槽，该连接槽能够连接一电路板，该电路板一侧设有一凹口及一卡块；

二排端子，设于该塑胶座体的二排端子槽；及

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一卡扣元件，设有一枢接部、一卡扣部、一顶起部及一按压部，该枢接部枢接于该塑胶座体的枢接槽，该卡扣部能够卡扣该电路板的卡块，该顶起部抵于该电路板的卡块下缘，卡扣部下缘设有一卡面；

其特征在于：卡扣元件卡定电路板时，该卡扣元件的枢接部中心垂直对应该卡扣部的卡面，且该卡扣元件的枢接部中心在 Y 轴座标的位置不高于该电路板的卡块下缘上方 2.5mm。

15. 如权利要求 14 所述的电连接器，其特征在于：该卡扣元件的枢接部为一枢轴，该塑胶座体的枢接槽设有枢接孔与该枢轴枢接。

16. 如权利要求 14 所述的电连接器，其特征在于：该卡扣元件的枢接部中心在 X 轴座标的位置在该电路板的卡块的卡缘以内。

17. 如权利要求 14 所述的电连接器，其特征在于：该卡扣元件的枢接部中心在 Y 轴座标的位置不高于该电路板的卡块下缘上方 1.5mm。

18. 如权利要求 14 所述的电连接器，其特征在于：该卡扣元件的枢接部中心在 Y 轴座标的位置不高于该电路板的卡块下缘。

19. 如权利要求 14 所述的电连接器，其特征在于：该卡扣元件的枢接部中心垂直对应该卡扣部的卡面中心。

20. 如权利要求 14 所述的电连接器，其特征在于：该塑胶座体的另一侧亦设有一枢接槽，还设有另一卡扣元件枢接该枢接槽。

21. 如权利要求 14 所述的电连接器，其特征在于：其是一显示卡连接器，该塑胶座体仅于一侧设有该枢接槽。

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电连接器

【技术领域】

[0001] 本实用新型是关于一种电连接器，特别是关于一种连接电路板的电连接器。

【背景技术】

[0002] 请参阅图 1，为一现有的电连接器的卡板构造，其是一体成型于电连接器的塑胶座体 10 一端借以卡定一电路板 20，其包括有一扳动弹臂 15，该扳动弹臂 15 可侧向弹动，其一侧设有一卡扣部 16，其向外端延伸一扳柄 17，该电路板 20 的一侧设有一凹口 21，当电路板 20 插入电连接器 10 连接时，其一侧的凹口 21 可为该卡扣部 16 卡定。

[0003] 上述现有设计有以下缺点，即：

[0004] 1. 需向外延伸一扳动弹臂 15 及一扳柄 17，使整体产品占用空间。

[0005] 2. 该扳柄 17 若设于塑胶座体 10 右侧则仅能从右侧，若设于左侧则仅能从左侧扳动，无法两侧任意扳动，使用上较为不便。

[0006] 3. 操作上需向一侧扳动该扳柄 17，没有按压操作方式的顺手方便。

[0007] 请参阅图 2，为一种另一种现有的连接电路板的电连接器，其包括有一塑胶座体 10 及一耳扣 25，其中：塑胶座体 10 上是排列设有数个端子（图未示），其一侧设有一容置槽 11，容置槽的两侧面设有枢接孔；该耳扣 25 的两侧设有枢轴 26 借以枢接于塑胶座体 10 的容置槽 11，其上端设有一向座体内凸出的卡扣部 27 及一向座体外凸出的按压部 28，该卡扣部 27 可卡定于电路板 20 的一侧凹口 21，卡扣部 27 下缘设有一卡面 29，其下端设有一向座体内凸出的顶块 210 顶于电路板 20 的卡块 22 下缘。

[0008] 上述现有设计有以下缺点，即：

[0009] 1. 枢轴 26 位于卡面 29 外侧，当电路板 20 受到向上的外力时，该卡面 29 为受力点在枢轴 26 内侧，如此该耳扣 25 即向外侧枢转而脱离卡扣电路板 20。

[0010] 2. 枢轴 26 几乎位于耳扣的中间高度，离距该卡块 22 下缘和按压部 28 的长度相当，如此依杠杆原理知由按压部 28 施力时省力效果不佳。

【实用新型内容】

[0011] 本实用新型的主要目的在于提供一种电连接器，当卡扣电路板时受到向上的外力时，该卡扣元件可静止不动，仍很稳固的卡扣该电路板。

[0012] 本实用新型的另一主要目的在于提供一种电连接器，该卡扣元件的按压部至枢接部中心的长度明显大过顶起部至枢接部中心的长度，借以达到由按压部施力时甚为省力。

[0013] 为达上述目的，本实用新型电连接器，其包括有：一塑胶座体，其呈纵长条形状，其设有二排间隔排列的端子槽，该两排端子槽之间形成一纵长条形状的连接槽，其于一侧设有一枢接槽，该连接槽可连接一电路板，该电路板一侧设有一凹口及一卡块；二排端子，其设于该塑胶座体的二排端子槽；及一卡扣元件，其设有一枢接部、一卡扣部、一顶起部及一按压部，该枢接部枢接于该塑胶座体的枢接槽，该卡扣部可卡扣该电路板的卡块，该顶起部抵于该电路板的卡块下缘，卡扣部下缘设有一卡面；其中，卡扣元件卡定电路板时，该卡扣

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元件的枢接部中心垂直对应该卡扣部的卡面，且该卡扣元件的枢接部中心在 X 轴座标的位置在该电路板的卡块的卡缘以内。

[0014] 本实用新型还提供一种电连接器，包括：一塑胶座体，呈纵长条形状，其设有二排间隔排列的端子槽，该两排端子槽之间形成一纵长条形状的连接槽，其于一侧设有一枢接槽，该连接槽能够连接一电路板，该电路板一侧设有一凹口及一卡块；二排端子，设于该塑胶座体的二排端子槽；及一卡扣元件，设有一枢接部、一卡扣部、一顶起部及一按压部，该枢接部枢接于该塑胶座体的枢接槽，该卡扣部能够卡扣该电路板的卡块，该顶起部抵于该电路板的卡块下缘，卡扣部下缘设有一卡面；其中，卡扣元件卡定电路板时，该卡扣元件的枢接部中心垂直对应该卡扣部的卡面，且该卡扣元件的枢接部中心在 Y 轴座标的位置不高于该电路板的卡块下缘上方 2.5mm。

[0015] 所述的电连接器，其特征在于：该卡扣元件的枢接部中心在 Y 轴座标的位置不高于该电路板的卡块下缘上方 1.5mm。

[0016] 所述的电连接器，其特征在于：该卡扣元件的枢接部中心在 Y 轴座标的位置不高于该电路板的卡块下缘。

[0017] 综上所述，本实用新型的优点在于：

[0018] 1. 该卡扣元件卡定电路板时，该卡扣元件的枢接部中心垂直对应该卡扣部的卡面中心且在 X 轴座标的位置在该电路板的卡块的卡缘以内，如此，当电路板受到向上的外力时，该卡面为受力点恰垂直对应该枢接部中心，如此该卡扣元件可静止不动，故仍很稳固的卡扣该电路板。

[0019] 2. 该卡扣元件的枢接部中心在 Y 轴座标的位置位于该电路板的卡块一半高度以下，如此按压部至枢接部中心的长度明显大过顶起部至枢接部中心的长度，如此依杠杆原理可知由按压部施力时甚为省力。

[0020] 本实用新型的上述及其他目的、优点和特色由以下较佳实施例的详细说明中并参考图式当可更加明白，其中：

【附图说明】

[0021] 图 1 是现有电连接器与电路板的立体分解图。

[0022] 图 2 是现有电连接器卡扣电路板的侧视剖面图。

[0023] 图 3 是本实用新型第一实施例的立体分解图。

[0024] 图 4 是本实用新型第一实施例的立体组合图。

[0025] 图 5 是本实用新型第一实施例卡扣电路板时的侧视剖面图。

[0026] 图 6 是本实用新型第二实施例卡扣电路板时的侧视剖面图。

[0027] 图 7 是本实用新型第三实施例卡扣电路板时的侧视剖面图。

[0028] 图 8 是本实用新型第四实施例的上视图。

[0029] 图 9 是本实用新型第五实施例卡扣电路板时的侧视剖面图。

[0030] 电路板 20 凹口 21 卡块 22

[0031] 塑胶座体 30 端子槽 31 连接槽 32 枢接槽 33

[0032] 枢接孔 34 端子 40 卡扣元件 50 卡扣部 51

[0033] 按压部 52 顶起部 53 套接槽 54 枢接部 55

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[0034] 卡面 56

【具体实施方式】

[0035] 请参阅图 3、图 4、图 3 及图 4，本实施例为一显示卡连接器（简称 PCIEXPRESS），其包括有：一塑胶座体 30、二排端子 40 及一卡扣元件 50，其中：

[0036] 该塑胶座体 30，其呈纵长条形状，其设有二排间隔排列的端子槽 31，该两排端子槽 31 之间形成一纵长条形状的连接槽 32，且于一端设有一枢接槽 33，该枢接槽 33 的两对应面各设有一枢接孔 34，该连接槽 32 可连接一电路板 20，该电路板 20 为一显示卡，其一侧设有一凹口 21 及一卡块 22。

[0037] 该二排端子 40 设于该塑胶座体 30 的二排端子槽 31。

[0038] 该卡扣元件 50 的上端设有一卡扣部 51 及按压部 52，其下端设有一顶起部 53，该卡扣部 51 及顶起部 53 间设有一套接槽 54，套接槽 54 的两侧设有一枢接部 55，该枢接部 55 为二枢轴，该枢接部 55 枢接于该塑胶座体 30 的枢接槽 33，该卡扣部 51 下缘设有一卡面 56 卡扣部可卡扣该电路板的卡块 22，该顶起部 53 抵于该电路板的卡块 22 下缘，该按压部 52 一侧凸出该塑胶座体 30 宽度一侧。

[0039] 请参阅图 5，本实用新型的特征在于，该卡扣元件 50 卡定电路板 20 时，该卡扣元件 50 的枢接部 55 中心垂直对应该卡扣部 51 的卡面 56 中心，该卡扣元件 50 的枢接部 55 中心在 X 轴座标的位置在该电路板的卡块 22 的卡缘以内，本实施例是为该卡块 22 的卡缘以内 1.0mm，该卡扣元件 50 的枢接部 55 中心在 Y 轴座标的位置位于该电路板 20 的卡块 22 一半高度以下，本实施例是与电路板的卡块 22 下缘齐平。

[0040] 借由以上构造，本实用新型具有以下优点：

[0041] 1. 该卡扣元件 50 卡定电路板 20 时，该卡扣元件 50 的枢接部 55 中心垂直对应该卡扣部 51 的卡面 56 中心且在 X 轴座标的位置在该电路板的卡块 22 的卡缘以内，如此，当电路板 20 受到向上的外力时，该卡面 56 为受力点恰垂直对应该枢接部 55 中心，如此该卡扣元件 50 可静止不动，故仍很稳固的卡扣该电路板 20。

[0042] 2. 该卡扣元件 50 的枢接部 55 中心在 Y 轴座标的位置位于该电路板 20 的卡块 22 一半高度以下，如此按压部 52 至枢接部 55 中心的长度明显大过顶起部 53 至枢接部 55 中心的长度，如此依杠杆原理知由按压部 28 施力时甚为省力。

[0043] 请参阅图 6，是为本实用新型第二实施例，其大致与第一实施例相同，其差异在于本实施例的卡扣元件 50 的枢接部 55 中心在 X 轴座标的位置在该电路板的卡块 22 的卡缘以内 0.5mm，该卡扣元件 50 的枢接部 55 中心在 Y 轴座标的位置位于该电路板 20 的卡块 22 下缘上方 1.0mm。

[0044] 请参阅图 7，是为本实用新型第三实施例，其大致与第一实施例相同，其差异在于本实施例的卡扣元件 50 的枢接部 55 中心在 X 轴座标的位置在该电路板的卡块的卡缘以内 1.5mm，该卡扣元件 50 的枢接部 55 中心在 Y 轴座标的位置位于该电路板 20 的卡块 22 下缘下方约 0.3mm。

[0045] 请参阅图 8，是为本实用新型第四实施例，其大致与第一实施例相同，其差异在于本实施例的卡扣元件 50 的按压部 52 凸出该塑胶座体 30 宽度二侧，如此，使用上可由该塑胶座体 30 任一侧按压，达到使用上的方便性。

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[0046] 请参阅图 9，是为本实用新型第五实施例，其大致与第一实施例相同，其差异在于本实施例的塑胶座体 30 的两侧各设有一枢接槽 33，及设有二卡扣元件 50 分别枢接于该二枢接槽 33。

[0047] 在较佳实施例的详细说明中所提出的具体的实施例仅为了易于说明本实用新型的技术内容，而并非将本实用新型狭义地限制于该实施例，在不超出本实用新型的精神及申请专利范围的情况，可作种种变化实施。

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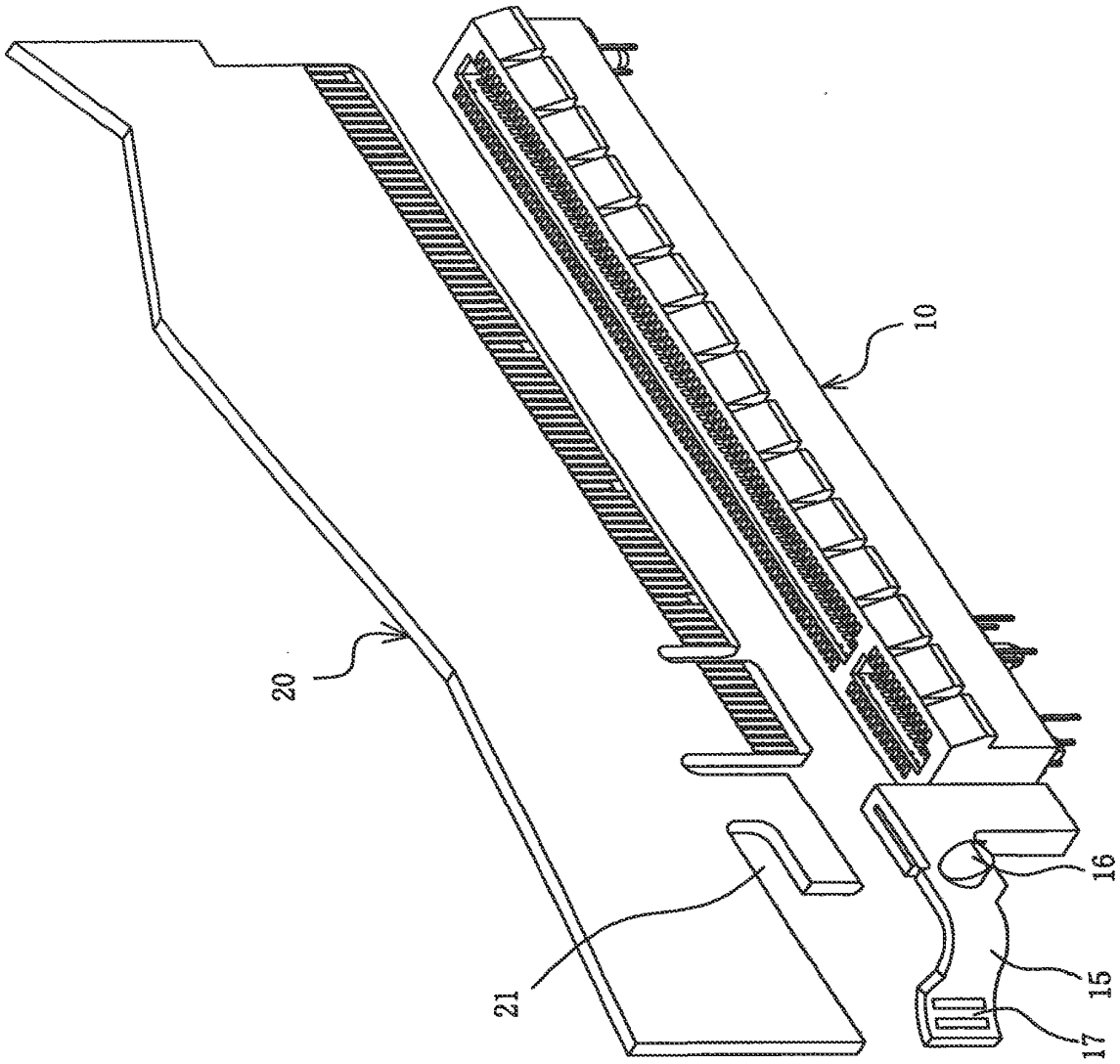


图 1

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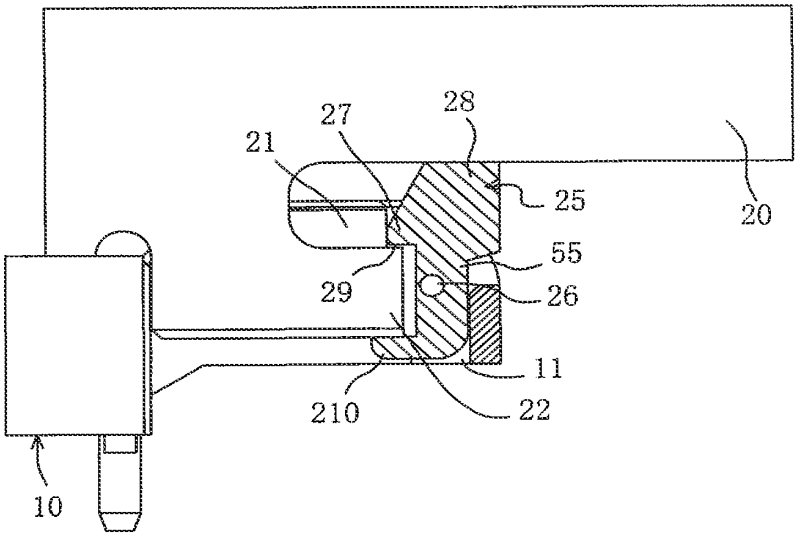


图 2

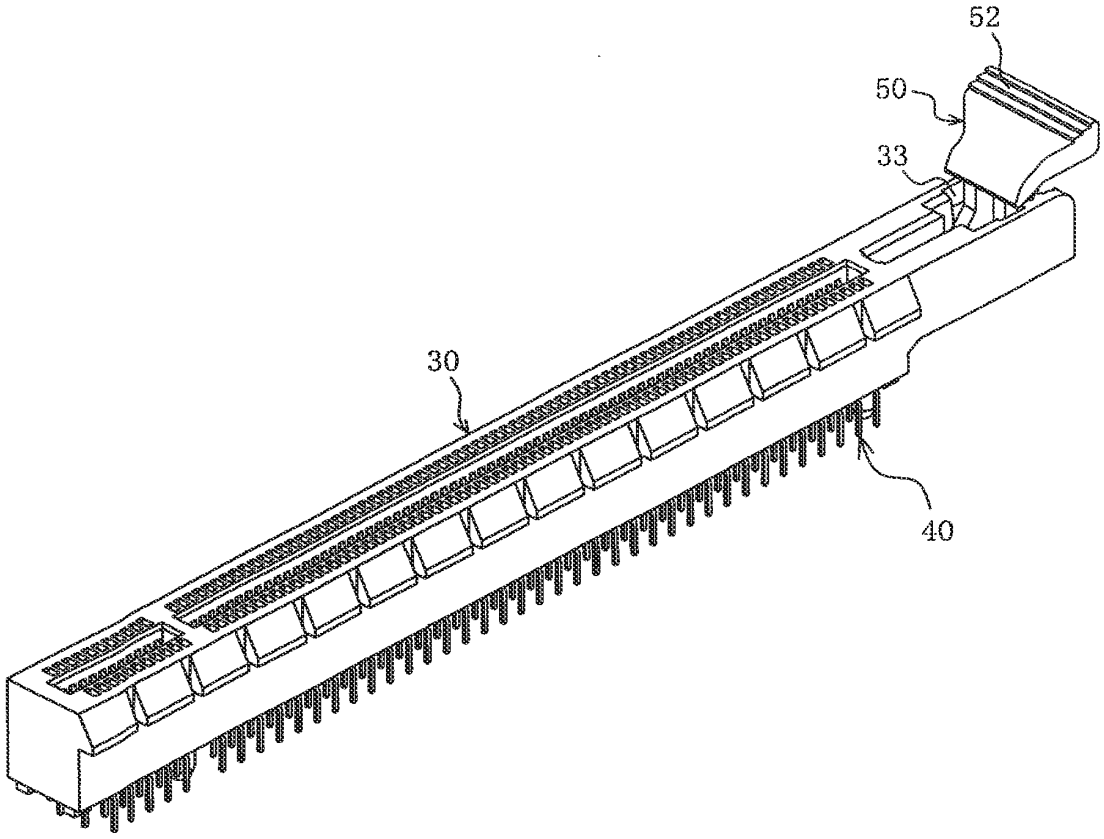


图 4

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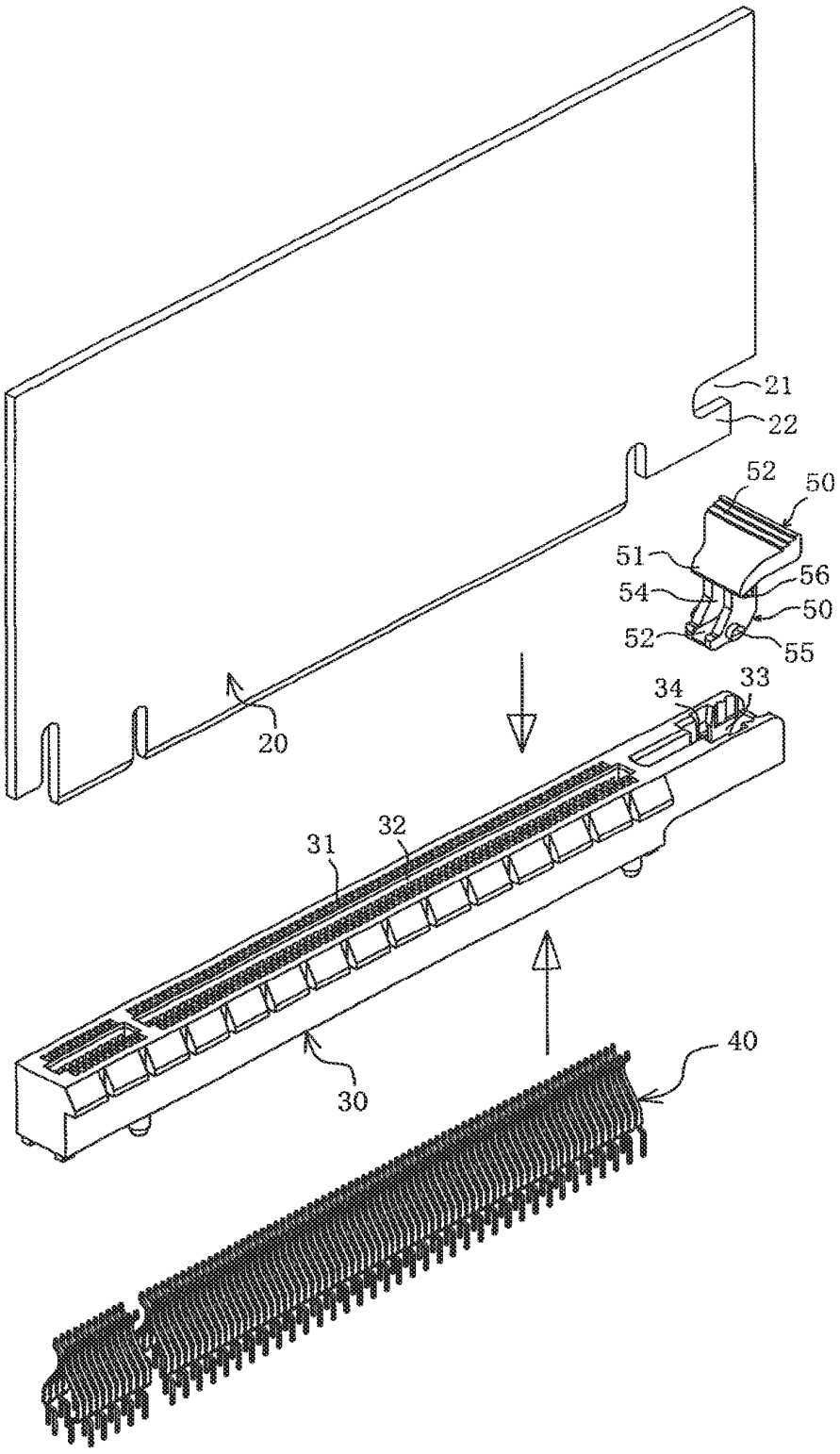


图 3

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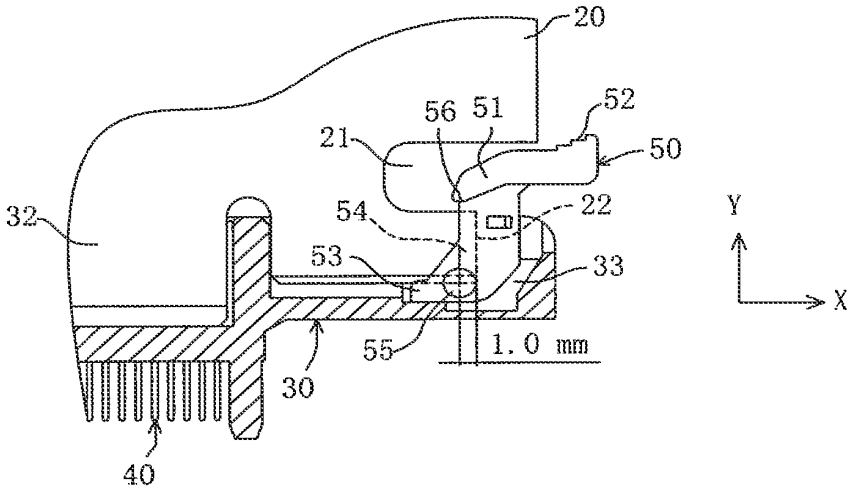


图 5

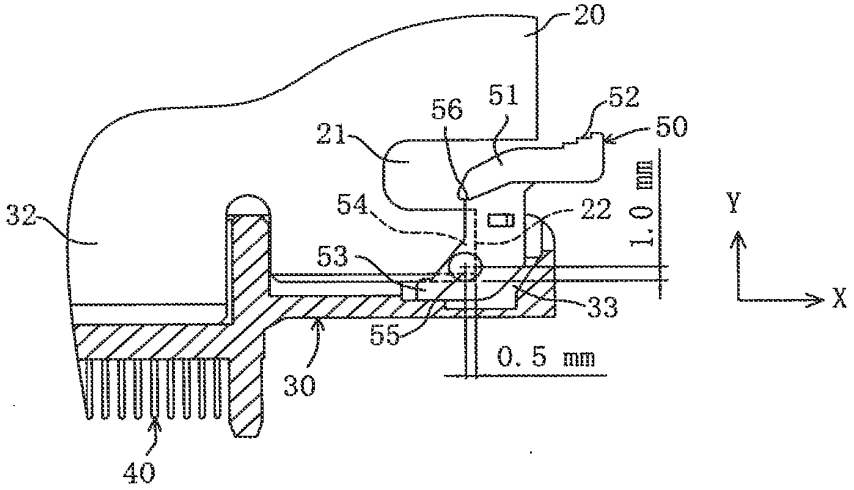


图 6

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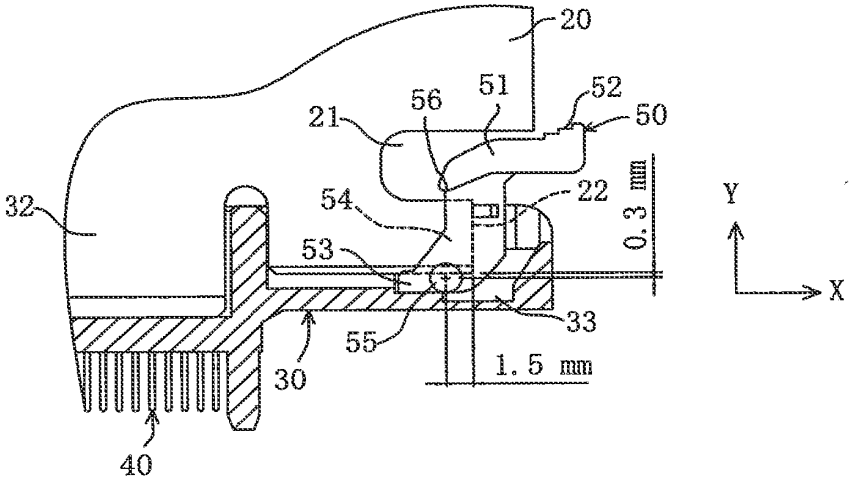


图 7

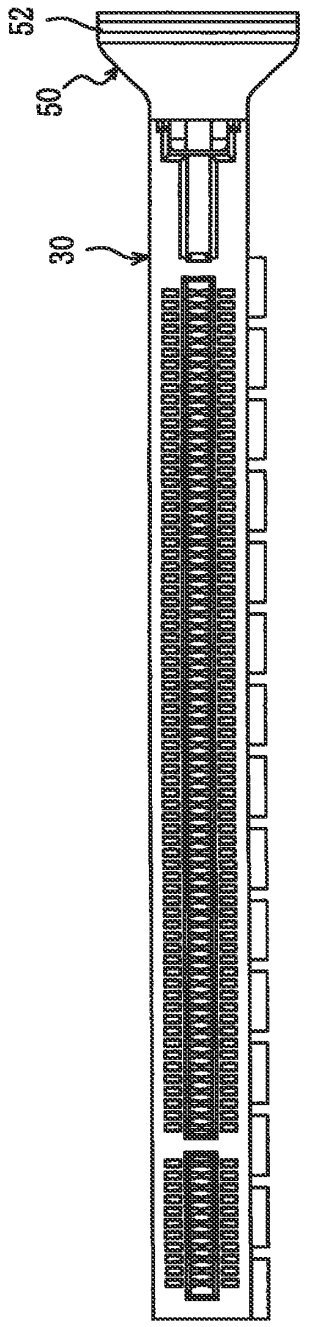


图 8

Samsung, EX1002, p. 2742

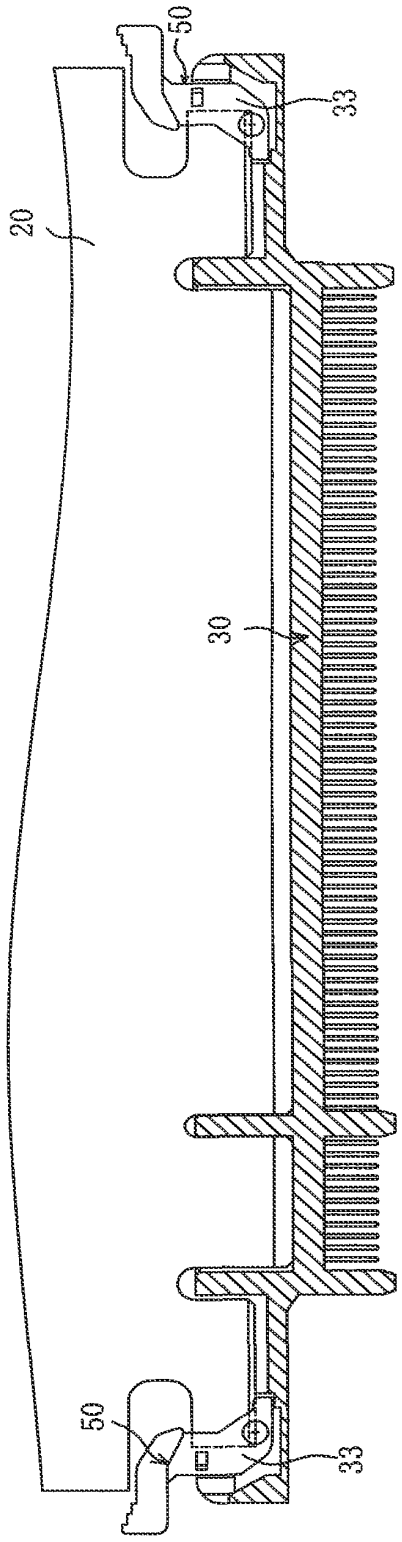


图 9

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Espacenet

Bibliographic data: CN201540991 (U) — 2010-08-04

Electronic card connector

Inventor(s): ZHOUXIAN CAI ± (CAI ZHOUXIAN)

Applicant(s): ZHOUXIAN CAI ± (CAI ZHOUXIAN)

Classification: **- international:** ***H01R12/71; H01R13/642***
- cooperative:

Application number: CN200920177779U 20090921

Priority number(s): CN200920177779U 20090921

Abstract of CN201540991 (U)

The utility model relates to an electronic card connector comprising a seat body, a first lower terminal, a second lower terminal, a first upper terminal and a second upper terminal, wherein the seat body is provided with a top surface and a bottom surface, is internally formed with a card slot, and the front end thereof is provided with an inserting port of the card slot; the first lower terminal is arranged at the seat body, the first lower terminal is provided with a contact part and a pin part, the contact part faces toward the top surface and the pin part extends out of the bottom surface of the seat body from the other one side of the inserting port of the card slot; the second lower terminal is arranged at the seat body and is provided with the contact part and the pin part, the contact part faces towards the top surface and the pin part extends out of the bottom surface of the seat body from the other one side of the inserting port of the card slot; the first upper terminal is arranged at the seat body and is provided with the contact part and the pin part, the contact part faces toward the bottom surface and the pin part extends out of the bottom surface of the seat body from the other one side of the inserting port of the card slot; and the second upper terminal is arranged at the seat body and is provided with the contact part and the pin part, the contact part faces toward the bottom surface and the pin part extends out of the bottom surface of the seat body from the other one side of the inserting port of the card slot. The electronic card connector can lead the positive surface and the negative surface of the intelligent card to insert.

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(51)Int.Cl.
H01R 12/22(2006.01)
H01R 13/642(2006.01)

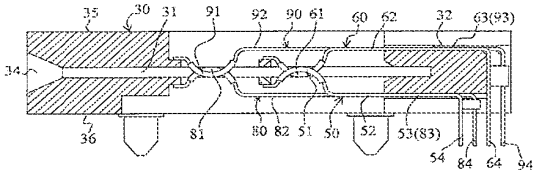
权利要求书 1 页 说明书 3 页 附图 3 页

(54)实用新型名称

电子卡连接器

(57)摘要

一种电子卡连接器，包括：座体，设有顶面及底面，其内形成卡槽，其前端设有卡槽的插入口；第一下端子，设于该座体，第一下端子设有接触部及接脚部，接触部朝向顶面，接脚部自该卡槽的插入口其他一侧伸出座体的底面；第二下端子，设于该座体，第二下端子设有接触部及接脚部，接触部朝向顶面，接脚部自该卡槽的插入口其他一侧伸出座体的底面；第一上端子，设于该座体，第一上端子设有接触部及接脚部，接触部朝向底面，接脚部自该卡槽的插入口其他一侧伸出座体的底面；第二上端子，设于该座体，第二上端子设有接触部及接脚部，接触部朝向底面，接脚部自该卡槽的插入口其他一侧伸出座体的底面。本实用新型可供智能卡正、反面插入。



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1. 一种电子卡连接器，其特征在于：包括有：

一座体，设有一顶面及一底面，该座体内形成容置一电子卡的卡槽，该座体前端设有该卡槽的插入口，该电子卡仅于一面设有接点；

一排第一下端子，其是呈间隔排列设于该座体，每一第一下端子设有一接触部及一接脚部，该接触部位于该卡槽且朝向座体的顶面，借以与该插入的电子卡的下面接触，该接脚部自该卡槽的插入口其他一侧伸出座体的底面；

一排第二下端子，其是呈间隔排列设于该座体，每一第二下端子设有一接触部及一接脚部，该接触部位于该卡槽且朝向座体的顶面，借以与该插入的电子卡的下面接触，该接脚部自该卡槽的插入口其他一侧伸出座体的底面，该第二下端子的接触部位于第一下端子的接触部前方；

一排第一上端子，其是呈间隔排列设于该座体，每一第一上端子设有一接触部及一接脚部，该接触部位于该卡槽且朝向座体的底面，借以与该插入的电子卡的上面接触，该接脚部自该卡槽的插入口其他一侧伸出座体的底面；及

一排第二上端子，其是呈间隔排列设于该座体，每一第二上端子设有一接触部及一接脚部，该接触部位于该卡槽且朝向座体的底面，借以与该插入的电子卡的上面接触，该接脚部自该卡槽的插入口其他一侧伸出座体的底面，该第二上端子的接触部位于第一上端子的接触部前方。

2. 如权利要求 1 所述的电子卡连接器，其特征在于：每一第一、二下端子及每一第一、二上端子皆设有一延伸部，该延伸部连接于该接触部及接脚部之间。

3. 如权利要求 2 所述的电子卡连接器，其特征在于：该第一、二下端子的延伸部等高，每一第二下端子的延伸部前段设有转折部，该转折部转至相邻的一第一下端子的接触部正前方，使相邻的第一、二下端子的接触部前后对齐；该第一、二上端子的延伸部等高，每一第二上端子的延伸部前段设有转折部，该转折部转至相邻的一第一上端子的接触部正前方，使相邻的第一、二上端子的接触部前后对齐。

4. 如权利要求 1 项所述的电子卡连接器，其特征在于：每一第一、二下端子的接触部凸向座体的顶面，每一第一、二上端子的接触部凸向座体的底面，该电子卡为一智能卡。

5. 如权利要求 1 所述的电子卡连接器，其特征在于：每一第一、二下端子的接脚部和每一第一、二上端子的接脚部自该卡槽的插入口相对一侧伸出座体的底面。

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电子卡连接器

【技术领域】

[0001] 本实用新型是有关于一种电连接器，特别是关于一种电子卡连接器。

【背景技术】

[0002] 请参阅图 1 及图 2，其是为一种现有卡连接器，是可令智能卡（如电话卡或金融卡）插入连接，其设有一座体 10 及二排设于该座体 10 的端子 20，其中该座体 10 设有一顶面 11 及一底面 12，其内是形成一容置智能卡的卡槽 13，该卡槽 13 设有一插入口 14；该各端子 20 设有接触部 21 及接脚部 22，该接触部 21 位于该卡槽，其呈凸弧状且凸向座体的顶面 11，该二排端子的接脚部 22 分别自插入口 14 一侧及对应插入口 14 的一侧伸出座体的底面 12。

[0003] 在使用上卡连接器一般是设于电路板 90 的正面，智能卡 28 依卡上的指示方向（接点 29 朝下）自插入口 14 插入，即可使接点 29 与两排端子的接触部 21 弹性接触，此时该接触部 21 则向座体的底面 12 弹动。

[0004] 上述现有的卡连接器由于端子的接触部均是凸向座体顶面 11，在使用下有如下的不便：

[0005] 1. 插卡时需依卡上的指示方向（接点 96 朝下）操作，当插反时则不被机器接受。

[0006] 2. 其中一排端子 20 的接脚 22 是向插入口 34 一侧伸出座体 10 的底面 12，因太接近插入口 34，在使用上有可能造成电磁干扰及易于被窃取资料的状况。

【实用新型内容】

[0007] 本实用新型的主要目的在于提供一种电子卡连接器，其是设有至少二排上端子及二排下端子，每一端子的接脚皆自插入口其他一侧伸出座体的底面，达到使用上可双面插接且可避免电磁干扰及被窃取资料。

[0008] 为达上述目的，本实用新型电子卡连接器是包括有：一座体，其设有一顶面及一底面，其内形成容置一电子卡的卡槽，该座体前端设有该卡槽的插入口，该电子卡仅于一面设有接点；一排第一下端子，其是呈间隔排列设于该座体，每一第一下端子设有一接触部及一接脚部，该接触部位于该卡槽且朝向座体的顶面，借以与该插入的电子卡的下面接触，该接脚部自该卡槽的插入口其他一侧伸出座体的底面；一排第二下端子，其是呈间隔排列设于该座体，每一第二下端子设有一接触部及一接脚部，该接触部位于该卡槽且朝向座体的顶面，借以与该插入的电子卡的下面接触，该接脚部自该卡槽的插入口其他一侧伸出座体的底面，该第二下端子的接触部位于第一下端子的接触部前方；一排第一上端子，其是呈间隔排列设于该座体，每一第一上端子设有一接触部及一接脚部，该接触部位于该卡槽且朝向座体的底面，借以与该插入的电子卡的上面接触，该接脚部自该卡槽的插入口其他一侧伸出座体的底面；及一排第二上端子，其是呈间隔排列设于该座体，每一第二上端子设有一接触部及一接脚部，该接触部位于该卡槽且朝向座体的底面，借以与该插入的电子卡的上面接触，该接脚部自该卡槽的插入口其他一侧伸出座体的底面，该第二上端子的接触部位于

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第一上端子的接触部前方。

[0009] 借由以上的说明，本实用新型具有以下优点：

[0010] 1. 智能卡正、反面插入时均可电连接，达到使用上的方便性。

[0011] 2. 所有的端子的接脚部皆由该卡槽的插入口其他一侧伸出座体的底面，故较不会受到电磁干扰且较不易于被窃取资料。

[0012] 本实用新型的上述及其他目的、优点和特色由以下较佳实施例的详细说明中并参考图式当可更加明白。

【附图说明】

[0013] 图 1 是现有卡连接器的侧视剖面图。

[0014] 图 2 是现有卡连接器的使用状态的侧视剖面图。

[0015] 图 3 是本实用新型较佳实施例的侧视剖面图。

[0016] 图 4 是本实用新型较佳实施例的二排下端子上视示意图。

[0017] 图 5 是本实用新型较佳实施例的二排上端子上视示意图。

[0018] 图 6 是本实用新型较佳实施例的使用状态图。

[0019] 图 7 是本实用新型较佳实施例的使用状态图。

[0020]	座体 30	顶面 35	底面 36	卡槽 31
[0021]	插入口 34	端子卡槽 32		
[0022]	第一下端子 50	接触部 51	延伸部 52	固定部 53
[0023]	接脚部 54	第一上端子 60	接触部 61	延伸部 62
[0024]	固定部 63	接脚部 64	第二下端子 80	接触部 81
[0025]	延伸部 82	固定部 83	接脚部 84	转折部 86
[0026]	第二上端子 90	接触部 91	延伸部 92	固定部 93
[0027]	接脚部 94	转折部 96		

【具体实施方式】

[0028] 请参阅图 3、图 4、及图 5，为本实用新型较佳实施例，其是为插接一智能卡的电子卡连接器，其包括一座体 30、一排第一下端子 50、一排第二下端子 80、一排第一上端子 60、一排第二上端子 90，其中：

[0029] 该座体 30 设有一顶面 35 及一底面 36，其内形成容置一智能卡的卡槽 31，该座体前端设有该卡槽 31 的插入口 34，该智能卡仅于一面设有接点，该座体的后段上下呈一高度差的二排端子卡槽 32。

[0030] 该一排第一下端子 50 是呈间隔排列设于该座体，每一第一下端子 50 由前而后依序设有一接触部 51、一延伸部 52、一固定部 53 及一接脚部 54，该接触部 51 位于该卡槽 31 且凸向座体的顶面 35，借以与该插入的智能卡的下面接触，该固定部 53 与下排的端子卡槽 32 卡定，该接脚部 54 自该卡槽 31 的插入口 34 相对一侧伸出座体的底面 36。

[0031] 该一排第二下端子 80 是呈间隔排列设于该座体，每一第二下端子 80 由前而后依序设有一接触部 81、一延伸部 82、一固定部 83 及一接脚部 84，该接触部 81 位于该卡槽 31 且凸向座体的顶面 35，借以与该插入的智能卡的下面接触，该固定部 83 与下排的端子卡槽

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32 卡定，该接脚部 54 自该卡槽 31 的插入口 34 相对一侧伸出座体的底面 36；该第一、二下端子 50、80 的延伸部 52、82 等高，每一第二下端子 80 的延伸部 82 前段设有转折部 86，该转折部 86 转至相邻的一第一下端子的接触部 51 正前方，使相邻的第一、二下端子 50、80 的接触部 51、81 前后对齐，即该第二下端子的接触部 81 位于第一下端子的接触部 51 正前方。

[0032] 该一排第一上端子 60 是呈间隔排列设于该座体，每一第一上端子 60 由前而后依序设有一接触部 61、一延伸部 62、一固定部 63 及一接脚部 64，该接触部 61 位于该卡槽 31 且凸向座体的底面 36，借以与该插入的智能卡的上面接触，该固定部 63 与上排的端子卡槽 32 卡定，该接脚部 64 自该卡槽 31 的插入口 34 相对一侧伸出座体的底面 36。

[0033] 该一排第二上端子 90 是呈间隔排列设于该座体，每一第二下端子 90 由前而后依序设有一接触部 91、一延伸部 92、一固定部 93 及一接脚部 94，该接触部 91 位于该卡槽 31 且凸向座体的底面 36，借以与该插入的智能卡的上面接触，该固定部 93 与上排的端子卡槽 32 卡定，该接脚部 54 自该卡槽 31 的插入口 34 相对一侧伸出座体的底面 36；该第一、二上端子 60、90 的延伸部 62、92 等高，每一第二下端子的延伸部 92 前段设有转折部 96，该转折部 96 转至相邻的一第一上端子的接触部 61 正前方，使相邻的第一、二上端子 60、90 的接触部 61、91 前后对齐，即该第二上端子 60 的接触部 61 位于第一上端子的接触部 61 正前方。

[0034] 借由以上构造，本实施例同时设有凸弧朝向座体底面的接触部 61、91 及凸弧朝向座体顶面的接触部 51、81，请参阅图 6，当智能卡 28 依卡上的指示方向（接点 29 朝上）插入卡槽 31，可使接点 29 与接触部 61、91 弹性接触；请参阅图 7，当智能卡 28 相反于卡上的指示方向即成接点 29 朝下插入卡槽 31 时，可使接点 29 与接触部 51、81 弹性接触。

[0035] 借由以上的说明，本实用新型具有以下优点：

[0036] 3. 智能卡正、反面插入时均可电连接，达到使用上的方便性。

[0037] 4. 所有的端子的接脚部皆由该卡槽的插入口其他一侧伸出座体的底面，故较不会受到电磁干扰且较不易于被窃取资料。

[0038] 在较佳实施例的详细说明中所提出的具体的实施例仅为了易于说明本实用新型的技术内容，而并非将本实用新型狭义地限制于该实施例，在不超出本实用新型的精神及申请专利范围的情况，可作种种变化实施。

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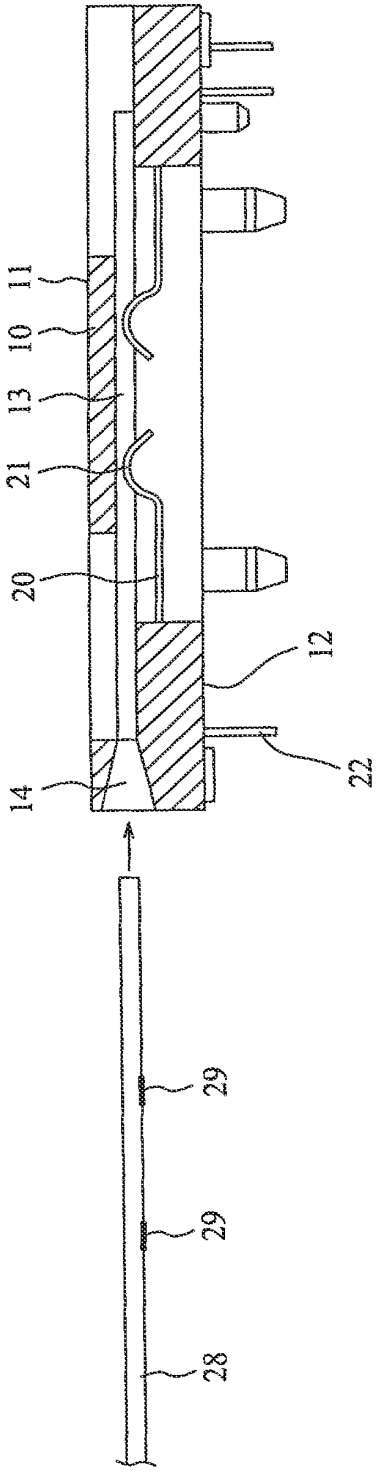


图 1

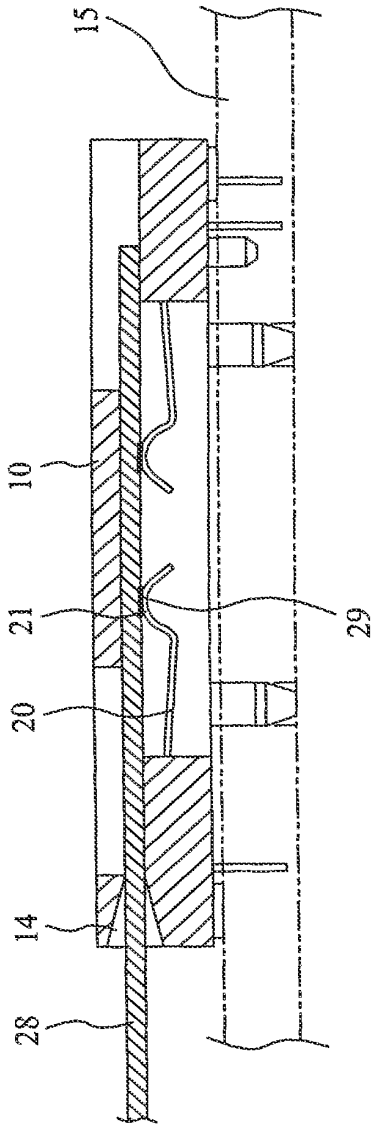


图 2

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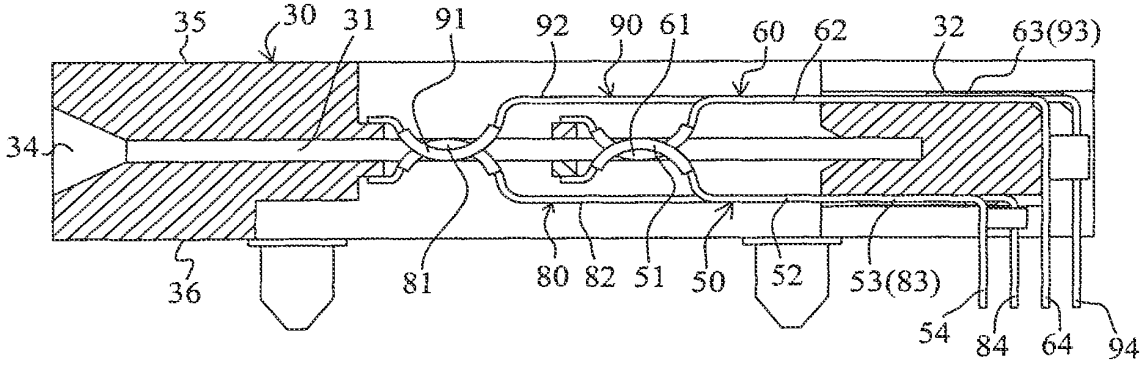


图 3

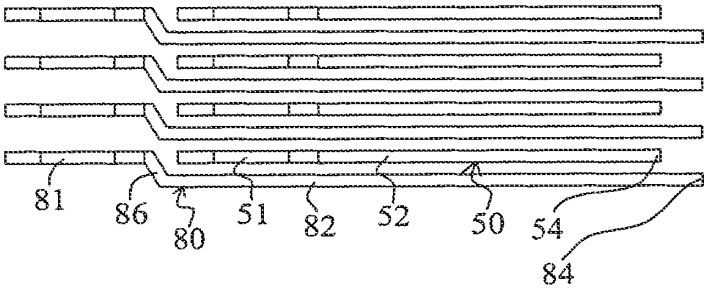


图 4

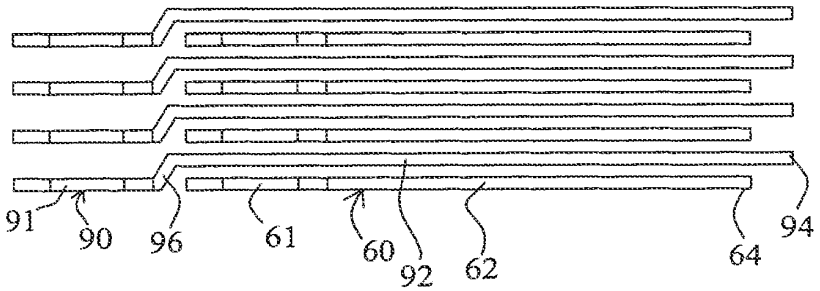


图 5

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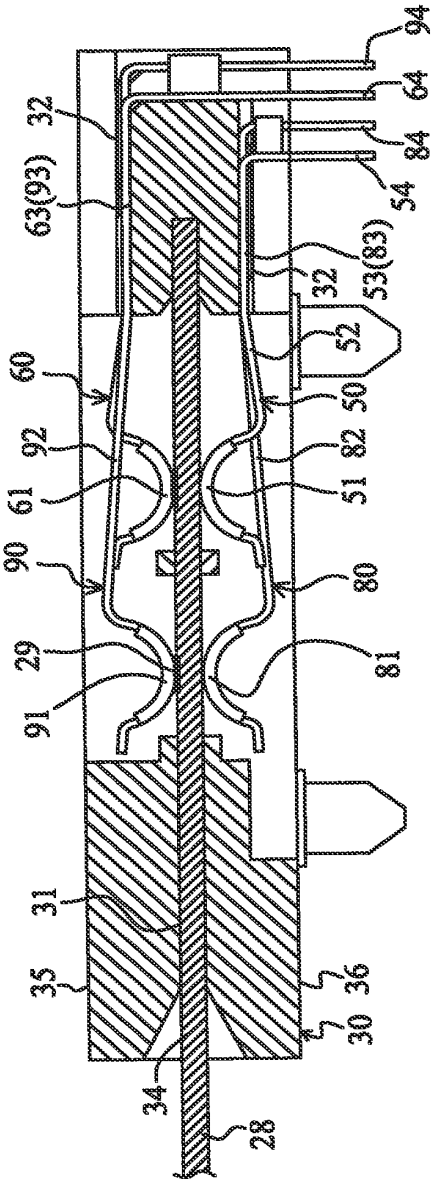


图 6

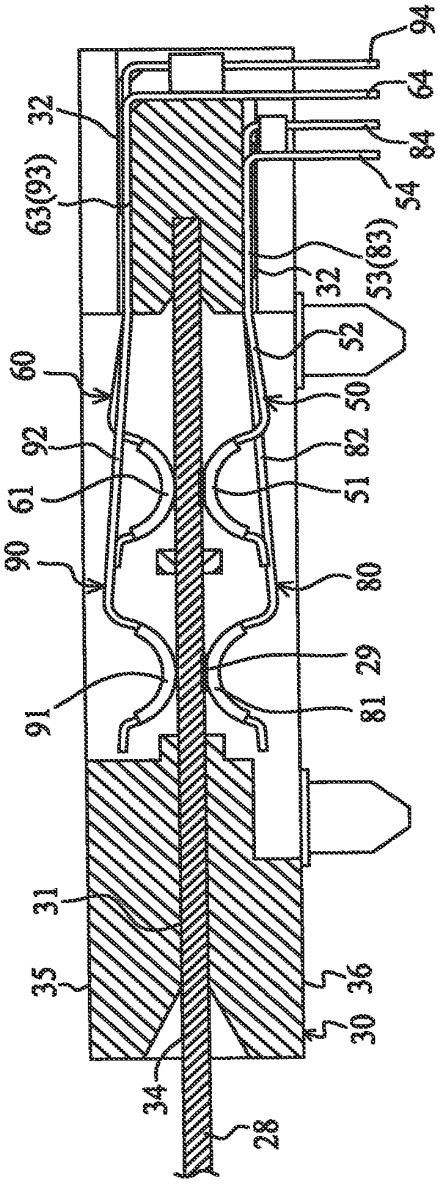


图 7

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re the Application of: Chou Hsien Tsai	)	Group Art Unit:
Application No.: 17/974,866 (**Reissue** of USPN 8,198,563)	)	Examiner:
Filed: Herewith	)	Confirmation No.: 1048
Atty. File No.: 10186PAT-1-REI-CON	)	

For: SOCKET STRUCTURE WITH DUPLEX ELECTRICAL CONNECTION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313

PRELIMINARY AMENDMENT

Dear Commissioner:

Prior to the initial review of the above-identified patent application by the Examiner, please enter the following Preliminary Amendment. Although Applicants do not believe that any fees are due based upon the filing of this Preliminary Amendment, please charge any such fees to Deposit Account 19-1970.

Please amend the above-identified patent application as follows:

Amendments to the Claims are shown in the listing of claims which begin on page **2** of this paper.

Remarks begin on page **42** of this paper.

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AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Cancel claims 1 - 34.

35. (New) A socket structure with duplex electrical connection, the socket structure comprising:

a plastic base;

a connection slot, which is disposed in front of the plastic base and configured to be connected to a plug having at least one row of connection terminals;

a tongue, which has a first surface with grooves, and a second surface with grooves, the second surface disposed opposite the first surface, the tongue being disposed on one end of the plastic base and within the connection slot, such that chambers of the connection slot on two sides of the tongue allow the plug to be normally and oppositely inserted and positioned into the connection slot;

at least one row of first contacts separately arranged on the first surface of the tongue, wherein each of the first contacts is electrically connected to a respective first pin extending out of the plastic base; and

at least one row of second contacts separately arranged on the second surface of the tongue, wherein:

each of the second contacts is electrically connected to a respective second pin extending out of the plastic base;

the socket structure is operative to simultaneously electrically connect via the first and second contacts;

the at least one row of first contacts has a functional reverse mirror configuration relative to the at least one row of second contacts, and the socket structure is thereby configured for two separate operational states:

a first operational state when the plug is normally inserted into the connection slot with the at least one row of connection terminals of the plug facing the second surface of the tongue,

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the at least one row of connection terminals of the plug are electrically connected to the at least one row of second contacts and the tongue is disposed within the connection slot, wherein the connection slot is symmetric with symmetric up and down chambers, and symmetric left and right chambers around the tongue; and

a second operational state when the plug is oppositely inserted into the connection slot with the at least one row of connection terminals of the plug facing the first surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of first contacts, and the tongue is disposed within the connection slot, wherein the connection slot is symmetric with symmetric up and down chambers, and symmetric left and right chambers around the tongue.

36. (New) The socket structure of claim 35, wherein the tongue only contacts an interior portion of the plug when the plug is inserted.

37. (New) The socket structure of claim 36, wherein a thickness of the tongue is less than a third of a height of the connection slot.

38. (New) The socket structure of claim 35, wherein a portion of each of the first contacts, in the at least one row of first contacts, is coplanar with a portion of the first surface of the tongue.

39. (New) The socket structure of claim 38, wherein a portion of each of the second contacts, in the at least one row of second contacts, is coplanar with a portion of the second surface of the tongue.

40. (New) The socket structure of claim 35, further comprising a metal housing at least partially covering the plastic base.

41. (New) The socket structure of claim 35, wherein the socket structure is a universal serial bus socket structure.

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42. (New) The socket structure of claim 35, wherein the tongue and the plastic base are integrally formed.

43. (New) The socket structure of claim 35, wherein each contact of the first and second contacts is a portion of a respective terminal.

44. (New) The socket structure of claim 35, wherein each of the first contacts is electrically connected to the respective first pin extending out of the plastic base through a rear cover and each of the second contacts is electrically connected to the respective second pin extending out of the plastic base through the rear cover.

45. (New) The socket structure of claim 35, wherein at least two of the first contacts are not in electrical communication with one another, and at least two of the second contacts are not in electrical communication with one another.

46. (New) The socket structure of claim 35, further comprising a rear cover attached to the plastic base.

47. (New) The socket structure of claim 46, wherein each of the first contacts is electrically connected to the respective first pin extending out of the plastic base through the rear cover.

48. (New) The socket structure of claim 46, wherein each of the second contacts is electrically connected to the respective second pin extending out of the plastic base through the rear cover.

49. (New) The socket structure of claim 35, wherein the socket structure is operatively connected to the plug, and wherein the socket structure is operative to simultaneously electrically connect via the first and second contacts.

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50. (New) The socket structure of claim 35, wherein at least two of the first contacts are not in electrical communication with one another.

51. (New) The socket structure of claim 35, wherein at least two of the second contacts are not in electrical communication with one another.

52. (New) The socket structure of claim 35, wherein the at least one row of first contacts and respective first pins are located at ends of respective ones of a row of first terminals and the at least one row of second contacts and respective second pins are located at ends of respective ones of a row of second terminals.

53. (New) The socket structure of claim 35, wherein a portion of a first contact projects beyond one surface of the tongue, and a portion of a second contact projects beyond another surface of the tongue.

54. (New) The socket structure of claim 35, wherein a portion of one of the first contacts is at least partially included in the first surface with grooves.

55. (New) The socket structure of claim 35, wherein a portion of one of the second contacts is at least partially included in the second surface with grooves.

56. (New) An electrical connection system comprising the socket structure with the duplex electrical connection of claim 35 and the plug.

57. (New) A socket structure with duplex electrical connection, the socket structure comprising:

a plastic base;

a connection slot, which is disposed in front of the plastic base and configured to be connected to a plug having at least one row of connection terminals;

a tongue, which has a top side with a first surface with grooves, and bottom side with a second surface with grooves, the second surface disposed opposite the first surface, the tongue

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being disposed on one end of the plastic base and within the connection slot, such that chambers of the connection slot on two sides of the tongue allow the plug to be normally and oppositely inserted and positioned into the connection slot;

at least one row of first contacts separately arranged on the first surface of the tongue, wherein each of the first contacts is electrically connected to a respective first pin extending out of the plastic base; and

at least one row of second contacts separately arranged on the second surface of the tongue, wherein:

each of the second contacts is electrically connected to a respective second pin extending out of the plastic base;

the socket structure is operative to simultaneously electrically connect on the top and the bottom side of the tongue;

the at least one row of first contacts has a functional reverse mirror configuration relative to the at least one row of second contacts, and the socket structure is thereby configured for two separate operational states:

a first operational state when the plug is normally inserted into the connection slot with the at least one row of connection terminals of the plug facing the second surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of second contacts; and

a second operational state when the plug is oppositely inserted into the connection slot with the at least one row of connection terminals of the plug facing the first surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of first contacts.

58. (New) An electrical connection system comprising the socket structure with the duplex electrical connection of claim 57 and the plug, wherein the socket structure is operatively connected to the plug, and wherein the socket structure is operative to simultaneously electrically connect via the first and second contacts.

59. (New) The socket structure of claim 57, wherein the tongue and the plastic base are integrally formed.

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60. (New) The socket structure of claim 59, further comprising a metal housing at least partially covering the plastic base.

61. (New) The socket structure of claim 60, wherein at least two of the first contacts are not in electrical communication with one another and at least two of the second contacts are not in electrical communication with one another.

62. (New) The socket structure of claim 61, wherein the grooves in the first surface of the tongue each include a portion of one of the first contacts, and the grooves in the second surface of the tongue each include a portion of one of the second contacts.

63. (New) The socket structure of claim 62, wherein the at least one row of first contacts includes at least five contacts, and the at least one row of second contacts includes at least five contacts.

64. (New) The socket structure of claim 63, wherein the tongue has rounded corners on two sides of the tongue.

65. (New) The socket structure of claim 64, wherein a tip of the tongue is tapered.

66. (New) The socket structure of claim 65, wherein a thickness of the tongue is less than third of a height of the connection slot.

67. (New) The socket structure of claim 66, wherein the socket structure is a universal serial bus socket structure.

68. (New) A socket structure with duplex electrical connection, the socket structure comprising:

a plastic base;

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a connection slot, which is disposed in front of the plastic base and configured to be connected to a plug having at least one row of connection terminals;

a tongue, which has a first surface with grooves, and a second surface with grooves, disposed opposite the first surface, the tongue being disposed on one end of the plastic base and within the connection slot, such that chambers of the connection slot on two sides of the tongue allow the plug to be normally and oppositely inserted and positioned into the connection slot based on an operational state when the socket structure is connected to the plug;

at least one row of first contacts separately arranged on the first surface of the tongue, wherein each of the first contacts is electrically connected to a respective first pin extending out of the plastic base; and

at least one row of second contacts separately arranged on the second surface of the tongue, wherein:

each of the second contacts is electrically connected to a respective second pin extending out of the plastic base;

the at least one row of first contacts includes at least six contacts,

the at least one row of second contacts includes at least six contacts,

the socket structure is operative to simultaneously electrically connect via the first and second contacts;

the at least one row of first contacts has a reverse mirror configuration relative to the at least one row of second contacts, and the socket structure is thereby configured for two separate operational states:

a first operational state when the plug is normally inserted into the connection slot with the at least one row of connection terminals of the plug facing the second surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of second contacts and the tongue is disposed within the connection slot, wherein the connection slot is symmetric with symmetric up and down chambers, and symmetric left and right chambers around the tongue; and

a second operational state when the plug is oppositely inserted into the connection slot with the at least one row of connection terminals of the plug facing the first surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of first contacts, and the tongue is disposed within the connection slot, wherein

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the connection slot is symmetric with symmetric up and down chambers, and symmetric left and right chambers around the tongue.

69. (New) An electrical connection system comprising the socket structure with the duplex electrical connection of claim 68 and the plug, wherein the socket structure is operatively connected to the plug, and wherein the socket structure is operative to simultaneously electrically connect via the first and second contacts.

70. (New) The socket structure of claim 68, wherein the tongue and the plastic base are integrally formed.

71. (New) The socket structure of claim 70, further comprising a metal housing at least partially covering the plastic base.

72. (New) The socket structure of claim 71, wherein at least two of the first contacts are not in electrical communication with one another and at least two of the second contacts are not in electrical communication with one another.

73. (New) The socket structure of claim 72, wherein the grooves in the first surface of the tongue each include a portion of one of the first contacts, and the grooves in the second surface of the tongue each include a portion of one of the second contacts.

74. (New) The socket structure of claim 73, wherein the tongue has rounded corners on two sides of the tongue.

75. (New) The socket structure of claim 74, wherein a portion of the tongue opposite the plastic base is tapered.

76. (New) The socket structure of claim 75, wherein a thickness of the tongue is less than third of a height of the connection slot.

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77. (New) The socket structure of claim 76, wherein the socket structure is a universal serial bus socket structure.

78. (New) The socket structure of claim 77, wherein each of the first contacts is electrically connected to the respective first pin extending out of the plastic base through the rear cover, and each of the second contacts is electrically connected to the respective second pin extending out of the plastic base through the rear cover.

79. (New) A socket structure with duplex electrical connection, the socket structure comprising:

a plastic base having a metal housing;

a connection slot, which is disposed in front of the plastic base and configured to be connected to a plug having at least one row of connection terminals;

a tongue, which has a first surface with grooves, and a second surface with grooves, disposed opposite the first surface, the tongue being disposed on one end of the plastic base and within the connection slot, such that chambers of the connection slot on two sides of the tongue allow the plug to be normally and oppositely inserted and positioned into the connection slot based on an operational state when the socket structure is connected to the plug;

at least one row of first contacts separately arranged on the first surface of the tongue, wherein each of the first contacts is electrically connected to a respective first pin extending out of the plastic base; and

at least one row of second contacts separately arranged on the second surface of the tongue, wherein:

each of the second contacts is electrically connected to a respective second pin extending out of the plastic base;

the at least one row of first contacts includes at least four contacts,

the at least one row of second contacts includes at least four contacts,

the socket structure is operative to simultaneously electrically connect via the first and the second contacts;

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the at least one row of first contacts has a reverse mirror configuration relative to the at least one row of second contacts, and the socket structure is thereby configured for two separate operational states:

a first operational state when the plug is normally inserted into the connection slot with the at least one row of connection terminals of the plug facing the second surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of second contacts and the tongue is disposed at a central location within the connection slot, wherein the connection slot is symmetric with symmetric up and down chambers, and symmetric left and right chambers around the tongue; and

a second operational state when the plug is oppositely inserted into the connection slot with the at least one row of connection terminals of the plug facing the first surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of first contacts, and the tongue is disposed at a central location within the connection slot, wherein the connection slot is symmetric with symmetric up and down chambers, and symmetric left and right chambers around the tongue.

80. (New) An electrical connection system comprising the socket structure with the duplex electrical connection of claim 79 and the plug, wherein the socket structure is operatively connected to the plug, and wherein the socket structure is operative to simultaneously electrically connect via the first and second contacts.

81. (New) The socket structure of claim 79, wherein the tongue and the plastic base are integrally formed.

82. (New) The socket structure of claim 81, wherein the metal housing at least partially covers the plastic base.

83. (New) The socket structure of claim 82, wherein at least two of the first contacts are not in electrical communication with one another and at least two of the second contacts are not in electrical communication with one another.

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84. (New) The socket structure of claim 83, wherein the grooves in the first surface of the tongue each include a portion of one of the first contacts, and the grooves in the second surface of the tongue each include a portion of one of the second contacts.

85. (New) The socket structure of claim 84, wherein the tongue has rounded corners on two sides of the tongue.

86. (New) The socket structure of claim 85, wherein a portion of the tongue opposite the plastic base is tapered.

87. (New) The socket structure of claim 86, wherein a thickness of the tongue is less than third of a height of the connection slot.

88. (New) The socket structure of claim 87, wherein the socket structure is a universal serial bus socket structure and each of the first contacts is electrically connected to the respective first pin extending out of the plastic base through the rear cover, and each of the second contacts is electrically connected to the respective second pin extending out of the plastic base through the rear cover.

89. (New) A socket structure with duplex electrical connection, the socket structure comprising:

a plastic base;

a connection slot, which is disposed in front of the plastic base and configured to be connected to a plug having at least one row of connection terminals;

a tongue, which has a first surface with grooves, and a second surface with grooves, the second surface disposed opposite the first surface, the tongue being disposed on one end of the plastic base and within the connection slot, such that chambers of the connection slot on two sides of the tongue allow the plug to be normally and oppositely inserted and positioned into the connection slot based on an operational state when the socket structure is connected to the plug;

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at least one row of first contacts separately arranged on the first surface of the tongue, wherein each of the first contacts is electrically connected to a respective first pin extending out of the plastic base; and

at least one row of second contacts separately arranged on the second surface of the tongue, wherein:

each of the second contacts is electrically connected to a respective second pin extending out of the plastic base;

the at least one row of first contacts includes more than four contacts,

the at least one row of second contacts includes more than four contacts,

the socket structure is operative to simultaneously electrically connect via the first and second contacts;

the at least one row of first contacts has a reverse mirror configuration relative to the at least one row of second contacts, and the socket structure is thereby configured for two separate operational states:

a first operational state when the plug is normally inserted into the connection slot with the at least one row of connection terminals of the plug facing the second surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of second contacts and the tongue is disposed at a central location within the connection slot, wherein the connection slot is symmetric with symmetric up and down chambers, and symmetric left and right chambers around the tongue; and

a second operational state when the plug is oppositely inserted into the connection slot with the at least one row of connection terminals of the plug facing the first surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of first contacts, and the tongue is disposed at a central location within the connection slot, wherein the connection slot is symmetric with symmetric up and down chambers, and symmetric left and right chambers around the tongue.

90. (New) An electrical connection system comprising the socket structure with the duplex electrical connection of claim 89 and the plug, wherein the socket structure is operatively connected to the plug, and wherein the socket structure is operative to simultaneously electrically connect via the first and second contacts.

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91. (New) The socket structure of claim 89, wherein the tongue and the plastic base are integrally formed.

92. (New) The socket structure of claim 91, wherein the metal housing at least partially covers the plastic base.

93. (New) The socket structure of claim 92, wherein at least two of the first contacts are not in electrical communication with one another and at least two of the second contacts are not in electrical communication with one another.

94. (New) The socket structure of claim 93, wherein the grooves in the first surface of the tongue each include a portion of one of the first contacts, and the grooves in the second surface of the tongue each include a portion of one of the second contacts.

95. (New) The socket structure of claim 94, wherein the tongue has rounded corners on two sides of the tongue.

96. (New) The socket structure of claim 95, wherein a portion of the tongue opposite the plastic base is tapered.

97. (New) The socket structure of claim 96, wherein a thickness of the tongue is less than third of a height of the connection slot.

98. (New) The socket structure of claim 97, wherein:

the socket structure is a universal serial bus socket structure and each of the first contacts is electrically connected to the respective first pin extending out of the plastic base through the rear cover, and each of the second contacts is electrically connected to the respective second pin extending out of the plastic base through the rear cover,

the tongue only contacts an interior portion of the plug when the plug is inserted,

each contact of the first and second contacts is a portion of a respective terminal,

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a portion of a first contact projects beyond one surface of the tongue, and a portion of a second contact projects beyond another surface of the tongue,

the grooves in the first surface of the tongue each include a portion of one of the first contacts, and

the grooves in the second surface of the tongue each include a portion of one of the second contacts.

99. (New) A socket structure with duplex electrical connection, the socket structure comprising:

a plastic base;

a connection slot, which is disposed in front of the plastic base and configured to be connected to a plug having at least one row of connection terminals;

a tongue, which has a first surface with grooves, and a second surface with grooves, the second surface disposed opposite the first surface, the tongue being disposed on one end of the plastic base and within the connection slot, such that chambers of the connection slot on two sides of the tongue allow the plug to be normally and oppositely inserted and positioned into the connection slot based on an operational state when the socket structure is connected to the plug;

at least one row of first contacts separately arranged on the first surface of the tongue, wherein each of the first contacts is electrically connected to a respective first pin extending out of the plastic base; and

at least one row of second contacts separately arranged on the second surface of the tongue, wherein:

each of the second contacts is electrically connected to a respective second pin extending out of the plastic base;

the socket structure is operative to simultaneously electrically connect via the first and second contacts;

the at least one row of first contacts has a functional reverse mirror configuration relative to the at least one row of second contacts, and the socket structure is thereby configured for two separate operational states:

a first operational state when the plug is normally inserted into the connection slot with the at least one row of connection terminals of the plug facing the second surface of the tongue,

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the at least one row of connection terminals of the plug are electrically connected to the at least one row of second contacts and the tongue is disposed at a central location within the connection slot, wherein the connection slot is symmetric with symmetric up and down chambers, and symmetric left and right chambers around the tongue; and

a second operational state when the plug is oppositely inserted into the connection slot with the at least one row of connection terminals of the plug facing the first surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of first contacts, and the tongue is disposed at a central location within the connection slot, wherein the connection slot is symmetric with symmetric up and down chambers, and symmetric left and right chambers around the tongue.

100. (New) An electrical connection system comprising the socket structure with the duplex electrical connection of claim 99 and the plug, wherein the socket structure is operatively connected to the plug, and wherein the socket structure is operative to simultaneously electrically connect via the first and second contacts.

101. (New) The socket structure of claim 99, wherein the tongue and the plastic base are integrally formed.

102. (New) The socket structure of claim 101, wherein the metal housing at least partially covers the plastic base.

103. (New) The socket structure of claim 102, wherein at least two of the first contacts are not in electrical communication with one another and at least two of the second contacts are not in electrical communication with one another.

104. (New) The socket structure of claim 103, wherein the grooves in the first surface of the tongue each include a portion of one of the first contacts, and the grooves in the second surface of the tongue each include a portion of one of the second contacts.

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105. (New) The socket structure of claim 104, wherein the tongue has rounded corners on two sides of the tongue.

106. (New) The socket structure of claim 105, wherein a portion of the tongue opposite the plastic base is tapered.

107. (New) The socket structure of claim 106, wherein a thickness of the tongue is less than third of a height of the connection slot.

108. (New) The socket structure of claim 107, wherein:

the socket structure is a universal serial bus socket structure and each of the first contacts is electrically connected to the respective first pin extending out of the plastic base through the rear cover, and each of the second contacts is electrically connected to the respective second pin extending out of the plastic base through the rear cover,

the tongue only contacts an interior portion of the plug when the plug is inserted,

each contact of the first and second contacts is a portion of a respective terminal,

a portion of a first contact projects beyond one surface of the tongue, and a portion of a second contact projects beyond another surface of the tongue,

the grooves in the first surface of the tongue each include a portion of one of the first contacts, and

the grooves in the second surface of the tongue each include a portion of one of the second contacts.

109. (New) A socket structure with duplex electrical connection, the socket structure comprising:

a plastic base;

a metal housing at least partially covering the plastic base;

a connection slot, which is disposed in front of the plastic base and configured to be connected to a plug having at least one row of connection terminals;

a tongue, which has a first surface with grooves, and a second surface with grooves, the second surface disposed opposite the first surface, the tongue being disposed on one end of the

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plastic base and within the connection slot, such that chambers of the connection slot on two sides of the tongue allow the plug to be normally and oppositely inserted and positioned into the connection slot based on an operational state when the socket structure is connected to the plug;

at least one row of first contacts separately arranged on the first surface of the tongue, wherein each of the first contacts is electrically connected to a respective first pin extending out of the plastic base; and

at least one row of second contacts separately arranged on the second surface of the tongue, wherein:

each of the second contacts is electrically connected to a respective second pin extending out of the plastic base;

the socket structure is operative to simultaneously electrically connect via the first and second contacts;

the at least one row of first contacts has a functional reverse mirror configuration relative to the at least one row of second contacts, and the socket structure is thereby configured for two separate operational states:

a first operational state when the plug is normally inserted into the connection slot with the at least one row of connection terminals of the plug facing the second surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of second contacts and the tongue is disposed at a central location within the connection slot, wherein the connection slot is symmetric with symmetric up and down chambers, and symmetric left and right chambers around the tongue; and

a second operational state when the plug is oppositely inserted into the connection slot with the at least one row of connection terminals of the plug facing the first surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of first contacts, and the tongue is disposed at a central location within the connection slot, wherein the connection slot is symmetric with symmetric up and down chambers, and symmetric left and right chambers around the tongue,

the socket structure is a universal serial bus socket structure and each of the first contacts is electrically connected to the respective first pin extending out of the plastic base through a rear cover, and each of the second contacts is electrically connected to the respective second pin extending out of the plastic base through the rear cover,

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the tongue only contacts an interior portion of the plug when the plug is inserted,

each contact of the first and second contacts is connected to a respective portion of a respective terminal,

the grooves in the first surface of the tongue each include a at least a portion of respective ones of the first contacts, and

the grooves in the second surface of the tongue each include at least a portion of respective ones of the second contacts.

110. (New) An electrical connection socket and plug comprising the socket structure of claim 109 and the plug, wherein the socket structure is operatively connected to the plug, and wherein the socket structure is operative to simultaneously electrically connect via the first and second contacts.

111. (New) A socket structure with duplex electrical connection, the socket structure comprising:

a plastic base;

a metal housing at least partially covering the plastic base;

a connection slot, which is disposed in front of the plastic base and configured to be connected to a plug having at least one row of connection terminals;

a tongue, which has a top side with a first surface with grooves, and a bottom side with a second surface with grooves, the second surface disposed opposite the first surface, the tongue being disposed on one end of the plastic base and within the connection slot, such that chambers of the connection slot on two sides of the tongue allow the plug to be normally and oppositely inserted and positioned into the connection slot based on an operational state when the socket structure is connected to the plug;

at least one row of first contacts separately arranged on the first surface of the tongue, wherein each of the first contacts is electrically connected to a respective first pin extending out of the plastic base; and

at least one row of second contacts separately arranged on the second surface of the tongue, wherein:

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each of the second contacts is electrically connected to a respective second pin extending out of the plastic base;

the socket structure is operative to simultaneously electrically connect on the top and the bottom side of the tongue;

the at least one row of first contacts has a reverse mirror configuration relative to the at least one row of second contacts, and the socket structure is thereby configured for two separate operational states:

a first operational state when the plug is normally inserted into the connection slot with the at least one row of connection terminals of the plug facing the second surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of second contacts and the tongue is disposed at a central location within the connection slot, wherein the connection slot is symmetric with symmetric up and down chambers, and symmetric left and right chambers around the tongue; and

a second operational state when the plug is oppositely inserted into the connection slot with the at least one row of connection terminals of the plug facing the first surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of first contacts, and the tongue is disposed at a central location within the connection slot, wherein the connection slot is symmetric with symmetric up and down chambers, and symmetric left and right chambers around the tongue,

the socket structure is a universal serial bus socket structure and each of the first contacts is electrically connected to the respective first pin extending out of the plastic base through a rear cover, and each of the second contacts is electrically connected to the respective second pin extending out of the plastic base through the rear cover,

the tongue only contacts an interior portion of the plug when the plug is inserted,

each contact of the first and second contacts is a portion of a respective terminal,

the grooves in the first surface of the tongue each include a respective portion of respective ones of the first contacts,

the grooves in the second surface of the tongue each include a portion of respective ones of the second contacts,

a portion of the tongue opposite the plastic base is tapered, and

the tongue has rounded edges on two opposite sides of the tongue.

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112. (New) An electrical connection socket and plug comprising the socket structure of claim 111 and the plug, wherein the socket structure is operatively connected to the plug, and wherein the socket structure is operative to simultaneously electrically connect via the first and second contacts.

113. (New) A socket structure with duplex electrical connection, the socket structure comprising:

a plastic base;

a metal housing at least partially covering the plastic base;

a connection slot, which is disposed in front of the plastic base and configured to be connected to a plug having at least one row of connection terminals;

a tongue, which has a top side with a first surface with grooves, and bottom side with a second surface with grooves, the second surface disposed opposite the first surface, the tongue being disposed on one end of the plastic base and within the connection slot, such that chambers of the connection slot on two sides of the tongue allow the plug to be normally and oppositely inserted and positioned into the connection slot based on an operational state when the socket structure is connected to the plug;

at least one row of first contacts separately arranged on the first surface of the tongue, wherein each of the first contacts is electrically connected to a respective first pin extending out of the plastic base; and

at least one row of second contacts separately arranged on the second surface of the tongue, wherein:

each of the second contacts is electrically connected to a respective second pin extending out of the plastic base;

the socket structure is operative to simultaneously electrically connect on the top and the bottom side of the tongue;

the at least one row of first contacts has a functional reverse mirror configuration relative to the at least one row of second contacts, and the socket structure is thereby configured for two separate operational states:

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a first operational state when the plug is normally inserted into the connection slot with the at least one row of connection terminals of the plug facing the second surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of second contacts and the tongue is disposed at a central location within the connection slot, wherein the connection slot is symmetric with symmetric up and down chambers, and symmetric left and right chambers around the tongue; and

a second operational state when the plug is oppositely inserted into the connection slot with the at least one row of connection terminals of the plug facing the first surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of first contacts, and the tongue is disposed at a central location within the connection slot, wherein the connection slot is symmetric with symmetric up and down chambers, and symmetric left and right chambers around the tongue,

the socket structure is a universal serial bus socket structure and each of the first contacts is electrically connected to the respective first pin extending out of the plastic base through a rear cover, and each of the second contacts is electrically connected to the respective second pin extending out of the plastic base through the rear cover,

the tongue only contacts an interior portion of the plug when the plug is inserted,

each contact of the first and second contacts is connected to a portion of a respective terminal,

the grooves in the first surface of the tongue each include at least a portion of respective ones of the first contacts,

the grooves in the second surface of the tongue each include at least a portion of respective ones of the second contacts,

a portion of the tongue opposite the plastic base is tapered,

a thickness of the tongue, in at least one portion, is less than third of a height of the connection slot, and

the tongue has rounded edges on two opposite sides of the tongue.

114. (New) An electrical connection socket and plug comprising the socket structure of claim 113 and the plug, wherein the socket structure is operatively connected to the plug, and

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wherein the socket structure is operative to simultaneously electrically connect via the first and second contacts.

115. (New) A socket structure with duplex electrical connection, the socket structure comprising:

a plastic base;

a connection slot, which is disposed in front of the plastic base and configured to be connected to a plug having at least one row of connection terminals;

a tongue, which has a first surface and a second surface disposed opposite the first surface and is disposed on one end of the plastic base and within the connection slot, such that chambers of the connection slot on two sides of the tongue allow the plug to be normally and oppositely inserted and positioned into the connection slot based on an operational state when the socket structure is connected to the plug;

at least one row of first contacts separately arranged on the first surface of the tongue, wherein each of the first contacts is electrically connected to a respective first pin extending out of the plastic base; and

at least one row of second contacts separately arranged on the second surface of the tongue, wherein:

each of the second contacts is electrically connected to a respective second pin extending out of the plastic base;

the socket structure is operative to simultaneously electrically connect via the first and second contacts;

the at least one row of first contacts has a functional reverse mirror configuration relative to the at least one row of second contacts, and the socket structure is thereby configured for two separate operational states:

a first operational state when the plug is normally inserted into the connection slot with the at least one row of connection terminals of the plug facing the second surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of second contacts and the tongue is centrally located within the connection slot, wherein the connection slot is symmetric with up, down, left and right chambers around the tongue; and

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a second operational state when the plug is oppositely inserted into the connection slot with the at least one row of connection terminals of the plug facing the first surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of first contacts, and the tongue is centrally located within the connection slot, wherein the connection slot is symmetric with symmetric up and down chambers, and symmetric left and right chambers around the tongue.

116. (New) A socket structure with duplex electrical connection, the socket structure comprising:

a plastic base;

a connection slot, which is disposed in front of the plastic base and configured to be connected to a plug having at least one row of connection terminals;

a tongue, which has a top side with a first castellated surface and bottom side with a second castellated surface disposed opposite the first castellated surface and is disposed on one end of the plastic base and within the connection slot, such that chambers of the connection slot on two sides of the tongue allow the plug to be normally and oppositely inserted and positioned into the connection slot based on an operational state when the socket structure is connected to the plug;

at least one row of first contacts separately arranged on the first castellated surface of the tongue, wherein each of the first contacts is electrically connected to a respective first pin extending out of the plastic base; and

at least one row of second contacts separately arranged on the second castellated surface of the tongue, wherein:

each of the second contacts is electrically connected to a respective second pin extending out of the plastic base,

the socket structure is operative to electrically connect on the top side, the bottom side, and the top side and the bottom side of the tongue; and

the socket structure is thereby configured for two separate operational states:

a first operational state when the plug is normally inserted into the connection slot with the at least one row of connection terminals of the plug facing the second castellated surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to

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the at least one row of second contacts and the tongue is centrally located within the connection slot, wherein the connection slot is symmetric with up, down, left and right chambers around the tongue; and

a second operational state when the plug is oppositely inserted into the connection slot with the at least one row of connection terminals of the plug facing the first castellated surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of first contacts, and the tongue is centrally located within the connection slot, wherein the connection slot is symmetric with symmetric up and down chambers, and symmetric left and right chambers around the tongue.

117. (New) A socket structure with duplex electrical connection, the socket structure comprising:

a plastic base;

a connection slot, which is disposed in front of the plastic base and configured to be connected to a plug having at least one row of connection terminals;

a tongue, which has a first surface and a second surface disposed opposite the first surface and is disposed on one end of the plastic base and within the connection slot, such that chambers of the connection slot on two sides of the tongue allow the plug to be normally and oppositely inserted and positioned into the connection slot based on an operational state when the socket structure is connected to the plug;

at least one row of first contacts separately arranged on the first surface of the tongue, wherein each of the first contacts is electrically connected to a respective first pin extending out of the plastic base, wherein a first portion of each of the first contacts is proud of a top-most surface of the tongue; and

at least one row of second contacts separately arranged on the second surface of the tongue, wherein a second portion of each of the second contacts is proud of a bottom-most surface of the tongue, and

the socket structure is operative to simultaneously electrically connect on both sides of the tongue via the first and second contacts, wherein:

each of the second contacts is electrically connected to a respective second pin extending out of the plastic base; and

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the socket structure is thereby configured for two separate operational states:

a first operational state when the plug is normally inserted into the connection slot with the at least one row of connection terminals of the plug facing the second surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of second contacts and the tongue is disposed at a middle within the connection slot, wherein the connection slot is symmetric with symmetric up and down chambers, and symmetric left and right chambers around the tongue; and

a second operational state when the plug is oppositely inserted into the connection slot with the at least one row of connection terminals of the plug facing the first surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of first contacts, and the tongue is disposed at within the connection slot, wherein the connection slot is symmetric with symmetric up and down chambers, and symmetric left and right chambers around the tongue.

118. (New) A socket structure with duplex electrical connection, the socket structure comprising:

a plastic base;

a connection slot, which is disposed in front of the plastic base and configured to be connected to a plug having at least one row of connection terminals;

a tongue, which has a top side with a first surface and bottom side with a second surface disposed opposite the first surface, and the tongue is disposed on one end of the plastic base and within the connection slot, such that chambers of the connection slot on two sides of the tongue allow the plug to be normally and oppositely inserted and positioned into the connection slot based on an operational state when the socket structure is connected to the plug;

at least one row of first contacts separately arranged on the first surface of the tongue, wherein each of the first contacts is electrically connected to a respective first pin extending out of the plastic base; and

at least one row of second contacts separately arranged on the second surface of the tongue, wherein:

each of the second contacts is electrically connected to a respective second pin extending out of the plastic base;

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the socket structure is operative to electrically connect on the top side, the bottom side, and the top side and the bottom side of the tongue; and

the socket structure is thereby configured for two separate operational states:

a first operational state when the plug is normally inserted into the connection slot with the at least one row of connection terminals of the plug facing the second surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of second contacts and the tongue is centrally located within the connection slot, wherein the connection slot is symmetric with symmetric up and down chambers, and symmetric left and right chambers around the tongue; and

a second operational state when the plug is oppositely inserted into the connection slot with the at least one row of connection terminals of the plug facing the first surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of first contacts, and the tongue is centrally located within the connection, wherein the connection slot is symmetric with symmetric up and down chambers, and symmetric left and right chambers around the tongue.

119. (New) A socket structure with duplex electrical connection, the socket structure comprising:

a plastic base;

a connection slot, which is disposed in front of the plastic base and configured to be connected to a plug having at least one row of connection terminals;

a tongue, which has a top side with a first surface and a bottom side with a second surface disposed opposite the first surface, and the tongue is disposed on one end of the plastic base and within the connection slot, such that chambers of the connection slot on two sides of the tongue allow the plug to be normally and oppositely inserted and positioned into the connection slot based on an operational state when the socket structure is connected to the plug;

at least one row of first contacts separately arranged on the first surface of the tongue, wherein each of the first contacts is electrically connected to a respective first pin extending out of the plastic base; and

at least one row of second contacts separately arranged on the second surface of the tongue, wherein:

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each of the second contacts is electrically connected to a respective second pin extending out of the plastic base;

the at least one row of first contacts has a functional reverse mirror configuration relative to the at least one row of second contacts;

the socket structure is operative to electrically connect on the top side, the bottom side, and the top side and the bottom side of the tongue; and

the socket structure is thereby configured for two separate operational states:

a first operational state when the plug is normally inserted into the connection slot with the at least one row of connection terminals of the plug facing the second surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of second contacts and the tongue is centrally located within the connection slot, wherein the connection slot is symmetric with symmetric up and down chambers, and symmetric left and right chambers around the tongue; and

a second operational state when the plug is oppositely inserted into the connection slot with the at least one row of connection terminals of the plug facing the first surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of first contacts, and the tongue is centrally located within the connection slot, wherein the connection slot is symmetric with symmetric up and down chambers, and symmetric left and right chambers around the tongue.

120. (New) A socket structure with duplex electrical connection, the socket structure comprising:

a plastic base;

a connection slot, which is disposed in front of the plastic base and configured to be connected to a plug having at least one row of connection terminals;

a tongue, which has a top side a first surface and a bottom side with a second surface disposed opposite the first surface, and the tongue is disposed on one end of the plastic base and within the connection slot, such that chambers of the connection slot on two sides of the tongue allow the plug to be normally and oppositely inserted and positioned into the connection slot based on an operational state when the socket structure is connected to the plug;

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at least one row of first contacts separately arranged on the first surface of the tongue, wherein each of the first contacts is electrically connected to a first pin extending out of the plastic base; and

at least one row of second contacts separately arranged on the second surface of the tongue, wherein:

each of the second contacts is electrically connected to a second pin extending out of the plastic base;

the socket structure is operative to electrically connect on the top side, the bottom side, and the top side and the bottom side of the tongue; and

the socket structure is thereby configured for two separate operational states:

a first operational state when the plug is normally inserted into the connection slot with the at least one row of connection terminals of the plug facing the second surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of second contacts and the tongue is disposed at a middle within the connection slot, wherein the connection slot is symmetric with symmetric up and down chambers, and symmetric left and right chambers around the tongue; and

a second operational state when the plug is oppositely inserted into the connection slot with the at least one row of connection terminals of the plug facing the first surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of first contacts, and the tongue is disposed at within the connection slot, wherein the connection slot is symmetric with symmetric up and down chambers, and symmetric left and right chambers around the tongue.

121. (New) A socket structure with duplex electrical connection, the socket structure comprising:

a plastic base;

a connection slot, which is disposed in front of the plastic base and configured to be connected to a plug having at least one row of connection terminals;

a tongue, which has a top side with a first surface and a bottom side with a second surface disposed opposite the first surface, and the tongue is disposed on one end of the plastic base and within the connection slot, such that chambers of the connection slot on two sides of the tongue

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allow the plug to be normally and oppositely inserted and positioned into the connection slot based on an operational state when the socket structure is connected to the plug;

at least one row of first contacts separately arranged on the first surface of the tongue, wherein each of the first contacts is electrically connected to a first pin extending out of the plastic base; and

at least one row of second contacts separately arranged on the second surface of the tongue, wherein:

each of the second contacts is electrically connected to a second pin extending out of the plastic base;

the socket structure is operative to electrically connect on the top side, the bottom side, and the top side and the bottom side of the tongue; and

the socket structure is thereby configured for two separate operational states:

a first operational state when the plug is normally inserted into the connection slot with the at least one row of connection terminals of the plug facing the second surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of second contacts and the tongue is centrally located within the connection slot, wherein the connection slot is symmetric with symmetric up and down chambers, and symmetric left and right chambers around the tongue; and

a second operational state when the plug is oppositely inserted into the connection slot with the at least one row of connection terminals of the plug facing the first surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of first contacts, and the tongue is centrally located within the connection slot, wherein the connection slot is symmetric with symmetric up and down chambers, and symmetric left and right chambers around the tongue.

122. (New) A socket structure configured for a duplex electrical connection, the socket structure comprising:

a plastic base;

a connection slot, which is disposed in front of the plastic base and configured to be connected to a plug having at least one row of connection terminals;

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a tongue, which has a first surface and a second surface disposed opposite the first surface, and is disposed on one end of the plastic base and within the connection slot, such that chambers of the connection slot on two sides of the tongue allow the plug to be normally and oppositely inserted and positioned into the connection slot,

at least one row of first contacts separately arranged on the first surface of the tongue, wherein each of the first contacts is electrically connected to a respective first pin extending out of the plastic base; and

at least one row of second contacts separately arranged on the second surface of the tongue, wherein:

each of the second contacts is electrically connected to a respective second pin extending out of the plastic base;

the at least one row of first contacts have increasing assigned serial numbers in a first direction and the at least second row of second contacts have decreasing assigned serial numbers in the first direction;

when the plug is normally inserted into the connection slot with the at least one row of connection terminals of the plug facing the second surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of second contacts, and the tongue is disposed at central location within the connection slot so that the connection slot is formed with up and down chambers, and left and right chambers around the tongue with the up and down chambers being symmetrical, and the left and right chambers being symmetrical; and

when the plug is oppositely inserted into the connection slot with the at least one row of connection terminals of the plug facing the first surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of first contacts, and the tongue is disposed at the middle within the connection slot so that the connection slot is formed with symmetric profiles in up, down, left and right chambers around the tongue with the up and down chambers being symmetrical, and the left and right chambers being symmetrical; and

the tongue operative for signal transmission on one side when connected in a first configuration, and operative for signal transmission simultaneouslyly on both sides when connected in a second configuration.

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123. The socket structure of claim 122, wherein the first and the second surfaces of the tongue are castellated, and wherein the first contacts are at least partially on a grooved portion of the first surface such that at least a portion of the first contacts are proud of the first surface, and the second contacts are at least partially on a grooved portion of the second surface such that at least a portion of the second contacts are proud of the second surface.

124. (New) The socket structure of claim 122, wherein a thickness of the tongue is less than third of a height of the connection slot.

125. (New) A socket structure configured for a duplex electrical connection, the socket structure comprising:

a plastic base;

a connection slot, which is disposed in front of the plastic base and configured to be connected to a plug having at least one row of connection terminals;

a tongue, which has a first surface and a second surface disposed opposite the first surface, and is disposed on one end of the plastic base and within the connection slot, such that chambers of the connection slot on two sides of the tongue allow the plug to be normally and oppositely inserted and positioned into the connection slot,

at least one row of first contacts separately arranged on the first surface of the tongue, wherein each of the first contacts is electrically connected to a respective first pin extending out of the plastic base; and

at least one row of second contacts separately arranged on the second surface of the tongue, wherein:

each of the second contacts is electrically connected to a respective second pin extending out of the plastic base;

the at least one row of first contacts have increasing assigned serial numbers in a first direction and the at least second row of second contacts have decreasing assigned serial numbers in the first direction;

when the plug is normally inserted into the connection slot with the at least one row of connection terminals of the plug facing the second surface of the tongue, the at least one row of

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connection terminals of the plug are electrically connected to the at least one row of second contacts, and the tongue is disposed at central location within the connection slot so that the connection slot is formed with up and down chambers, and left and right chambers around the tongue with the up and down chambers being symmetrical, and the left and right chambers being symmetrical; and

when the plug is oppositely inserted into the connection slot with the at least one row of connection terminals of the plug facing the first surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of first contacts, and the tongue is disposed at the middle within the connection slot so that the connection slot is formed with symmetric profiles in up, down, left and right chambers around the tongue with the up and down chambers being symmetrical, and the left and right chambers being symmetrical; and

the tongue is operative for signal transmission on one side when connected in a first configuration, and operative for signal transmission simultaneously on both sides when connected in a second configuration; and

the socket structure is further operative to receive one of two different types of universal serial bus plugs.

126. (New) The socket structure of claim 125, wherein the first and the second surfaces of the tongue are castellated, and wherein the first contacts are at least partially placed in grooves of the first surface such that at least a portion of the first contacts are proud of the first surface, and the second contacts are at least partially placed in grooves of the second surface such that at least a portion of the second contacts are proud of the second surface.

127. (New) The socket structure of claim 125, wherein a thickness of the tongue is less than third of a height of the connection slot.

128. (New) A socket structure configured for a duplex electrical connection, the socket structure comprising:

a plastic base;

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a connection slot, which is disposed in front of the plastic base and configured to be connected to a plug having at least one row of connection terminals;

a tongue, which has a first surface and a second surface disposed opposite the first surface, and is disposed on one end of the plastic base and within the connection slot, such that chambers of the connection slot on two sides of the tongue allow the plug to be normally and oppositely inserted and positioned into the connection slot,

at least one row of first contacts separately arranged on the first surface of the tongue, wherein each of the first contacts is electrically connected to a respective first pin extending out of the plastic base; and

at least one row of second contacts separately arranged on the second surface of the tongue, wherein:

each of the second contacts is electrically connected to a respective second pin extending out of the plastic base;

the at least one row of first contacts have increasing assigned serial numbers in a first direction and the at least second row of second contacts have decreasing assigned serial numbers in the first direction;

when the plug is normally inserted into the connection slot with the at least one row of connection terminals of the plug facing the second surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of second contacts, and the tongue is disposed at central location within the connection slot so that the connection slot is formed with up and down chambers, and left and right chambers around the tongue with the up and down chambers being symmetrical, and the left and right chambers being symmetrical; and

when the plug is oppositely inserted into the connection slot with the at least one row of connection terminals of the plug facing the first surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of first contacts, and the tongue is disposed at the middle within the connection slot so that the connection slot is formed with symmetric profiles in up, down, left and right chambers around the tongue with the up and down chambers being symmetrical, and the left and right chambers being symmetrical; and

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the tongue is operative for signal transmission on one side when connected in a first configuration, and operative for signal transmission simultaneously on both sides when connected in a second configuration; and

the socket structure is further operative to receive one of two different styles of universal serial bus plugs.

129. (New) The socket structure of claim 128, wherein the first and the second surfaces of the tongue are castellated, and wherein the first contacts are at least partially placed in grooves of the first surface such that at least a portion of the first contacts are proud of the first surface, and the second contacts are at least partially placed in grooves of the second surface such that at least a portion of the second contacts are proud of the second surface.

130. (New) The socket structure of claim 128, wherein a thickness of the tongue is less than third of a height of the connection slot.

131. (New) A socket structure with duplex electrical connection, the socket structure comprising:

a plastic base;

a connection slot, which is disposed in front of the plastic base and configured to be connected to a plug having at least one row of connection terminals;

a tongue, which has a first surface with recesses, and a second surface with recesses, the second surface disposed opposite the first surface, the tongue being disposed on one end of the plastic base and within the connection slot, such that chambers of the connection slot on two sides of the tongue allow the plug to be normally and oppositely inserted and positioned into the connection slot;

at least one row of first contacts separately arranged on the first surface of the tongue, wherein each of the first contacts is electrically connected to a respective first pin extending out of the plastic base; and

at least one row of second contacts separately arranged on the second surface of the tongue, wherein:

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each of the second contacts is electrically connected to a respective second pin extending out of the plastic base;

the socket structure is operative to simultaneously electrically connect via the first and second contacts;

the at least one row of first contacts has a functional reverse mirror configuration relative to the at least one row of second contacts, and the socket structure is thereby configured for two separate operational states:

a first operational state when the plug is normally inserted into the connection slot with the at least one row of connection terminals of the plug facing the second surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of second contacts and the tongue is disposed within the connection slot, wherein the connection slot is symmetric with symmetric up and down chambers, and symmetric left and right chambers around the tongue; and

a second operational state when the plug is oppositely inserted into the connection slot with the at least one row of connection terminals of the plug facing the first surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of first contacts, and the tongue is disposed within the connection slot, wherein the connection slot is symmetric with symmetric up and down chambers, and symmetric left and right chambers around the tongue.

132. (New) A socket structure with duplex electrical connection, the socket structure comprising:

a plastic base;

a connection slot, which is disposed in front of the plastic base and configured to be connected to a plug having at least one row of connection terminals;

a tongue, which has a top side with a first surface with grooves, and bottom side with a second surface with grooves, the second surface disposed opposite the first surface, the tongue being disposed on one end of the plastic base and within the connection slot, such that chambers of the connection slot on two sides of the tongue allow the plug to be normally and oppositely inserted and positioned into the connection slot;

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at least one row of first contacts separately arranged on the first surface of the tongue, wherein each of the first contacts is electrically connected to a first pin extending out of the plastic base; and

at least one row of second contacts separately arranged on the second surface of the tongue, wherein:

each of the second contacts is electrically connected to a second pin extending out of the plastic base;

the socket structure is operative to simultaneously electrically connect on the top and the bottom side of the tongue;

the at least one row of first contacts has a functional reverse mirror configuration relative to the at least one row of second contacts, and the socket structure is thereby configured such that:

when the plug is normally inserted into the connection slot with the at least one row of connection terminals of the plug facing the second surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of second contacts; and

when the plug is oppositely inserted into the connection slot with the at least one row of connection terminals of the plug facing the first surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of first contacts.

133. (New) A socket structure with duplex electrical connection, the socket structure comprising:

a plastic base;

a connection slot, which is disposed in front of the plastic base and configured to be connected to a plug having at least one row of connection terminals;

a tongue, which has a top side with a first surface with grooves, and bottom side with a second surface with grooves, the second surface disposed opposite the first surface, the tongue being disposed on one end of the plastic base and within the connection slot, such that chambers of the connection slot on two sides of the tongue allow the plug to be normally and oppositely inserted and positioned into the connection slot;

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at least one row of first contacts separately arranged on the first surface of the tongue, wherein each of the first contacts is electrically connected to a first pin extending out of the plastic base; and

at least one row of second contacts separately arranged on the second surface of the tongue, wherein:

each of the second contacts is electrically connected to a second pin extending out of the plastic base;

the socket structure is operative to simultaneously electrically connect on the top and the bottom side of the tongue;

the at least one row of first contacts has a functional reverse mirror configuration relative to the at least one row of second contacts, and the socket structure is thereby configured for reversable connection such that:

when the plug is normally inserted into the connection slot with the at least one row of connection terminals of the plug facing the second surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of second contacts; and

when the plug is oppositely inserted into the connection slot with the at least one row of connection terminals of the plug facing the first surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of first contacts.

134. (New) A socket structure with duplex electrical connection, the socket structure comprising:

a plastic base;

a connection slot, which is disposed in front of the plastic base and configured to be connected to a plug having at least one row of connection terminals;

a tongue, which has a first surface with recesses, and a second surface with recesses, the second surface disposed opposite the first surface, the tongue being disposed on one end of the plastic base and within the connection slot, such that chambers of the connection slot on two sides of the tongue allow the plug to be normally and oppositely inserted and positioned into the connection slot;

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at least one row of first contacts separately arranged on the first surface of the tongue, wherein each of the first contacts is electrically connected to a respective first pin extending out of the plastic base; and

at least one row of second contacts separately arranged on the second surface of the tongue, wherein:

each of the second contacts is electrically connected to a respective second pin extending out of the plastic base;

the socket structure is operative to simultaneously electrically connect via the first and second contacts;

some of the at least one row of first contacts has a functional reverse mirror configuration relative to some of the at least one row of second contacts, and the socket structure is thereby configured for two operational states:

a first operational state when the plug is normally inserted into the connection slot with the at least one row of connection terminals of the plug facing the second surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of second contacts and the tongue is disposed within the connection slot, wherein the connection slot is symmetric with symmetric up and down chambers, and symmetric left and right chambers around the tongue; and

a second operational state when the plug is oppositely inserted into the connection slot with the at least one row of connection terminals of the plug facing the first surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of first contacts, and the tongue is disposed within the connection slot, wherein the connection slot is symmetric with symmetric up and down chambers, and symmetric left and right chambers around the tongue.

135. (New) A socket structure with duplex electrical connection, the socket structure comprising:

a plastic base;

a connection slot, which is disposed in front of the plastic base and configured to be connected to a plug having at least one row of connection terminals;

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a tongue, which has a top side with a first surface with grooves, and bottom side with a second surface with grooves, the second surface disposed opposite the first surface, the tongue being disposed on one end of the plastic base and within the connection slot, such that chambers of the connection slot on two sides of the tongue allow the plug to be normally and oppositely inserted and positioned into the connection slot;

at least one row of first contacts separately arranged on the first surface of the tongue, wherein each of the first contacts is electrically connected to a first pin extending out of the plastic base; and

at least one row of second contacts separately arranged on the second surface of the tongue, wherein:

each of the second contacts is electrically connected to a second pin extending out of the plastic base;

the socket structure is operative to simultaneously electrically connect on the top and the bottom side of the tongue;

at least some of the at least one row of first contacts has a functional reverse mirror configuration relative to at least some of the at least one row of second contacts, and the socket structure is thereby configured such that:

when the plug is normally inserted into the connection slot with the at least one row of connection terminals of the plug facing the second surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of second contacts; and

when the plug is oppositely inserted into the connection slot with the at least one row of connection terminals of the plug facing the first surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of first contacts.

136. (New) A socket structure with duplex electrical connection, the socket structure comprising:

a plastic base;

a connection slot, which is disposed in front of the plastic base and configured to be connected to a plug having at least one row of connection terminals;

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a tongue, which has a top side with a first surface with grooves, and bottom side with a second surface with grooves, the second surface disposed opposite the first surface, the tongue being disposed on one end of the plastic base and within the connection slot, such that chambers of the connection slot on two sides of the tongue allow the plug to be normally and oppositely inserted and positioned into the connection slot;

at least one row of first contacts separately arranged on the first surface of the tongue, wherein each of the first contacts is electrically connected to a respective first pin extending out of the plastic base; and

at least one row of second contacts separately arranged on the second surface of the tongue, wherein:

each of the second contacts is electrically connected to a respective second pin extending out of the plastic base;

the socket structure is operative to simultaneously electrically connect on the top and the bottom side of the tongue;

a portion of the at least one row of first contacts has a reverse mirror configuration relative to a portion of the at least one row of second contacts, and the socket structure is thereby configured for reversable connection such that:

when the plug is normally inserted into the connection slot with the at least one row of connection terminals of the plug facing the second surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of second contacts; and

when the plug is oppositely inserted into the connection slot with the at least one row of connection terminals of the plug facing the first surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of first contacts.

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REMARKS/ARGUMENTS

By the above amendments, claims 1-34 have been cancelled without prejudice or disclaimer and new claims 35-136 have been added.

Applicant requests examination on the merits.

Applicant believes that the pending claims are in condition for allowance and such disposition is respectfully requested. In the event that a telephone conversation would further prosecution and/or expedite allowance, the Examiner is invited to contact the undersigned.

The Commissioner is hereby authorized to charge to Deposit Account No. 19-1970 any fees under 37 C.F.R. §§ 1.16 and 1.17 that may be required by this paper and to credit any overpayment to that Account. If any extension of time is required in connection with the filing of this paper and has not been separately requested, such extension is hereby Petitioned.

Respectfully submitted,

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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/974,866	**04/22/2024 03:00:07 PM Z ET**	**10186PAT-1-REI-CON**

Title of Invention

SOCKET STRUCTURE WITH DUPLEX ELECTRICAL CONNECTION

Application Information

APPLICATION TYPE	Utility - Reissue	PATENT #	-
CONFIRMATION #	1048	FILED BY	Joanne Vos
PATENT CENTER #	65191248	FILING DATE	10/27/2022
CUSTOMER #	22442	FIRST NAMED INVENTOR	Chou Hsien Tsai
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Jason Vick

Documents

TOTAL DOCUMENTS: 3

DOCUMENT		PAGES	DESCRIPTION	SIZE (KB)
AMEND_PRELIM_03_10186PAT-1-REI_CON.pdf		42	-	171 KB
AMEND_PRELIM_03_10186PAT-1-REI_CON-A.PE.pdf	(1-1)	1	Preliminary Amendment	77 KB
AMEND_PRELIM_03_10186PAT-1-REI_CON-CLM.pdf	(2-41)	40	Claims	162 KB
AMEND_PRELIM_03_10186PAT-1-REI_CON-REM.pdf	(42-42)	1	Applicant Arguments/Remarks Made in an Amendment	80 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
AMEND_PRELIM_03_10186PAT-1-REI_CON.pdf	C6A964A8E4F76152074E11356136AB3A3A1A71C609B44DE2E2B680ADCF6B07E4A6022880C737B76193E7C2D61FA2CBF61D4E845E57BFA3802AC46945A08A9F8C
AMEND_PRELIM_03_10186PAT-1-REI_CON-A.PE.pdf	F9B3EC003DE7AF72993B003AA990A40BEF7339D6B624F649BE65972240B6AA24C7EE63A4D231D2DC1F4CFF8A9FFA21848B628466346CF181F335220FD3ECAFC2
AMEND_PRELIM_03_10186PAT-1-REI_CON-CLM.pdf	3143F7319C4F3CE89502DCFCC683F87B426C033CA6B940B8E3AB047EEA7313D12B6BBD09D106800C0E6D5389CC0137B068D14AE3D5AC37CE8BEF087565D1C3C9
AMEND_PRELIM_03_10186PAT-1-REI_CON-REM.pdf	3022B64A74461FF8309740E24821DD732F3B55CD824AC814F61A976D351B3AE35FAE9D22B64DED40922A6823309B1DFD420B545B1A2F6127B7829D9EF038F0F8

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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ELECTRONIC PAYMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/974,866	04/22/2024 03:00:07 PM Z ET	10186PAT-1-REI-CON

Title of Invention

SOCKET STRUCTURE WITH DUPLEX ELECTRICAL CONNECTION

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CUSTOMER #	22442	FILING DATE	10/27/2022
CORRESPONDENCE ADDRESS	-	FIRST NAMED INVENTOR	Chou Hsien Tsai

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CARD / 0409	E20244LF00469218	Joanne Vos

PRE-AUTHORIZED ACCOUNT	PRE-AUTHORIZED CATEGORY
191970	37 CFR 1.16 (National application filing, search, and examination fees); 37 CFR 1.17 (Patent application and reexamination processing fees); 37 CFR 1.19 (Document supply fees); 37 CFR 1.21 (Miscellaneous fees and charges)

FEE CODE	DESCRIPTION	ITEM PRICE($)	QUANTITY	ITEM TOTAL($)
2205	EACH REISSUE CLAIM IN EXCESS OF 20	40.00	82	3280.00
2204	EACH REISSUE INDEPENDENT CLAIM IN EXCESS OF THREE	192.00	22	4224.00
			TOTAL AMOUNT:	$7,504.00

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 17/974,866	Filing Date 10/27/2022	☐ To be Mailed

ENTITY: ☐ LARGE ☑ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $50 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $240 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	04/22/2024	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 102	Minus	** 20	= 82		x $40 =	3280
	Independent (37 CFR 1.16(h))	* 25	Minus	*** 3	= 22		x $192 =	4224
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	7504

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LDRC
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/ANDREW J JAMES JR/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re the Application of: Chou Hsien Tsai	)	Group Art Unit: 3992
Application No.: 17/974,866	)	Examiner: JAMES A MENEFEE
Filed: October 27, 2022	)	Confirmation No.: 1048
Atty. File No.: 10186PAT-1-REI-CON	)	

For: SOCKET STRUCTURE WITH DUPLEX ELECTRICAL CONNECTION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313

PRELIMINARY AMENDMENT

Dear Commissioner:

Prior to the initial review of the above-identified patent application by the Examiner, please enter the following Preliminary Amendment. Although Applicants do not believe that any fees are due based upon the filing of this Preliminary Amendment, please charge any such fees to Deposit Account 19-1970.

Please amend the above-identified patent application as follows:

Amendments to the Specification begin on page **2** of this paper.

Remarks begin on page **3** of this paper.

Samsung, EX1002, p. 2800

AMENDMENTS TO THE SPECIFICATION

Please amend the first paragraph of the application beneath the title with the following:

CROSS-REFERENCE TO RELATED APPLICATIONS

The present application is a Continuation Reissue of U.S. Patent Application No. 17/020,359, filed September 14, 2020, now U.S. Patent No. RE49,287, and the present application is a Reissue of U.S. Patent Application No. 12/759,408, filed April 13, 2010, now U.S. Patent No. 8,198,563. U.S. Patent Application No. 17/020,359 is a Reissue of U.S. Patent Application No. 12/759,408, filed April 13, 2010, now U.S. Patent No. 8,198,563, which claims priority to Taiwan Application No. 99100847, filed January 13, 2010, Taiwan Application No. 98210021, filed June 5, 2009, Taiwan Application No. 98117405, filed May 26, 2009, and Taiwan Application No. 98112573, filed April 15, 2009, each of which are incorporated herein by reference in their entirety.

Samsung, EX1002, p. 2801

REMARKS/ARGUMENTS

By this amendment, the Cross-Reference to Related Applications has been updated. No new matter is believed to be introduced by this amendment.

Applicant requests examination on the merits.

Applicant believes that the pending claims are in condition for allowance and such disposition is respectfully requested. In the event that a telephone conversation would further prosecution and/or expedite allowance, the Examiner is invited to contact the undersigned.

The Commissioner is hereby authorized to charge to Deposit Account No. 19-1970 any fees under 37 C.F.R. §§ 1.16 and 1.17 that may be required by this paper and to credit any overpayment to that Account. If any extension of time is required in connection with the filing of this paper and has not been separately requested, such extension is hereby Petitioned.

Respectfully submitted,

SHERIDAN ROSS P.C.

By: /Jason H. Vick/

Jason H. Vick
Registration No. 45,285
1560 Broadway, Suite 1200
Denver, Colorado 80202-5141
(303) 863-9700
jvick@sheridanross.com

Date: August 4, 2023

Samsung, EX1002, p. 2802

Electronic Acknowledgement Receipt

EFS ID:	48397163
Application Number:	17974866
International Application Number:	
Confirmation Number:	1048
Title of Invention:	SOCKET STRUCTURE WITH DUPLEX ELECTRICAL CONNECTION
First Named Inventor/Applicant Name:	Chou Hsien Tsai
Customer Number:	22442
Filer:	Jason Vick/Joanne Vos
Filer Authorized By:	Jason Vick
Attorney Docket Number:	10186PAT-1-REI-CON
Receipt Date:	04-AUG-2023
Filing Date:	27-OCT-2022
Time Stamp:	14:42:14
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		AMEND_PRELIM_02.pdf	87659 57876f617da2354523 4e7ac48333f86c405c b5c9	yes	3

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Preliminary Amendment	1	1
	Specification	2	2
	Applicant Arguments/Remarks Made in an Amendment	3	3
Warnings:			
Information:			
	Total Files Size (in bytes):	87659	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

<u>New Applications Under 35 U.S.C. 111</u>
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.
<u>National Stage of an International Application under 35 U.S.C. 371</u>
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.
<u>New International Application Filed with the USPTO as a Receiving Office</u>
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

MULTIPLE DEPENDENT CLAIM FEE CALCULATION SHEET

Substitute for Form PTO-1360
(For use with Form PTO/SB/06)

Application Number	Filing Date
17974866	

Applicant(s) Chou Hsien Tsai

* May be used for additional claims or amendments

CLAIMS	AS FILED		AFTER FIRST AMENDMENT		AFTER SECOND AMENDMENT	
	Indep	Depend	Indep	Depend	Indep	Depend
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Total Indep	1		0		0	
Total Depend	0	↵	0	↵	0	↵
Total Claims	1		0		0	

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
17/974,866	10/27/2022	2833	1670	10186PAT-1-REI-CON	1	1

CONFIRMATION NO. 1048

FILING RECEIPT

22442
Sheridan Ross PC
1560 Broadway
Suite 1200
Denver, CO 80202

OC000000136723268

Date Mailed: 11/01/2022

Receipt is acknowledged of this reissue patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections provided that the request is grantable.

Inventor(s)

Chou Hsien Tsai, New Taipei City, TAIWAN;

Applicant(s)

KIWI CONNECTION, LLC, Waco, TX, Assignee (with 37 CFR 1.172 Interest);

Power of Attorney: The patent practitioners associated with Customer Number 22442

Domestic Priority data as claimed by applicant

This application is a REI of 12/759,408 04/13/2010 PAT 8198563
and is a CON of 17/020,359 09/14/2020 PAT RE49287
which is a REI of 12/759,408 04/13/2010 PAT 8198563

Foreign Applications (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.)
TAIWAN 099100847 01/13/2010
TAIWAN 098210021 06/05/2009
TAIWAN 098117405 05/26/2009
TAIWAN 098112573 04/15/2009

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

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Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 10/27/2022

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/974,866**

Projected Publication Date: None, application is not eligible for pre-grant publication

Non-Publication Request: No

Early Publication Request: No
**** SMALL ENTITY ****
Title

SOCKET STRUCTURE WITH DUPLEX ELECTRICAL CONNECTION

Preliminary Class

439

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific

Samsung, EX1002, p. 2807

countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop

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Samsung, EX1002, p. 2809

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 17/974,866

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	160		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	350		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	1160		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	1 minus 20 =	*	x 50 =	0.00	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1 minus 3 =	*	x 240 =	0.00			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	1670		TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)	OR	RATE($)	ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

PTO/AIA/50 (10-17)
Approved for use through 03/31/2023. OMB 0651-0033
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995 no persons are required to respond to a collection of information unless it displays a valid OMB control number.

REISSUE PATENT APPLICATION TRANSMITTAL

Address to:

Mail Stop Reissue
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Attorney Docket No.	10186PAT-1-REI-CON
First Named Inventor	Chou Hsien Tsai
Original Patent Number	8,198,563
Original Patent Issue Date (Month/Day/Year)	06/12/2012
Priority Mail Express® Label No.	

APPLICATION FOR REISSUE OF: (*Check applicable box*) ☑ Utility Patent ☐ Design Patent ☐ Plant Patent

APPLICATION ELEMENTS (37 CFR 1.173)

1. ☑ **Fee Transmittal Form** (PTO/SB/56)
2. ☑ **Applicant asserts small entity status.** See 37 CFR 1.27
3. ☐ **Applicant certifies micro entity status.** See 37 CFR 1.29. Applicant must attach form PTO/SB/15A or B or equivalent.
4. ☑ **Specification and Claims** in double column copy of patent format (*amended, if appropriate*)
5. ☑ **Drawing(s)** (*proposed amendments, if appropriate*)
6. ☑ **Reissue Oath/Declaration or Substitute Statement** (37 CFR 1.175) (PTO/AIA/05, 06, or 07)
7. ☑ **Application Data Sheet** **NOTE:** Benefit claims under 37 CFR 1.78 and foreign priority claims under 37 CFR 1.55 MUST be set forth in an Application Data Sheet (ADS).
8. ☑ **Original U.S. Patent currently assigned?** ☑ Yes ☐ No (*If Yes, check applicable box(es)*)
   - ☑ Written Consent of all Assignees (PTO/AIA/53)
   - ☑ 37 CFR 3.73(c) Statement (PTO/AIA/96)
9. ☐ **CD-ROM or CD-R** in duplicate, Computer Program (*Appendix*) or large table
   - ☐ Landscape Table on CD
10. **Nucleotide and/or Amino Acid Sequence Submission** (*if applicable, items a. – c. are required*)
    - a. ☐ Computer Readable Form (CRF)
    - b. ☐ Specification Sequence Listing on:
      - i. ☐ CD-ROM (2 copies) or CD-R (2 copies); **or**
      - ii. ☐ Paper
    - c. ☐ Statements verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

11. ☑ **Statement of status and support for all changes to the claims.** See 37 CFR 1.173(c).
12. ☑ **Power of Attorney**
13. ☐ **Information Disclosure Statement (IDS)** PTOSB/08 or PTO-1449
    - ☐ Copies of citations attached
14. ☐ **English translation of Reissue Oath/Declaration** (*if applicable*)
15. ☐ **Return Receipt Postcard** (MPEP § 503) (Should be specifically itemized)
16. ☑ **Preliminary Amendment** (37 CFR 1.173; MPEP § 1453)
17. ☐ **Other:** _____

☑ This is a continuation reissue or divisional reissue application (*i.e.*, a second or subsequent reissue application for the same issued patent). (*Check box if applicable.*)

18. CORRESPONDENCE ADDRESS

☑ The address associated with Customer Number: 22442 **OR** ☐ Correspondence address below

Name					
Address					
City		State		Zip Code	
Country		Telephone			
Email					

Signature	/Jason H. Vick/	Date	October 27, 2022
Name (Print/Type)	Jason H. Vick	Registration No.	45,285

This collection of information is required by 37 CFR 1.173. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Mail Stop Reissue, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/SB/56 (05-22)
Approved for use through 03/31/2023. OMB 0651-0033
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REISSUE APPLICATION FEE TRANSMITTAL FORM

Docket Number (Optional): 10186PAT-1-REI-CON

Application as Filed – Part 1

	(1) Claims in Patent	(2) Claims Filed in Reissue Application	(3) Number Extra	Micro Entity Rate ($)	Micro Entity Fee ($)	Small Entity Rate ($)	Small Entity Fee ($)	Undiscounted Rate ($)	Undiscounted Fee ($)
Total Claims (37 CFR 1.16(i))	(A) 33	(B) 1	* 0 =	x =		x =	0	x =	
Ind. Claims (37 CFR 1.16(h))	(C) 1	(D) 1	** 0 =	x =		x =	0	x =	
Application Size Fee (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $420 ($210 for small entity, $105 for micro entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).								
	Filing Fee (37 CFR 1.16(e))						160		
	Search Fee (37 CFR 1.16(n))						350		
	Examination Fee (37 CFR 1.16(r))						1,160		
	Total Filing Fee						1,670		

Application as Amended – Part 2

	(1) Claims Remaining After Amendment	(2) Highest Number Previously Paid For	(3) Extra Claims Present	Micro Entity Rate ($)	Micro Entity Fee ($)	Small Entity Rate ($)	Small Entity Fee ($)	Undiscounted Rate ($)	Undiscounted Fee ($)
Total Claims (37 CFR 1.16(i))	*** -	****	=	x =		x =		x =	
Ind. Claims (37 CFR 1.16(h))	*** -	*****	=	x =		x =		x =	
Application Size Fee (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $420 ($210 for small entity, $105 for micro entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).								
			Total Additional Fee						

* Enter (B) – 20, or enter "0" if (B) is less than 20.
** Enter (D) – minus 3, or enter "0" if (D) is less than 3.
*** After any cancellation of claims.
**** If the "Highest Number of Total Claims Previously Paid For" is less than 20, enter "20" in this space.
***** If the "Highest Number of Independent Claims Previously Paid For" is less than 3, enter "3" in this space.

- [x] Applicant asserts small entity status. See 37 CFR 1.27.
- [ ] Applicant certifies micro entity status. See 37 CFR 1.29.
  Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.
- [x] The Director is hereby authorized to charge any additional fees under 37 CFR 1.16 or 1.17 which may be required, or credit any overpayment to Deposit Account No. 19-1970.
- [ ] A check in the amount of $ _____ to cover the filing/additional fee is enclosed.
- [x] Payment made via USPTO's patent electronic filing system (Patent Center or EFS-Web).
- [ ] Payment by credit card. Form PTO-2038 is attached. WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

/Jason H. Vick/ — Signature
October 27, 2022 — Date
Jason H. Vick — Typed or Printed Name
45,285 — Registration Number, if applicable
303-863-9700 — Telephone Number

A Federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to a penalty for failure to comply with an information collection subject to the requirements of the Paperwork Reduction Act of 1995, unless the information collection has a currently valid OMB Control Number. The OMB Control Number for this information collection is 0651-0033. Public burden for this form is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the information collection. Send comments regarding this burden estimate or any other aspect of this information collection, including suggestions for reducing this burden to the Chief Administrative Officer, United States Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450 or email InformationCollection@uspto.gov. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS.** If filing this completed form by mail, send to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/AIA/96 (08-12)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: KIWI CONNECTION, LLC

Application No./Patent No.: 8,198,563 Filed/Issue Date: June 12, 2012

Titled: SOCKET STRUCTURE WITH DUPLEX ELECTRICAL CONNECTION

KIWI CONNECTION, LLC, a Corporation

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☑ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

   ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (*e.g.*, bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

B. ☑ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: Chou Hsien Tsai To: KIWI INTELLECTUAL ASSETS CORPORATION

   The document was recorded in the United States Patent and Trademark Office at Reel 051885, Frame 0765, or for which a copy thereof is attached.

2. From: KIWI INTELLECTUAL ASSETS CORPORATION To: KIWI CONNECTION, LLC

   The document was recorded in the United States Patent and Trademark Office at Reel 053711, Frame 0762, or for which a copy thereof is attached.

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/AIA/96 (08-12)
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STATEMENT UNDER 37 CFR 3.73(c)

3. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

4. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

5. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☑ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Jason H. Vick/	October 27, 2022
Signature	Date
Jason H. Vick	45,285
Printed or Typed Name	Title or Registration Number

PTO/AIA/80 (07-17)
Approved for use through 03/31/2021. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(c).

I hereby appoint:

[X] Practitioners associated with Customer Number: 22442

OR

[ ] Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number	Name	Registration Number

As attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignment documents attached to this form in accordance with 37 CFR 3.73(c).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(c) to:

[X] The address associated with Customer Number: 22442

OR

[ ]

Firm or individual name		
Address		
City	State	Zip
Country		
Telephone	Email	

Assignee name and address: KIWI CONNECTION, LLC
7215 Bosque Blvd., Suite a-#102
Waco, TX 76710, USA

A copy of this form, together with a statement under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(c) may be completed by one of the practitioners appointed in this form, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee.

Signature ✓ William Tsai	Date ✓ 2020.09.14.
Name William Tsai	Telephone ✓ +886-933171393
Title Manager, KIWI Connection LLC	

This collection of information is required by 37 CFR 1.31, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public, which is to update (and by the USPTO to process) the file of a patent or reexamination proceeding. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 18 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/AIA/53 (09-12)
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REISSUE APPLICATION: CONSENT OF ASSIGNEE; STATEMENT OF NON-ASSIGNMENT	Docket Number (Optional) 10186PAT-1-REI

This is part of the application for a reissue patent based on the original patent identified below.

Name of Patentee(s)
KIWI CONNECTION, LLC

Patent Number	Date Patent Issued
8,198,563	June 12, 2012

Title of Invention
SOCKET STRUCTURE WITH DUPLEX ELECTRICAL CONNECTION

1. [X] Filed herein is a statement under 37 CFR 3.73(c). (Form PTO/AIA/96)

2. [ ] Ownership of the patent is in the inventor(s), and no assignment of the patent is in effect.

One of boxes 1 or 2 above must be checked. If multiple assignees, complete this form for each assignee. If box 2 is checked, skip the next entry and go directly to "Name of Assignee."

The written consent of all assignees and inventors owning an undivided interest in the original patent is included in this application for reissue.

The assignee(s) owning an undivided interest in said original patent is/are KIWI CONNECTION, LLC and the assignee(s) consents to the accompanying application for reissue.

Name of assignee/inventor (if not assigned)

Signature	Date
✓ William Tsai	✓ 2020.09.14

Typed or printed name and title of person signing for assignee (if assigned)

William Tsai, Manager, KIWI Connection, LLC

This collection of information is required by 37 CFR 1.172. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 6 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Doc Code: REIS.DECL
Document Description: Reissue Declaration Filed In Accordance With MPEP 1414

PTO/AIA/06 (02-17)
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REISSUE APPLICATION DECLARATION BY THE ASSIGNEE	Docket Number (optional) 10186PAT-1-REI

I hereby declare that:

The residence and mailing address of the inventor or joint inventors are stated below.

Name of the Assignee:

KIWI CONNECTION, LLC

I am authorized to act on behalf of the assignee (if the assignee is a juristic entity).

The entire title to the patent identified below is vested in said assignee, or if there are multiple assignees/owners, all assignees/owners have executed a Reissue Application Declaration to account for the entire title of the patent identified below.

Inventor Chou Hsien Tsai

Residence: City	State	Country
NEW TAIPEI CITY		TW

Mailing Address

8F.-2, NO. 1, WUQUAN 1ST RD., XINZHUANG DIST.

City	State	Zip	Country
NEW TAIPEI CITY		242	TW

☐ Additional Inventors are named on separately numbered sheets attached hereto.

Patent Number 8,198,563	Patent Issue Date June 12, 2012

I believe said inventor(s) to be the original inventor or original joint inventors of the subject matter which is described and claimed in said patent, for which a reissue patent is sought on the invention titled:

SOCKET STRUCTURE WITH DUPLEX ELECTRICAL CONNECTION

the specification of which

☑ is attached hereto.

☐ was filed on _____ as reissue application number _____.

The above-identified application was made or authorized to be made by me.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

I believe the original patent to be wholly or partly inoperative or invalid, for the reasons described below.
(Check all boxes that apply.)

☐ by reason of a defective specification or drawing.

☑ by reason of the patentee claiming more or less than he had the right to claim in the patent.

☐ by reason of other errors.

This collection of information is required by 37 CFR 1.175. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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REISSUE APPLICATION DECLARATION BY THE ASSIGNEE	Docket Number (Optional) 10186PAT-1-F

At least one error upon which reissue is based is described below. If the reissue is a broadening reissue, a claim that the application seeks to broaden must be identified and the box below must be checked:

At least one error upon which the subject reissue is based is the inclusion of claims 7-11, 16-17, 20, 23, 25, and 27-33 in the issued patent. Claims 7-11, 16-17, 20, 23, 25, and 27-33 have been canceled in the accompanying Preliminary amendment in view of an apparent administrative error by the Patent Office by including non-elected claims in the issued patent.

[Attach additional sheets, if needed.]

☐ **The application for the original patent was filed under 37 CFR 1.46 by the assignee of the entire interest.**

I hereby appoint:

☑ Practitioners associated with Customer Number: 22442

OR

☐ Practitioner(s) named below:

Name	Registration Number

as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith.

Correspondence Address: Direct all communications about the application to:

☑ The address associated with Customer Number: 22442

OR

☐ Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

Signature	William Tsai	Date (Optional)	2020.09.14
Legal name of person signing	William Tsai, Manager, KIWI Connection LLC		
Address of Assignee	7215 Bosque Blvd., Suite a-#102, Waco, TX 76710		

Samsung, EX1002, p. 2818

Doc Code: REIS.DECL
Document Description: Reissue Declaration Filed In Accordance With MPEP 1414

PTO/AIA/05 (06-12)
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REISSUE APPLICATION DECLARATION BY THE INVENTOR	Docket Number (Optional) 10186PAT-1-REI

I hereby declare that:
Each inventor's residence and mailing address are stated below next to their name.
I believe I am the original inventor or an original joint inventor of the subject matter which is described and claimed in patent number 8,198,583, granted June 12, 2012 and for which a reissue patent is sought on the invention titled SOCKET STRUCTURE WITH DUPLEX ELECTRICAL CONNECTION,

the specification of which

☑ is attached hereto.

☐ was filed on _____ as reissue application number _____.

The above-identified application was made or authorized to be made by me.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

I believe the original patent to be wholly or partly inoperative or invalid, for the reasons described below. (Check all boxes that apply.)

☐ by reason of a defective specification or drawing.

☑ by reason of the patentee claiming more or less than he had the right to claim in the patent.

☐ by reason of other errors.

At least one error upon which reissue is based is described below. If the reissue is a broadening reissue, a claim that the application seeks to broaden must be identified:

At least one error upon which the subject reissue is based is the inclusion of claims 7-11, 16-17, 20, 23, 25, and 27-33 in the issued patent. Claims 7-11, 16-17, 20, 23, 25, and 27-33 have been canceled in the accompanying Preliminary amendment in view of an apparent administrative error by the Patent Office by including non-elected claims in the issued patent.

This collection of information is required by 37 CFR 1.175. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: **Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/AIA/05 (06-12)
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(REISSUE APPLICATION DECLARATION BY THE INVENTOR, page 2)

Docket Number (Optional): 10186PAT-1-REI

Note: To appoint a power of attorney, use form PTO/AIA/81.

Correspondence Address: Direct all communications about the application to:

☑ The address associated with Customer Number: 22442

OR

☐ Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

Legal name of sole or first inventor (*E.g.*, Given Name (first and middle (if any) and Family Name or Surname)

Chou Hsien Tsai

Inventor's Signature	Date (Optional)
Hou Hsien Tsai	2020. 9. 14

Residence: City	State	Country
NEW TAIPEI CITY		TW

Mailing Address

8F.-2, NO. 1, WUQUAN 1ST RD., XINZHUANG DIST.

City	State	Zip	Country
NEW TAIPEI CITY		242	TW

☐ Additional joint inventors are named on the _____ supplemental sheet(s) PTO/AIA/10 attached hereto.

Samsung, EX1002, p. 2820

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re the Application of: Chou Hsien Tsai	)	Group Art Unit:
Application No.: **Reissue** of Appln. No. 12/759,408 (USPN 8,198,563)	)	Examiner:
Filed: Herewith	)	Confirmation No.:
Atty. File No.: 10186PAT-1-REI-CON	)	

For: SOCKET STRUCTURE WITH DUPLEX ELECTRICAL CONNECTION

STATEMENT UNDER 37 C.F.R. § 1.173(C)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

In accordance with the provisions of 37 C.F.R. § 1.173(c), the following statement is provided as to the status of all patent claims and all added claims, with an explanation as to the support in the disclosure for the concurrently made changes to the claims.

Attached hereto is a Preliminary Amendment.

Support for the new claims can at least be found throughout the specification, and original claims for example at least at column 12, lines 25 to column 12, line 36, and Figures 52-53 and other portions of the specification with overlapping embodiments.

Applicant requests examination on the merits.

Should the Examiner need any further information, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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The Commissioner is hereby authorized to charge to deposit account number 19-1970 any fees under 37 CFR § 1.16 and 1.17 that may be required by this paper and to credit any overpayment to that Account. If any extension of time is required in connection with the filing of this paper and has not been separately requested, such extension is hereby petitioned.

Respectfully submitted,

SHERIDAN ROSS P.C.

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(303) 863-9700
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Date: October 27, 2022

Samsung, EX1002, p. 2822

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re the Application of: Chou Hsien Tsai	)	Group Art Unit:
Application No.: **Reissue** of Appln. No. 12/759,408 (USPN 8,198,563)	)	Examiner:
Filed: Herewith	)	Confirmation No.:
Atty. File No.: 10186PAT-1-REI-CON	)	

For: SOCKET STRUCTURE WITH DUPLEX ELECTRICAL CONNECTION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313

PRELIMINARY AMENDMENT

Dear Commissioner:

Prior to the initial review of the above-identified patent application by the Examiner, please enter the following Preliminary Amendment. Although Applicants do not believe that any fees are due based upon the filing of this Preliminary Amendment, please charge any such fees to Deposit Account 19-1970.

Please amend the above-identified patent application as follows:

Amendments to the Specification begin on page **2** of this paper.

Amendments to the Claims are shown in the listing of claims which begin on page **3** of this paper.

Remarks begin on page 7 of this paper.

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AMENDMENTS TO THE SPECIFICATION

Please insert the below paragraph as the first paragraph of the application beneath the title:

CROSS-REFERENCE TO RELATED APPLICATIONS

The present application is a Broadening Continuation Reissue of U.S. Patent Application No. 17/020,359, filed September 14, 2020, now U.S. Patent No. RE49,287, and the present application is a Broadening Reissue of U.S. Patent Application No. 12/759,408, filed April 13, 2010, now U.S. Patent No. 8,198,563. U.S. Patent Application No. 17/020,359 is a Reissue of U.S. Patent Application No. 12/759,408, filed April 13, 2010, now U.S. Patent No. 8,198,563, which claims priority to Taiwan Application No. 99100847, filed January 13, 2010, Taiwan Application No. 98210021, filed June 5, 2009, Taiwan Application No. 98117405, filed May 26, 2009, and Taiwan Application No. 98112573, filed April 15, 2009, each of which are incorporated herein by reference in their entirety.

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AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Cancel claim 1.

Cancel claim 2.

Cancel claim 3.

Cancel claim 4.

Cancel claim 5.

Cancel claim 6.

Cancel claim 7.

Cancel claim 8.

Cancel claim 9.

Cancel claim 10.

Cancel claim 11.

Cancel claim 12.

Cancel claim 13.

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Cancel claim 14.

Cancel claim 15.

Cancel claim 16.

Cancel claim 17.

Cancel claim 18.

Cancel claim 19.

Cancel claim 20.

Cancel claim 21.

Cancel claim 22.

Cancel claim 23.

Cancel claim 24.

Cancel claim 25.

Cancel claim 26.

Cancel claim 27.

Cancel claim 28.

Cancel claim 29.

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Cancel claim 30.

Cancel claim 31.

Cancel claim 32.

Cancel claim 33.

34. (New) A socket structure with duplex electrical connection, the socket structure comprising:

a plastic base;

a connection slot, which is disposed in front of the plastic base and configured to be connected to a plug having at least one row of connection terminals;

a tongue, which has a first surface and a second surface disposed opposite the first surface, and is disposed on one end of the plastic base and within the connection slot, such that chambers of the connection slot on two sides of the tongue allow the plug to be normally and oppositely inserted and positioned into the connection slot;

at least one row of first contacts separately arranged on the first surface of the tongue, wherein each of the first contacts is electrically connected to a respective first pin extending out of the plastic base; and

at least one row of second contacts separately arranged on the second surface of the tongue, wherein:

each of the second contacts is electrically connected to a respective second pin extending out of the plastic base;

when the plug is normally inserted into the connection slot with the at least one row of connection terminals of the plug facing the second surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of second contacts; and

when the plug is oppositely inserted into the connection slot with the at least one row of connection terminals of the plug facing the first surface of the tongue, the at least one row of

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connection terminals of the plug are electrically connected to the at least one row of first contacts.

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REMARKS/ARGUMENTS

By the above amendments, claims 1-33 have been cancelled without prejudice or disclaimer.

Claims 1-33 have been cancelled in view of an apparent administrative error by the Patent Office by including non-elected claims in the issued patent. Applicant reserves the right to pursue the non-elected claims in a separate divisional application(s).

Support for the new claim can at least be found throughout the specification, and original claims for example at least at column 12, lines 25 to column 12, line 36, and Figures 52-53 and other portions of the specification with overlapping embodiments.

Applicant requests examination on the merits.

Applicant believes that the pending claims are in condition for allowance and such disposition is respectfully requested. In the event that a telephone conversation would further prosecution and/or expedite allowance, the Examiner is invited to contact the undersigned.

The Commissioner is hereby authorized to charge to Deposit Account No. 19-1970 any fees under 37 C.F.R. §§ 1.16 and 1.17 that may be required by this paper and to credit any overpayment to that Account. If any extension of time is required in connection with the filing of this paper and has not been separately requested, such extension is hereby Petitioned.

Respectfully submitted,

SHERIDAN ROSS P.C.

By: /Jason H. Vick/

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Date: October 27, 2022

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US008198563B2

(12) **United States Patent**
Tsai

(10) **Patent No.: US 8,198,563 B2**
(45) **Date of Patent: Jun. 12, 2012**

(54) **SOCKET STRUCTURE WITH DUPLEX ELECTRICAL CONNECTION**

(76) Inventor: **Chou Hsien Tsai**, Taipei Hsien (TW)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 126 days.

(21) Appl. No.: **12/759,408**

(22) Filed: **Apr. 13, 2010**

(65) **Prior Publication Data**

US 2010/0267282 A1 Oct. 21, 2010

(30) **Foreign Application Priority Data**

Apr. 15, 2009 (TW) ..... 98112573 A
May 26, 2009 (TW) ..... 98117405 A
Jun. 5, 2009 (TW) ..... 98210021 A
Jan. 13, 2010 (TW) ..... 99100847 A

(51) **Int. Cl.**
H01H 33/666 (2006.01)

(52) **U.S. Cl.** **218/140**; 218/118

(58) **Field of Classification Search** 439/660, 439/607.41
See application file for complete search history.

(56) **References Cited**

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7,359,208 B2 * 4/2008 Ni 361/752
7,361,059 B2 * 4/2008 Harkabi et al. 439/660
7,440,287 B1 * 10/2008 Ni et al. 361/752
7,670,156 B2 * 3/2010 Chen 439/108
2009/0258539 A1 * 10/2009 Zheng et al. 439/607.41

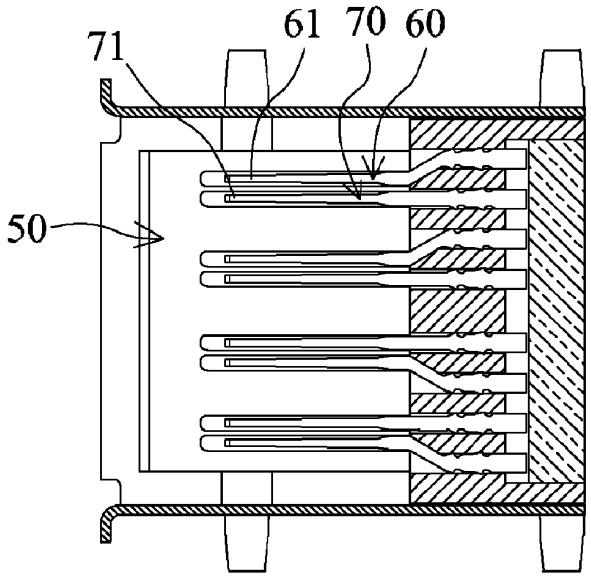
* cited by examiner

Primary Examiner — Truc Nguyen
(74) *Attorney, Agent, or Firm* — Pro-Techtor Int'l Services

(57) **ABSTRACT**

A socket structure includes a base; a slot, disposed on one end of the base and to be connected to one plug having one row of terminals; a tongue disposed on a front end of the base and within the slot so that chambers of the slot on two sides of the tongue may be normally and oppositely inserted and positioned into the slot; one row of first contacts separately arranged on one surface of the tongue, wherein each first contact is electrically connected to a first pin extending out of the base; and one row of second contacts separately arranged on the other surface of the tongue. Each second contact is electrically connected to a second pin extending out of the base. When the plug is inserted into the slot, the row of terminals of the plug are electrically connected to the row of first or second contacts.

33 Claims, 29 Drawing Sheets



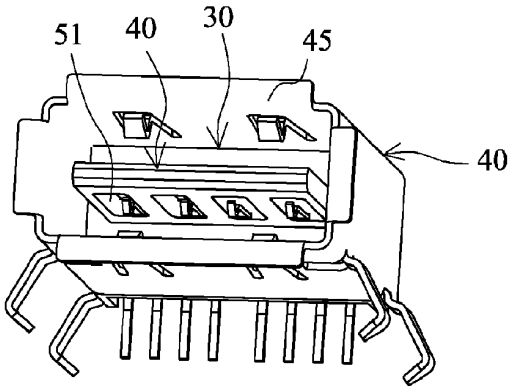


FIG. 1

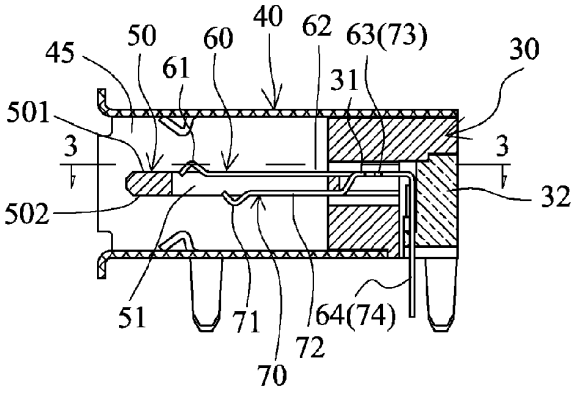


FIG. 2

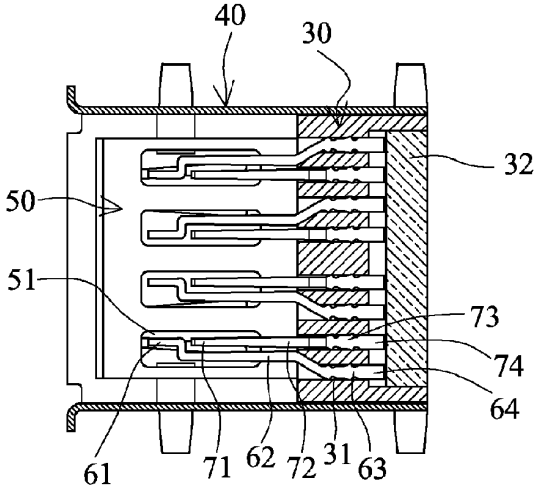


FIG. 3

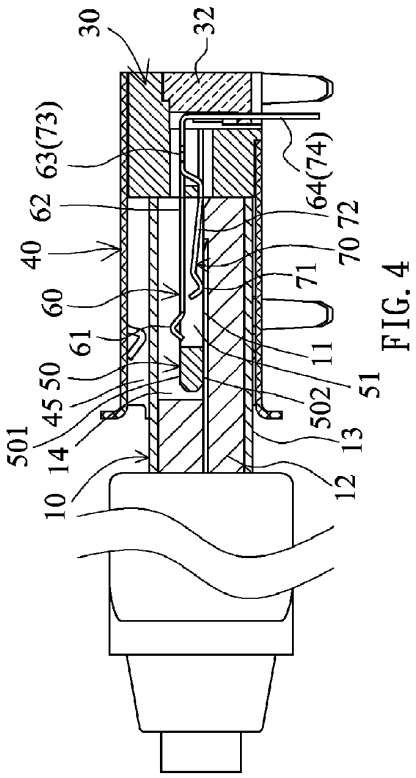


FIG. 4

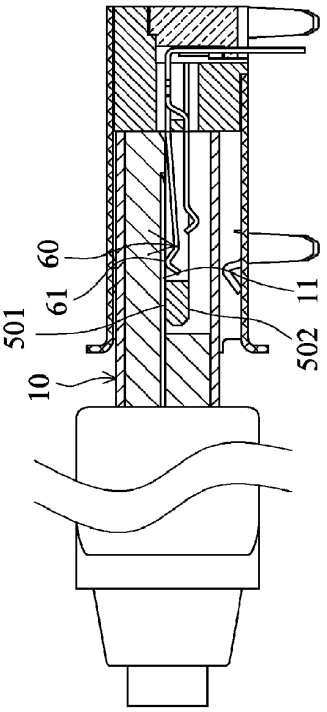


FIG. 5

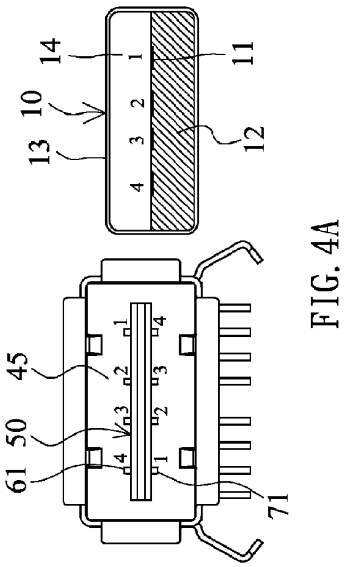


FIG. 4A

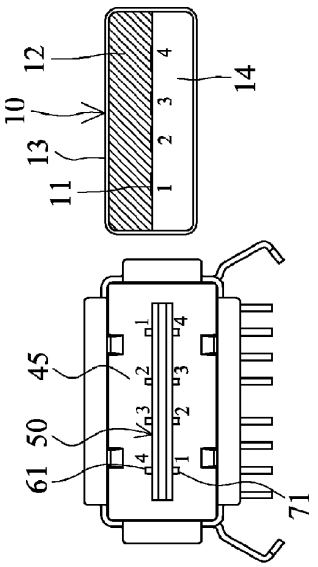


FIG. 5A

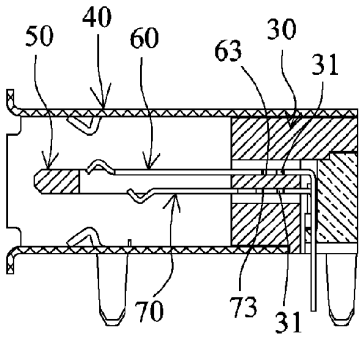


FIG. 6

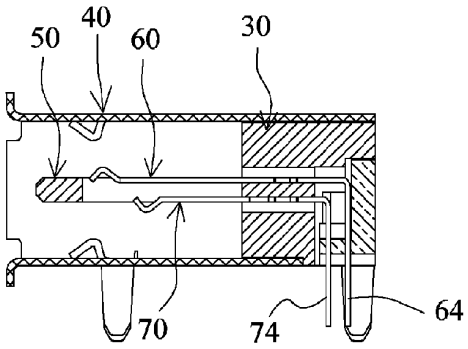


FIG. 7

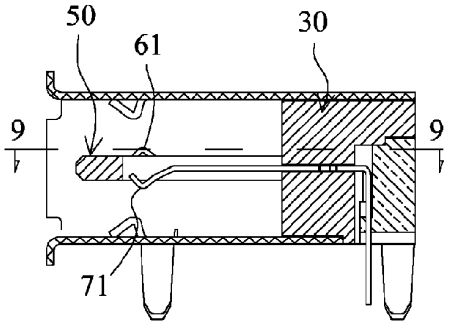


FIG. 8

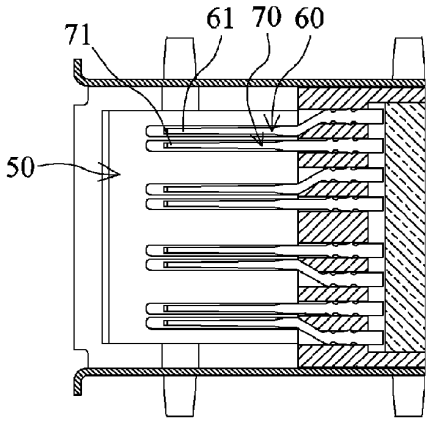


FIG. 9

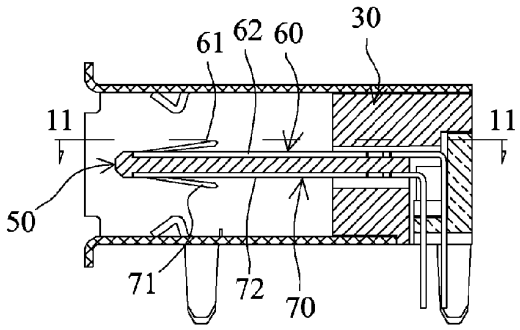


FIG. 10

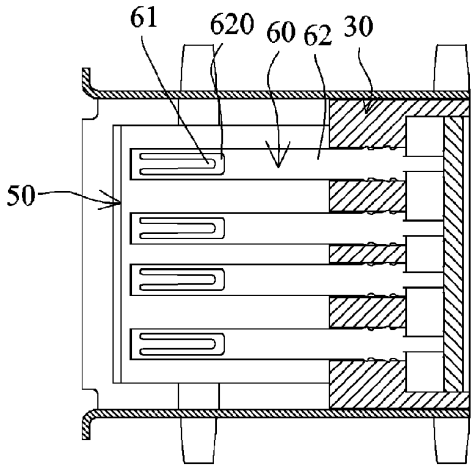


FIG. 11

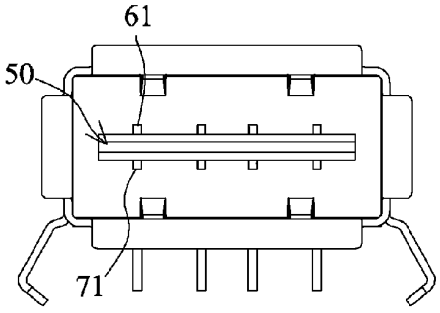


FIG. 12

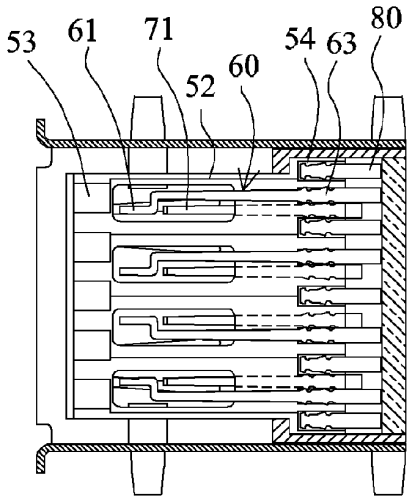


FIG. 14

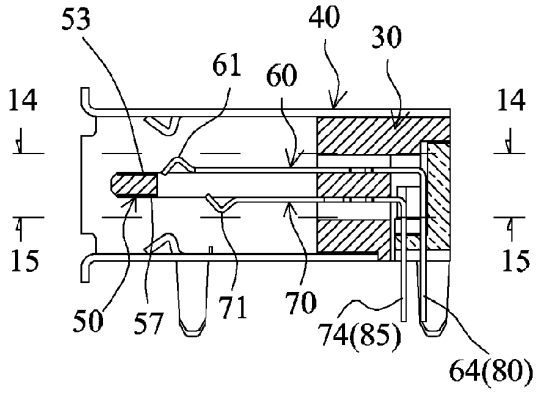


FIG. 13

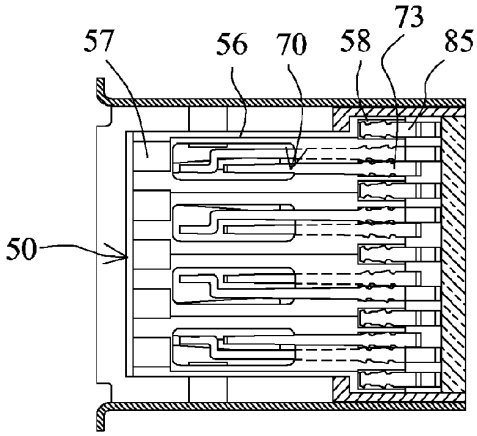


FIG. 15

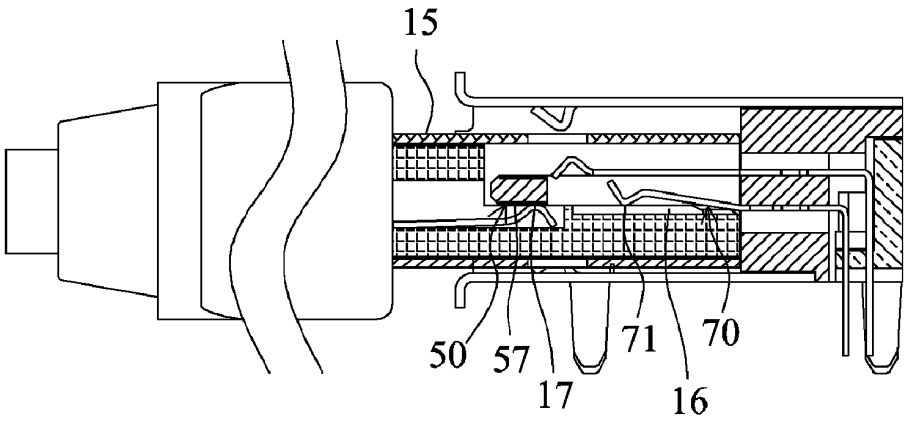


FIG. 16

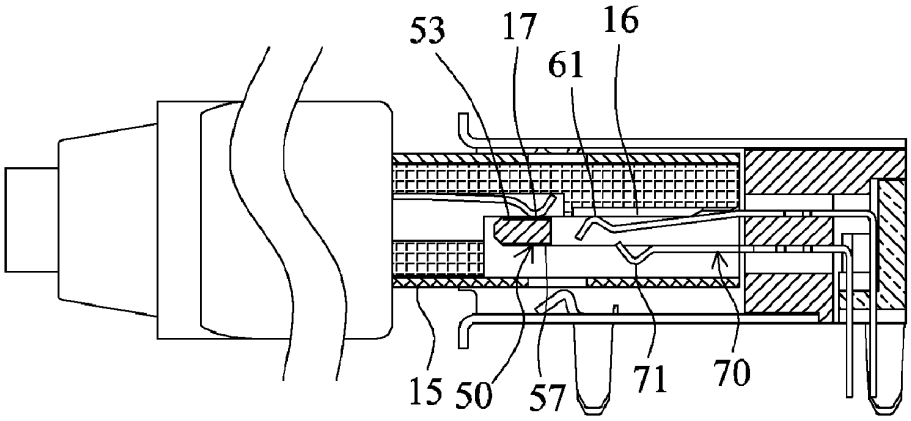


FIG. 17

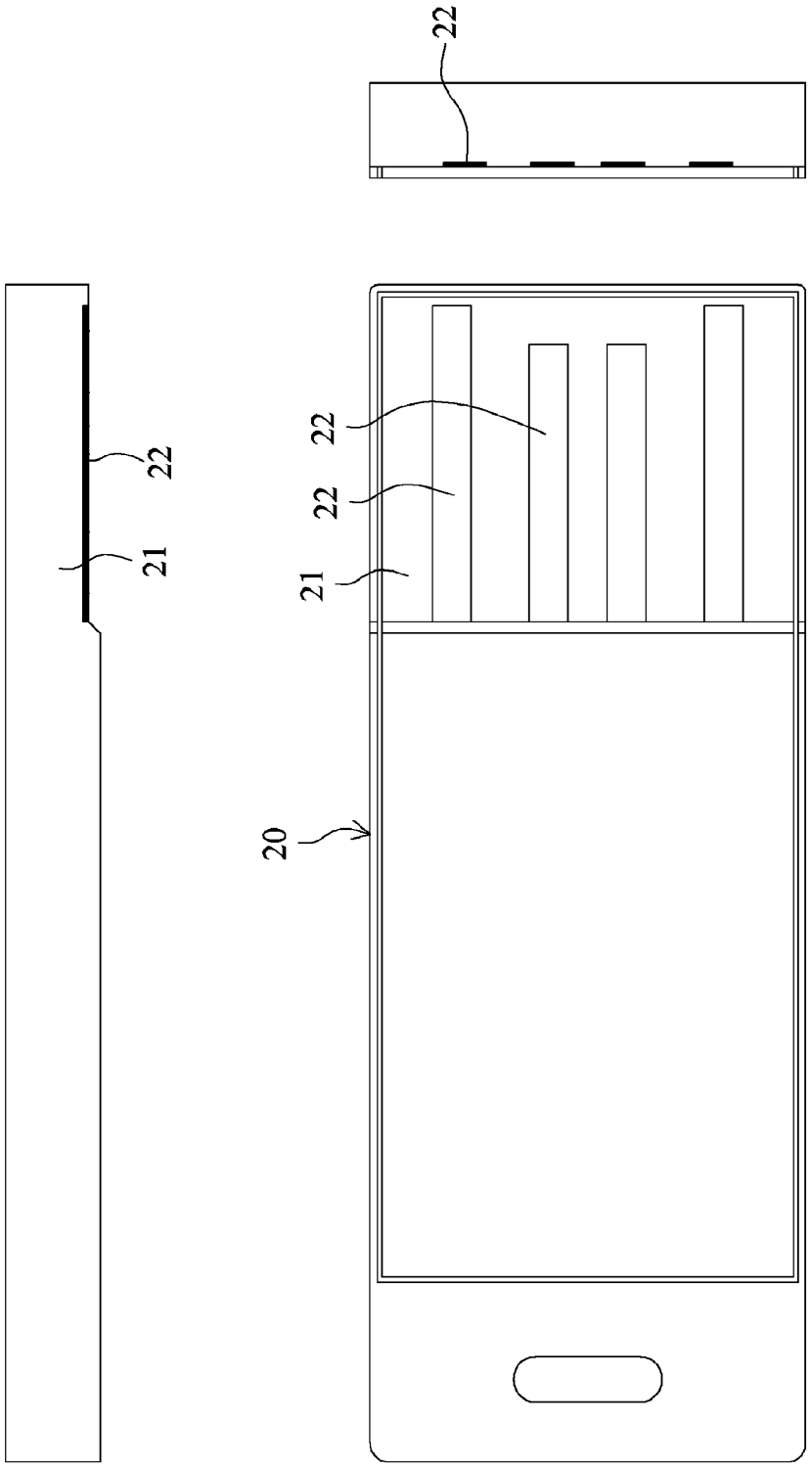


FIG. 18

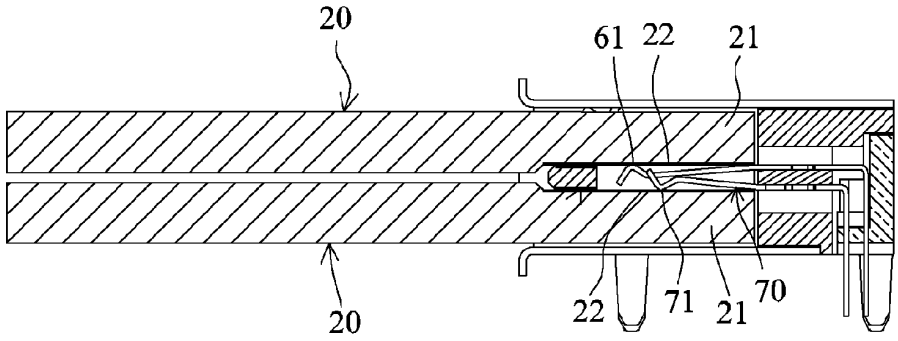


FIG. 19

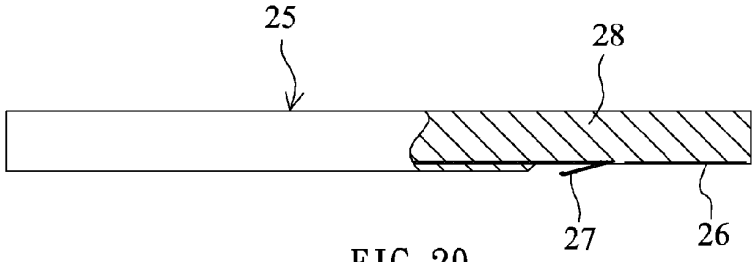


FIG. 20

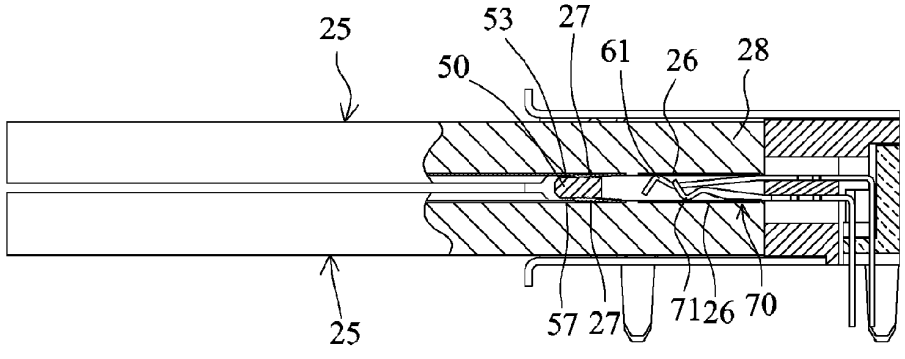


FIG. 21

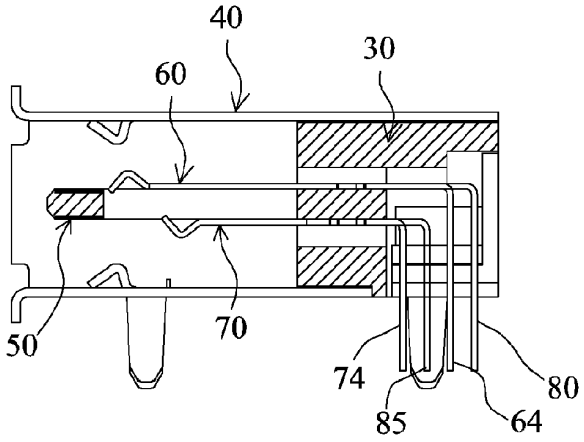


FIG. 22

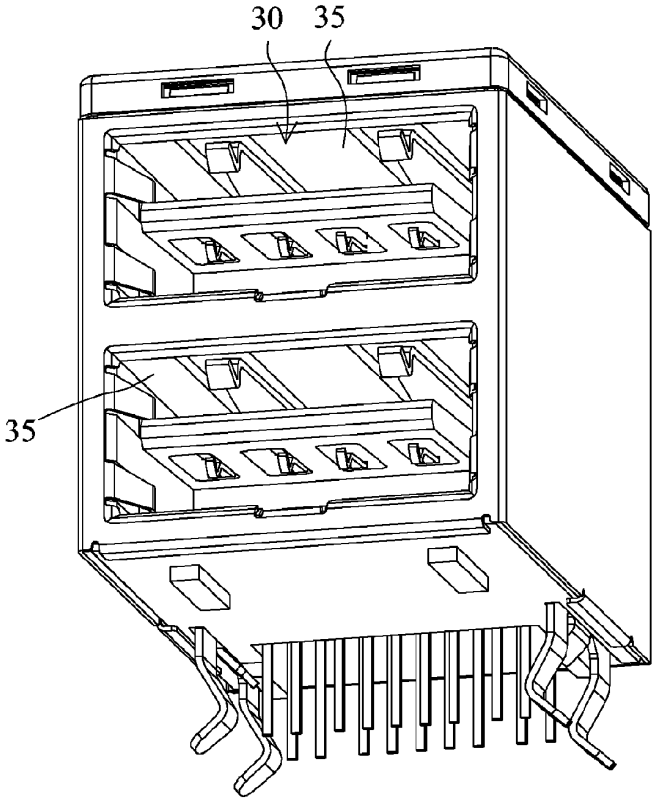


FIG. 23

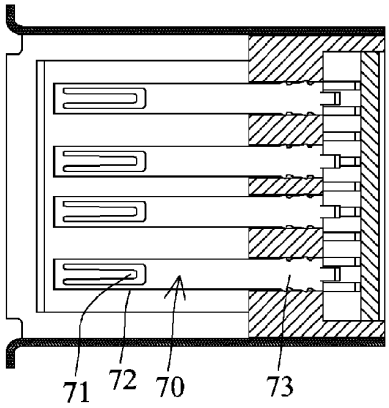


FIG. 26

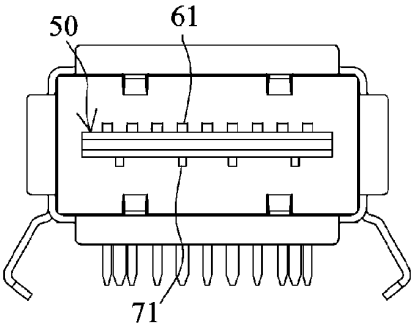


FIG. 25

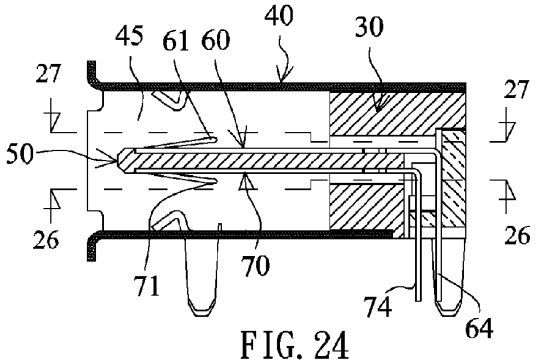


FIG. 24

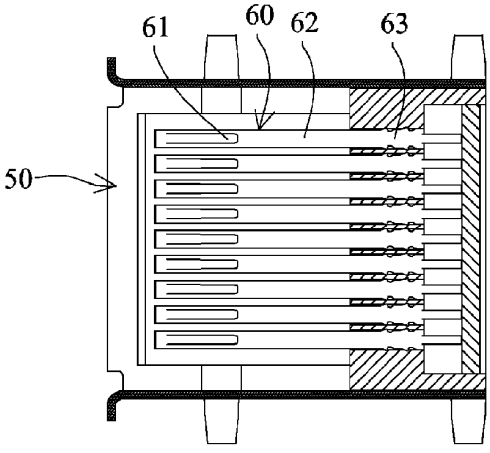


FIG. 27

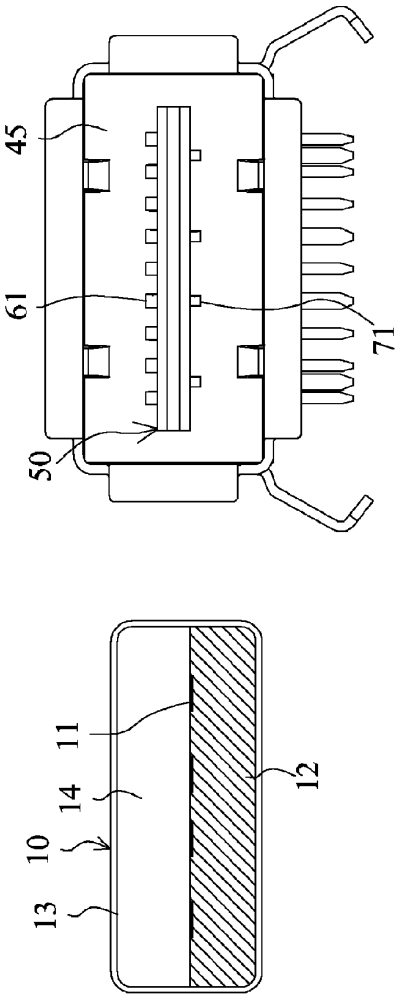


FIG. 28

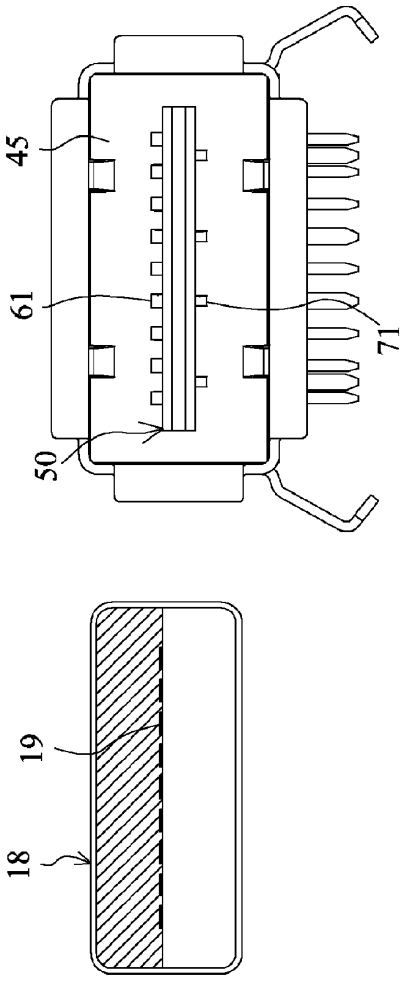


FIG. 29

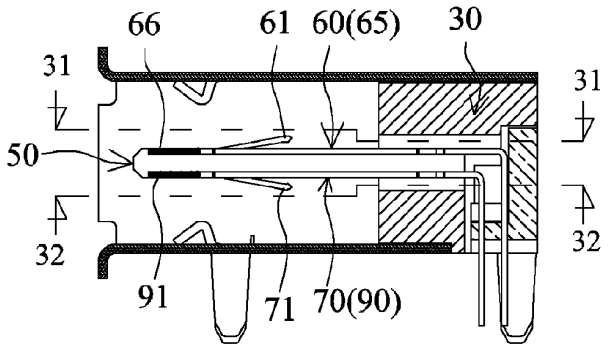


FIG. 30

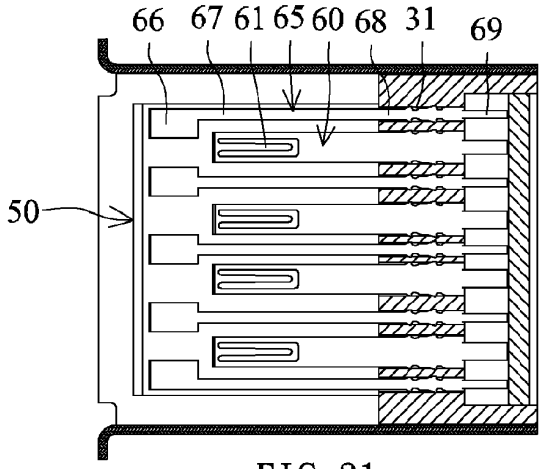


FIG. 31

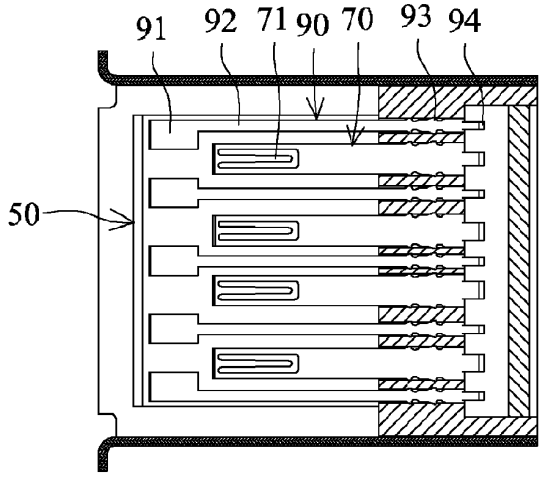


FIG. 32

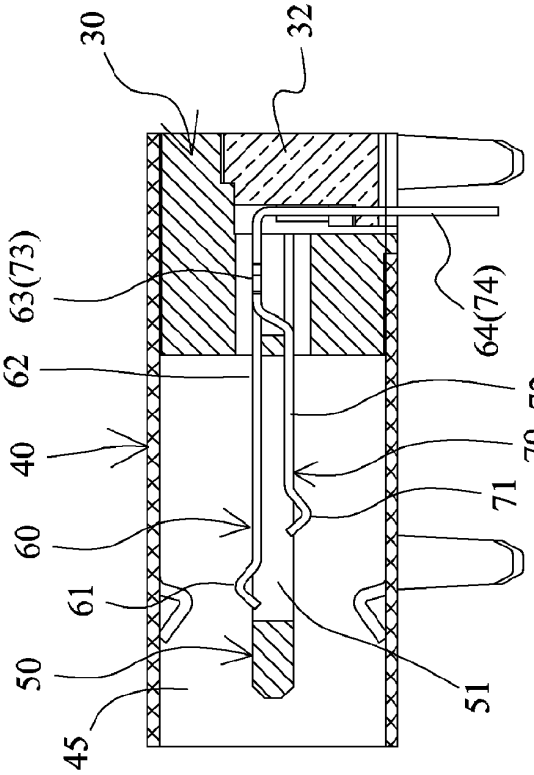


FIG. 34

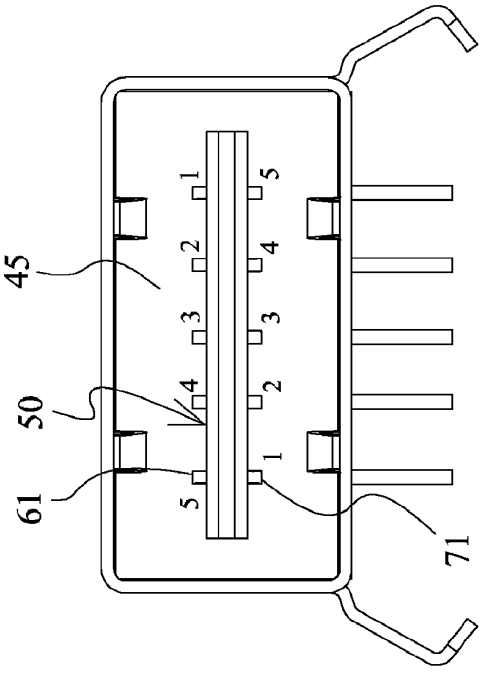
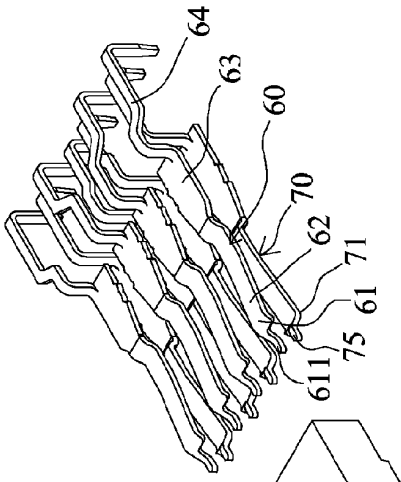


FIG. 33



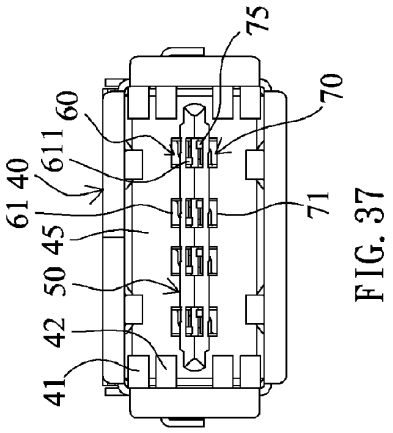


FIG. 37

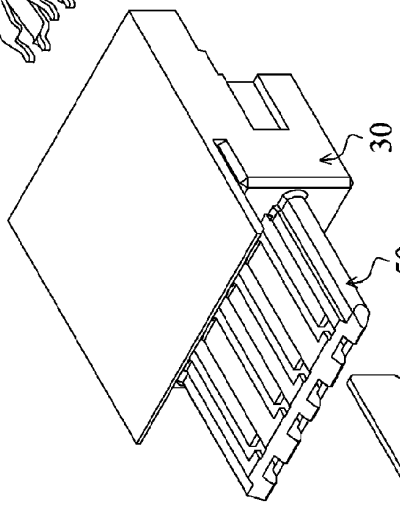


FIG. 35

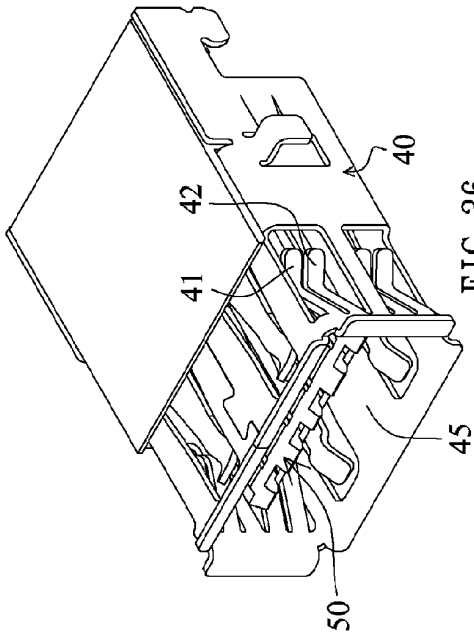
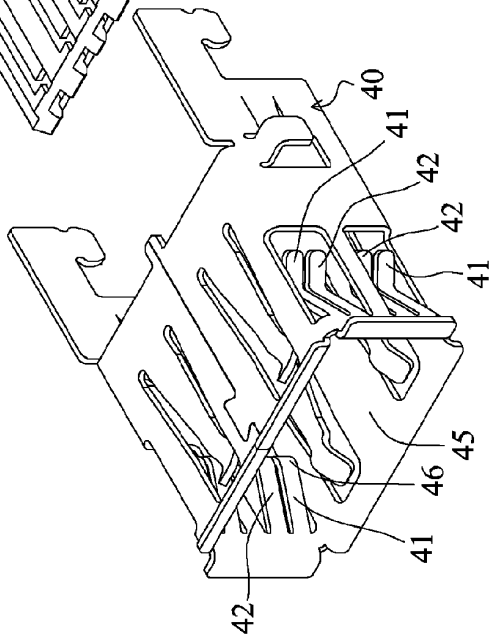


FIG. 36



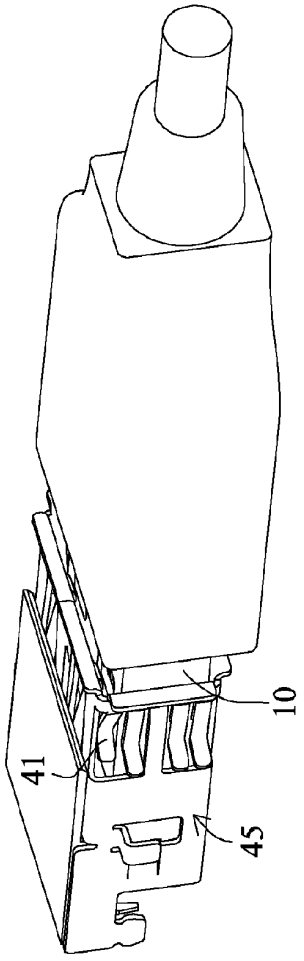


FIG. 40

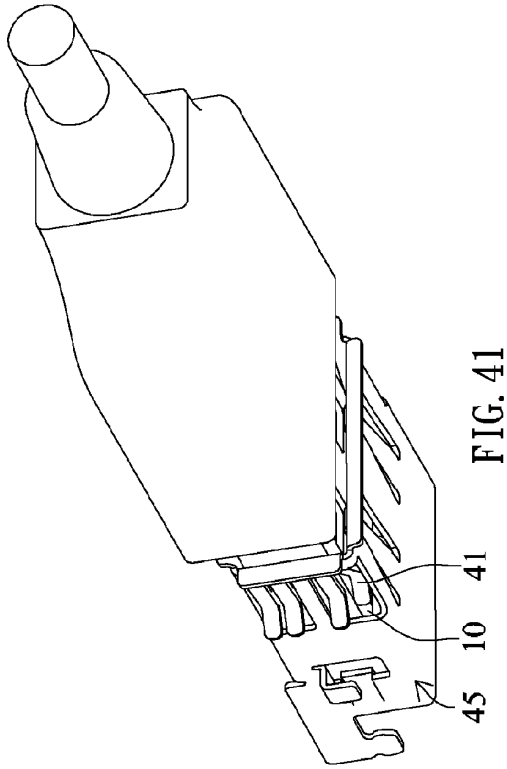


FIG. 41

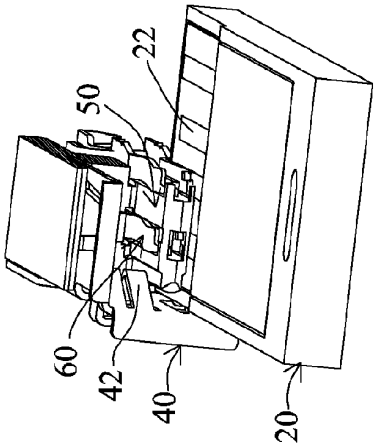


FIG. 38

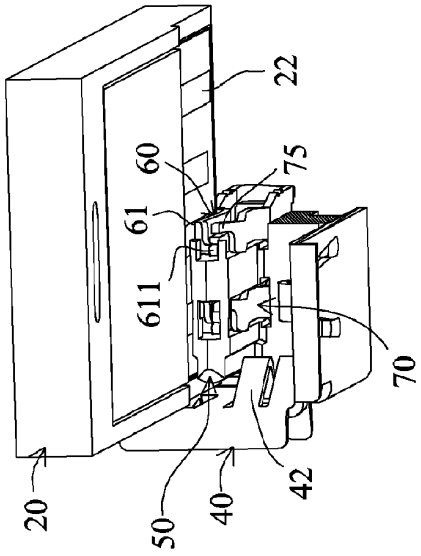


FIG. 39

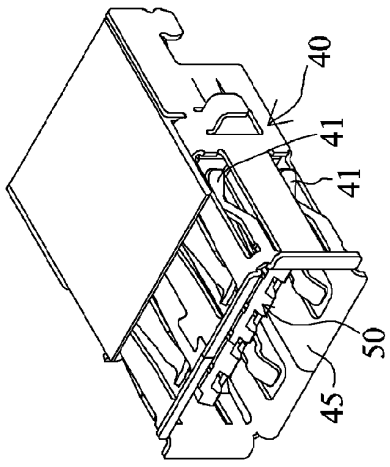


FIG. 42

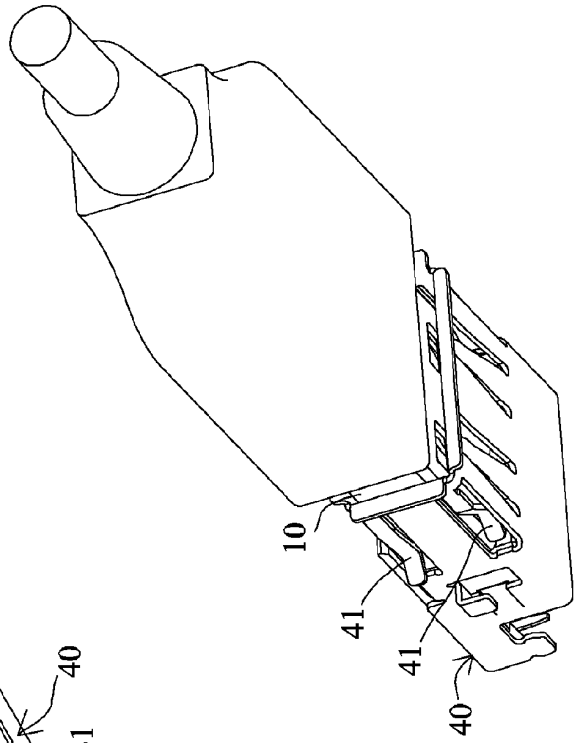


FIG. 44

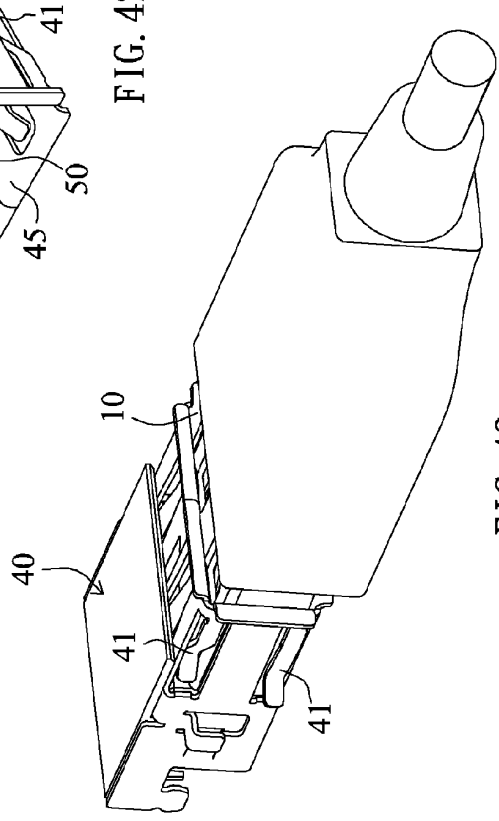


FIG. 43

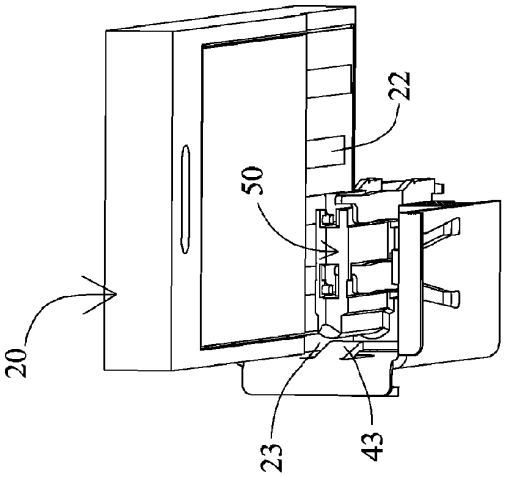


FIG. 47

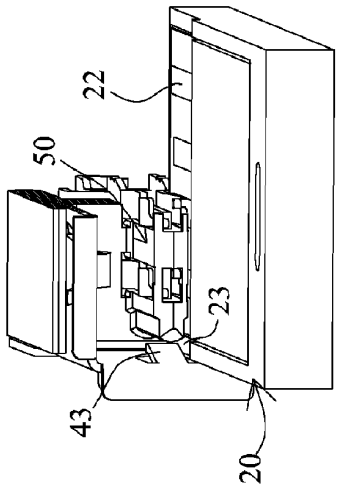


FIG. 46

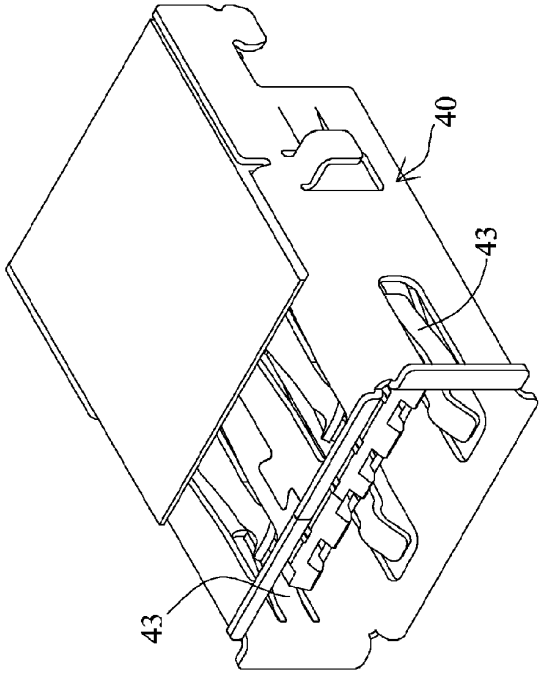


FIG. 45

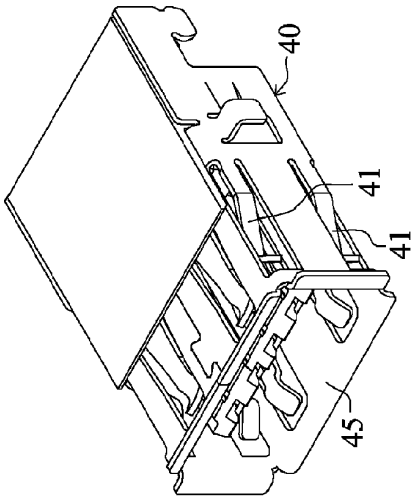


FIG. 50

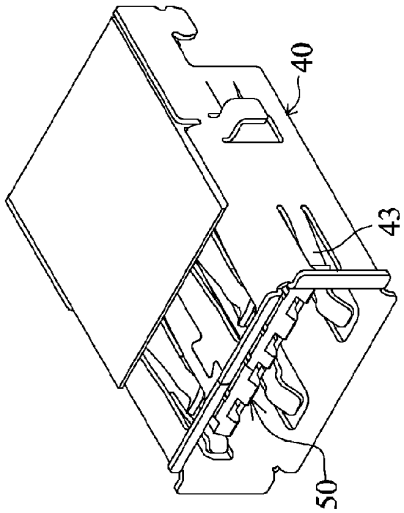


FIG. 51

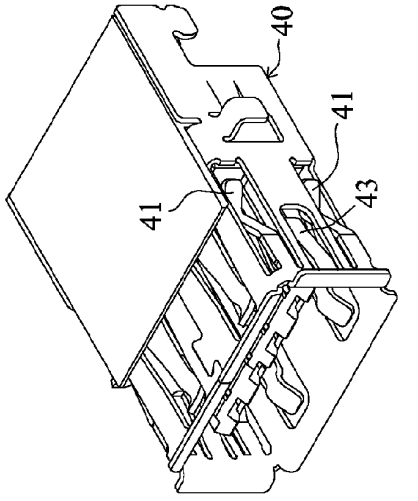


FIG. 48

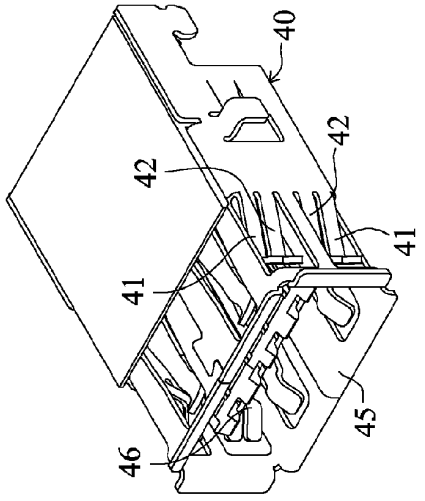


FIG. 49

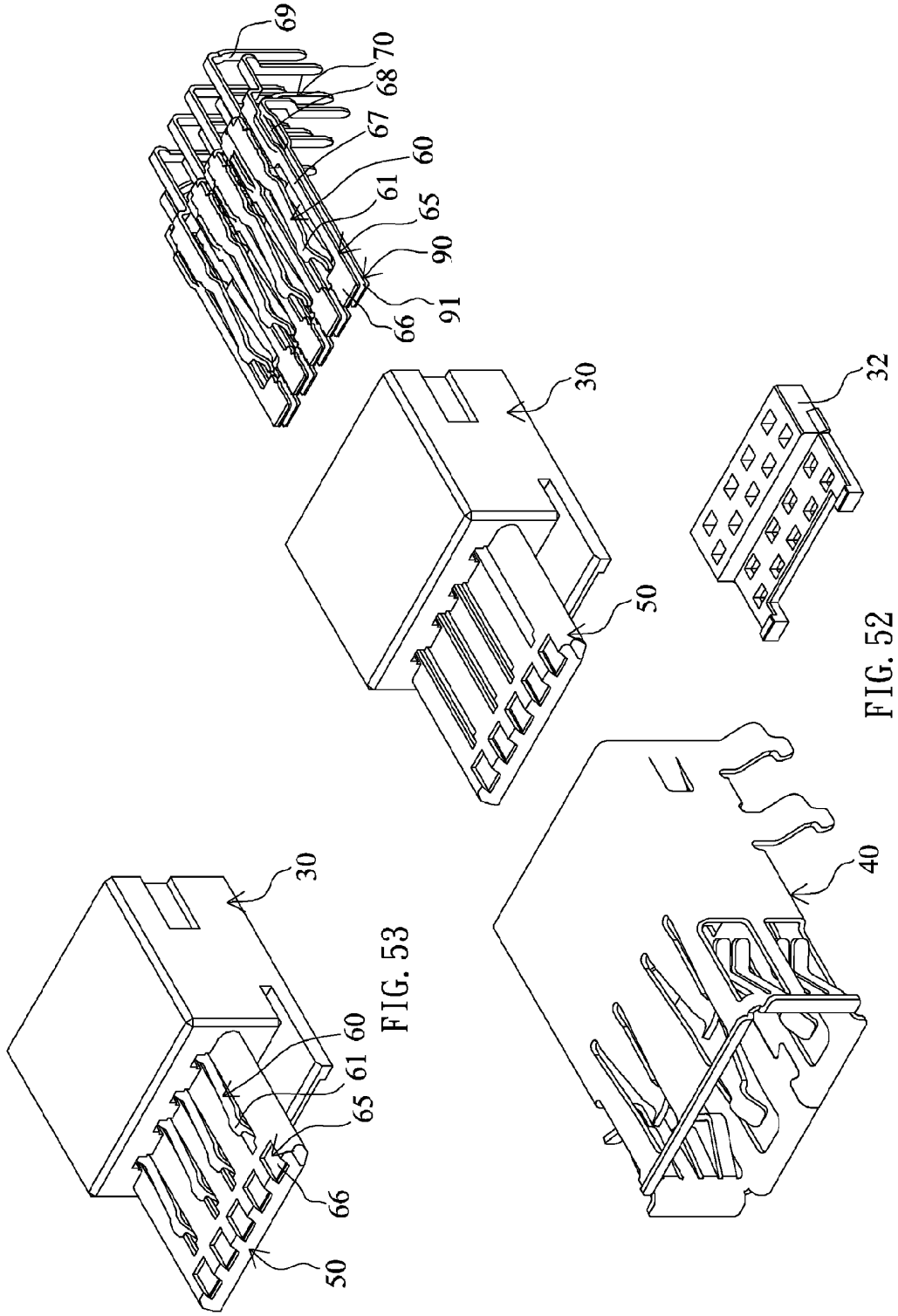
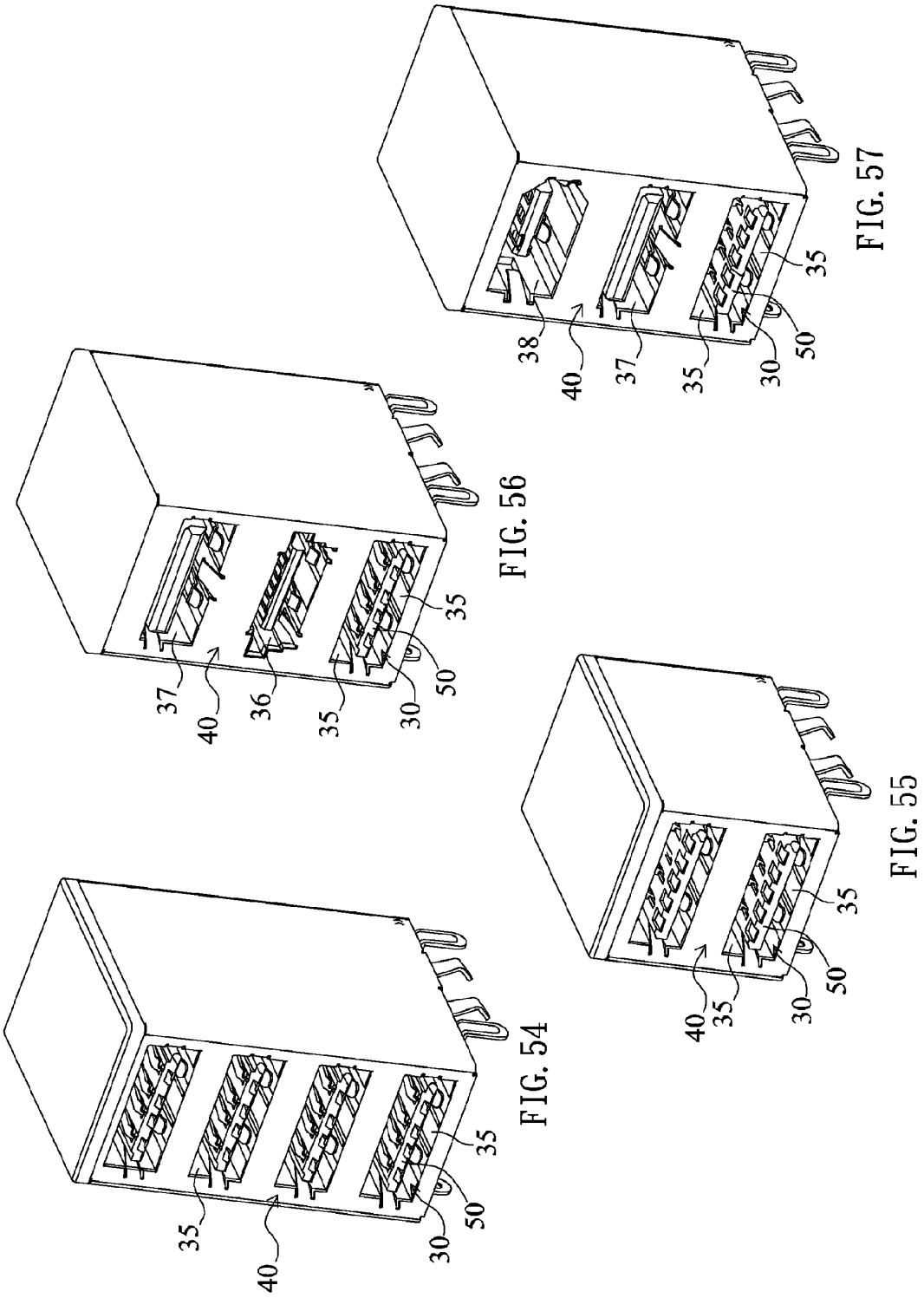


FIG. 52

FIG. 53


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FIG. 54
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FIG. 57

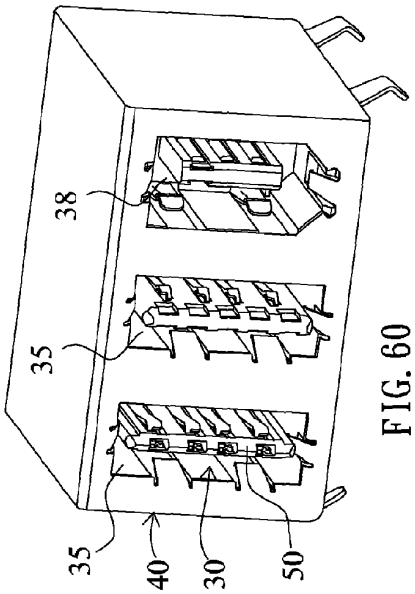


FIG. 60

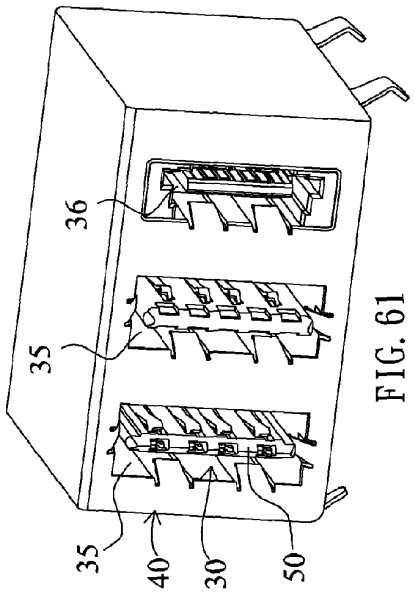


FIG. 61

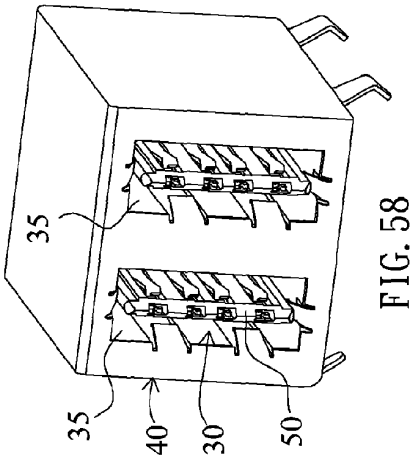


FIG. 58

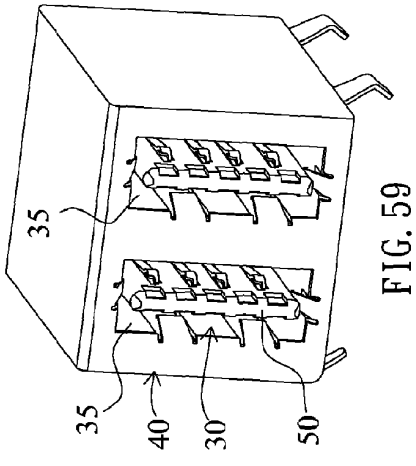


FIG. 59

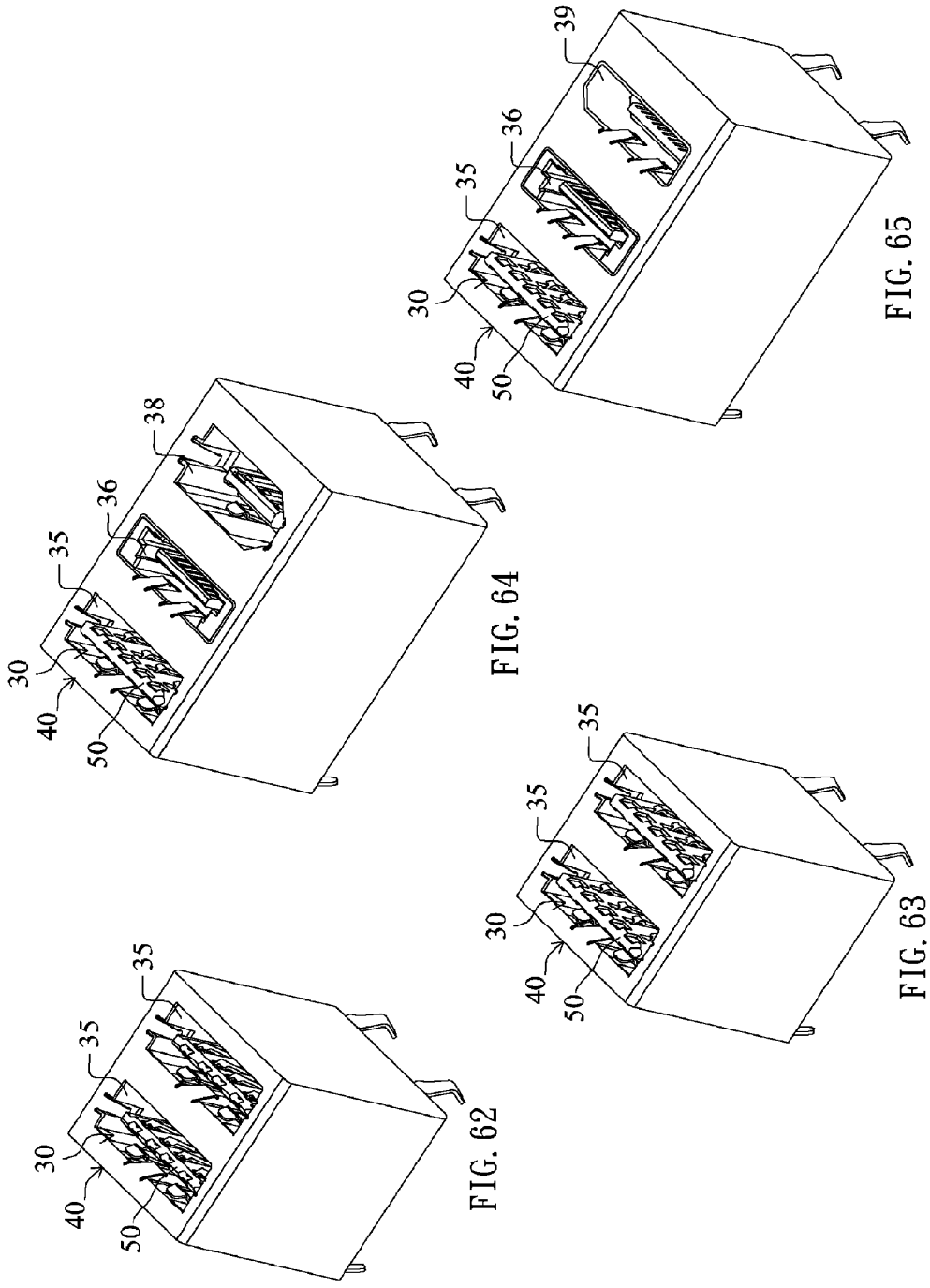


FIG. 62

FIG. 63

FIG. 64

FIG. 65

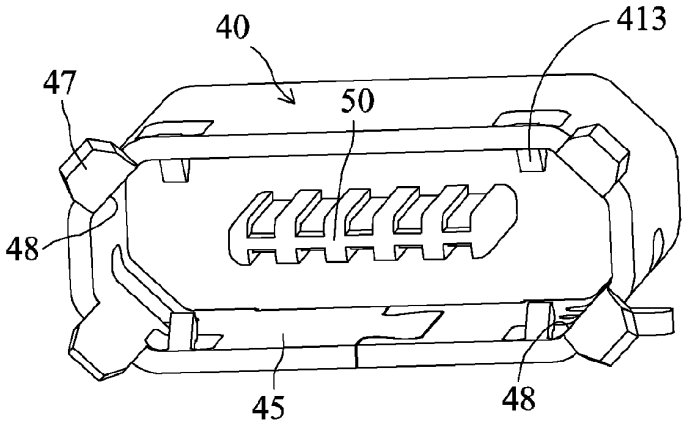


FIG. 66

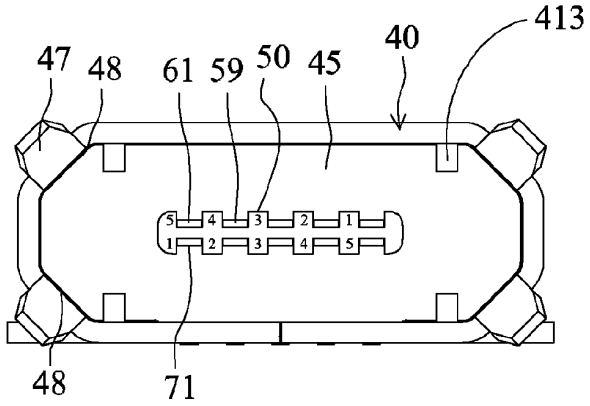


FIG. 67

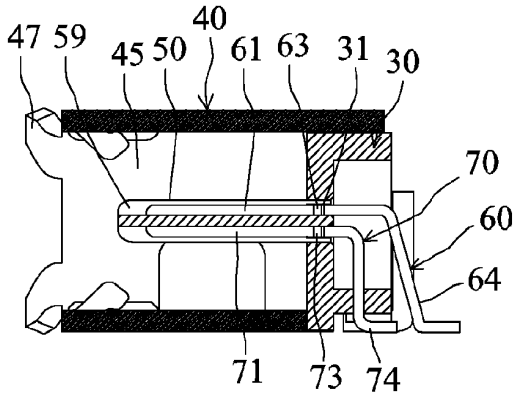


FIG. 68

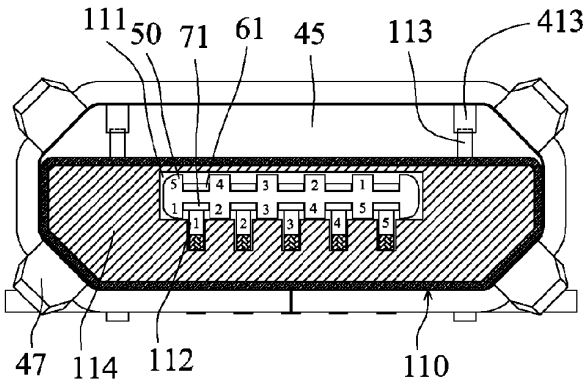


FIG. 69

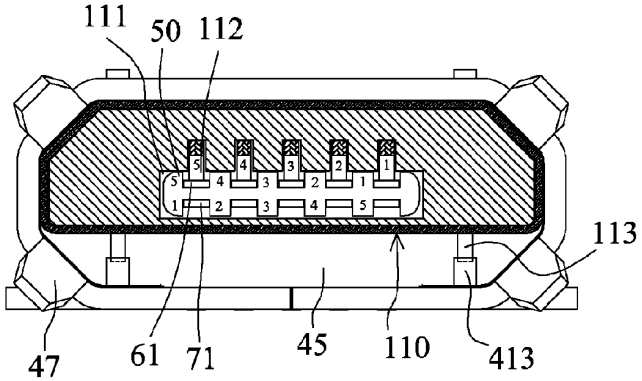


FIG. 70

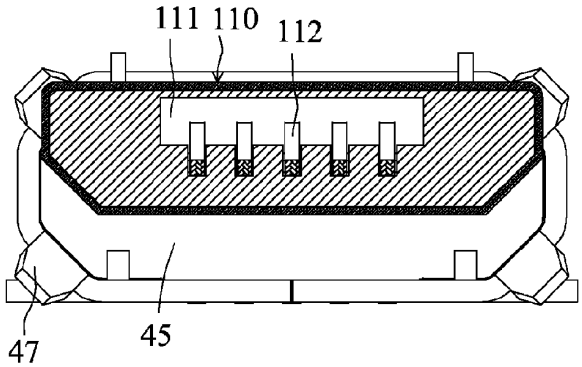


FIG. 71

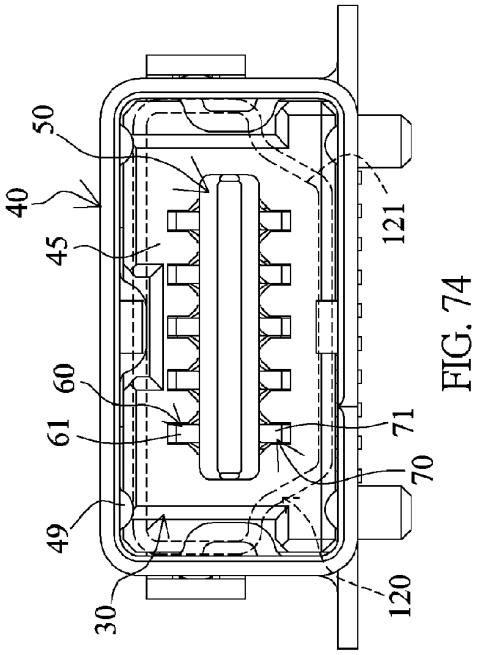


FIG. 74

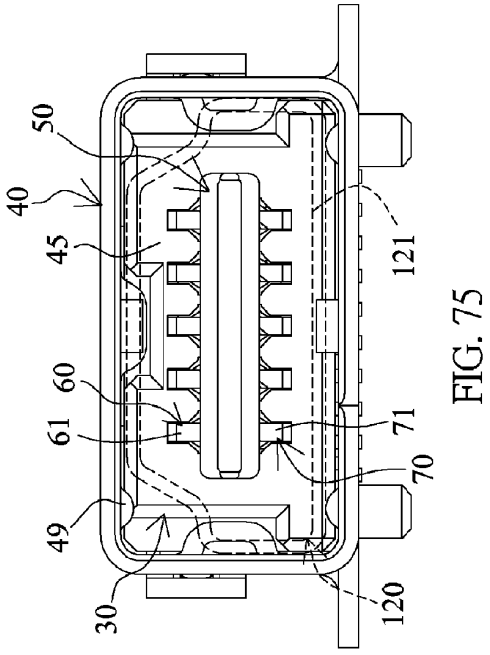


FIG. 75

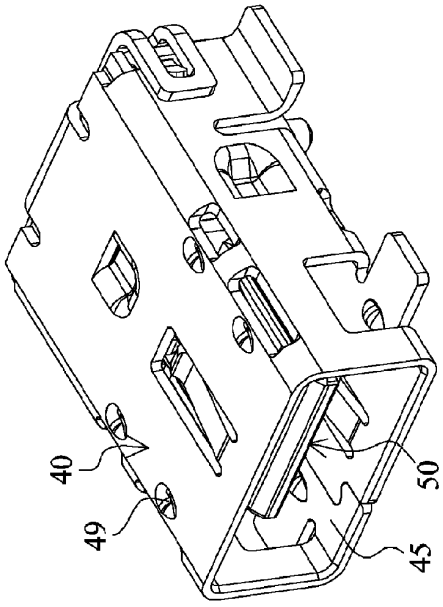


FIG. 72

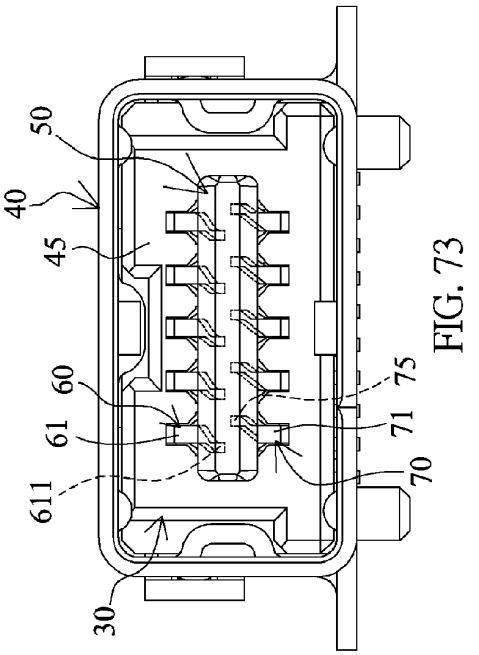


FIG. 73

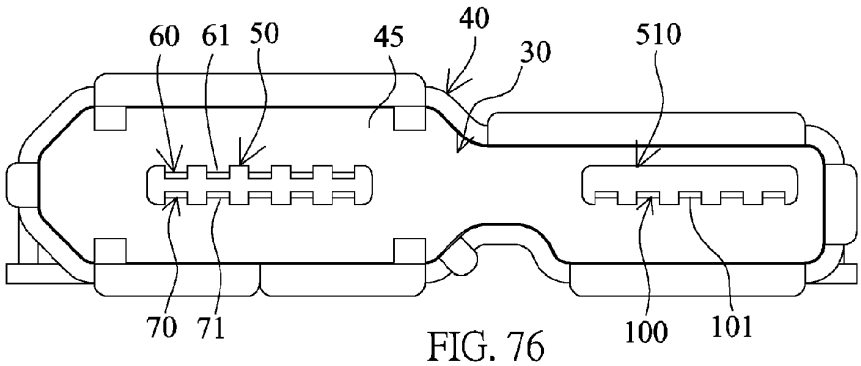


FIG. 76

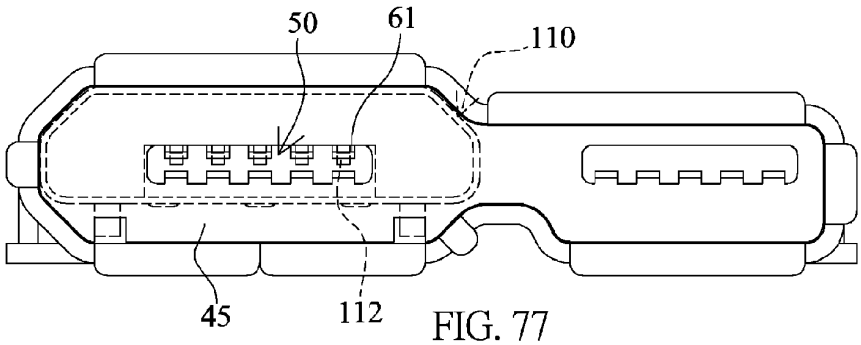


FIG. 77

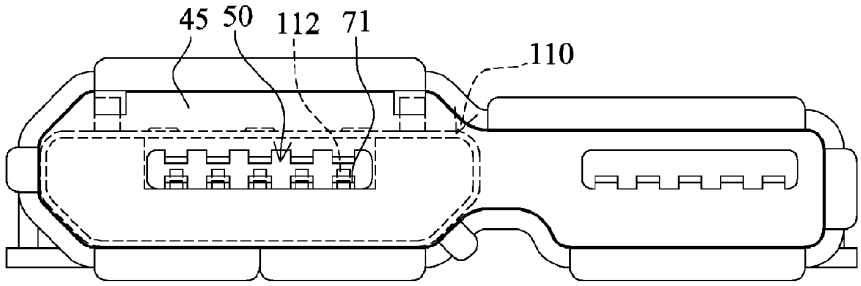


FIG. 78

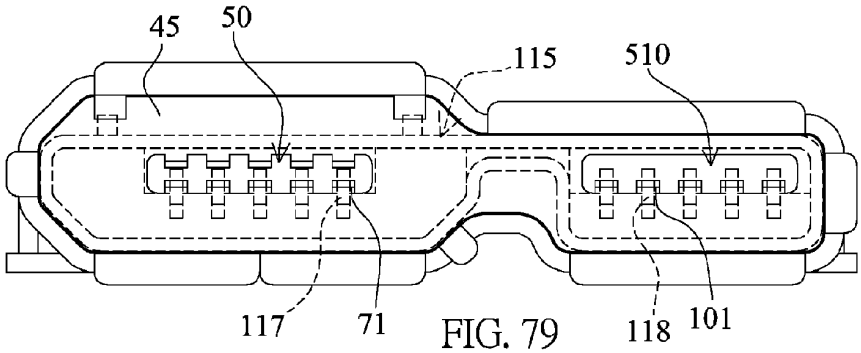


FIG. 79

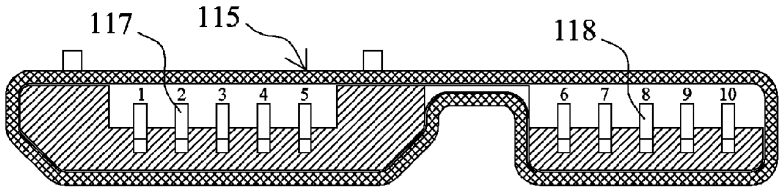


FIG. 80

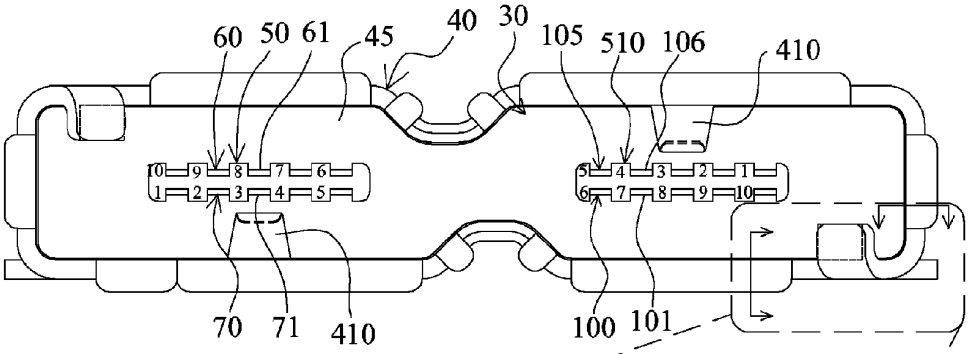
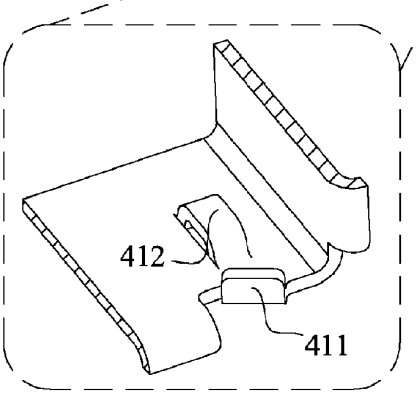


FIG. 81



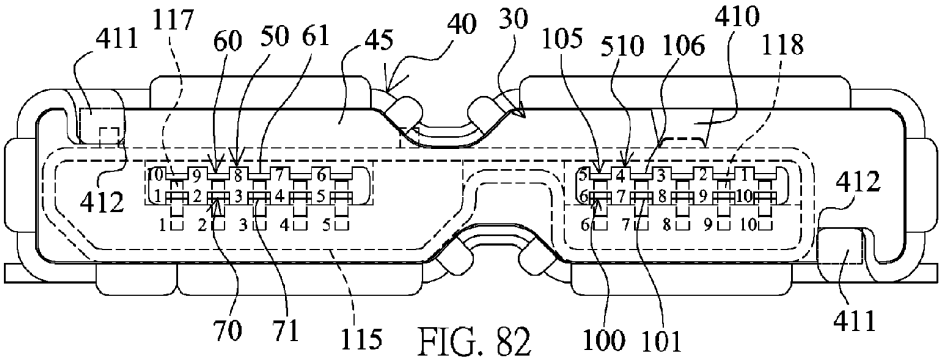


FIG. 82

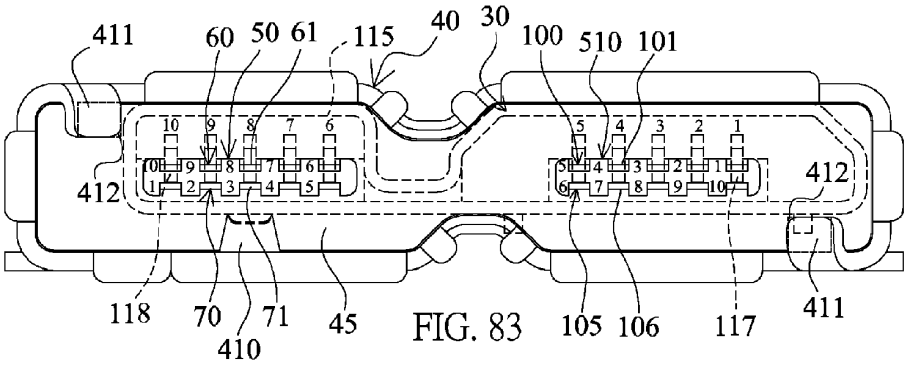


FIG. 83

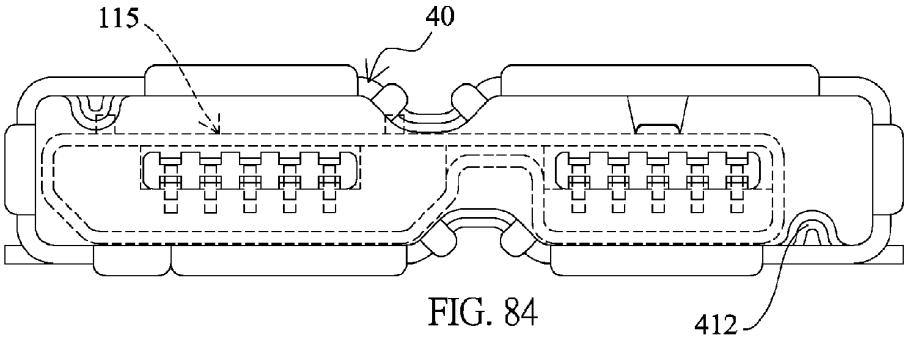


FIG. 84

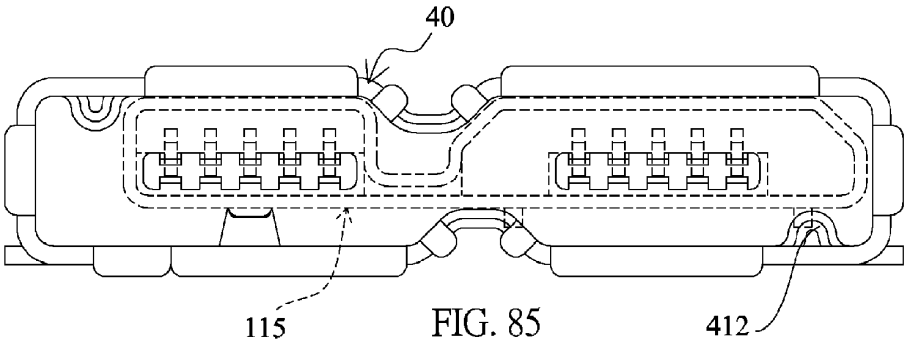


FIG. 85

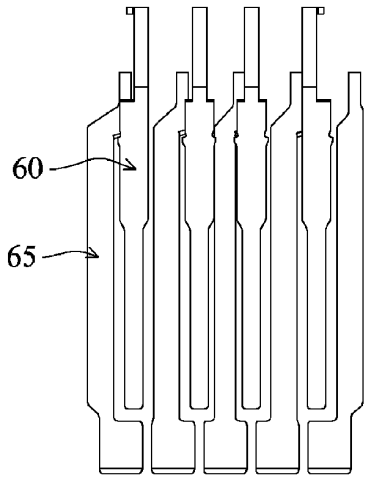


FIG. 86

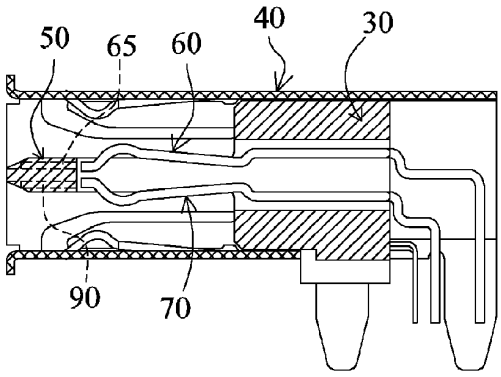


FIG. 87

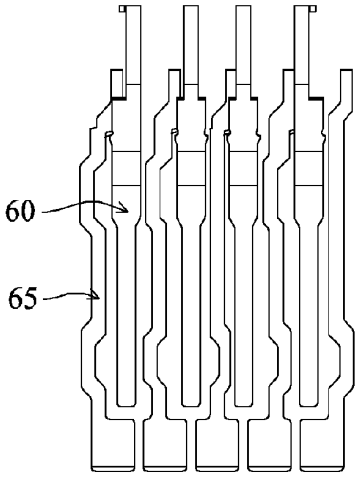


FIG. 88

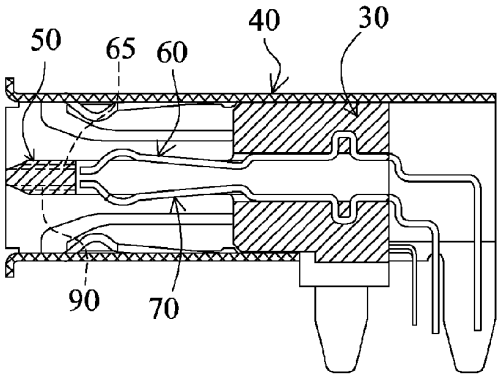


FIG. 89

SOCKET STRUCTURE WITH DUPLEX ELECTRICAL CONNECTION

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention relates to an electrical connector, and more particularly to a socket structure with duplex electrical connection.

2. Related Art

The most popular signal transmission specification of the modern computer apparatus is the universal serial bus (USB). A connector socket and a transmission cable satisfying this specification may make peripheral apparatuses, such as a mouse, a keyboard and the like, which are externally connected to the computer, be immediately detected and used by the computer.

Only one surface of the USB plug has one row of connection terminals. So, one surface of a tongue of the current USB socket has one row of connection terminals. In use, the USB plug has to be correctly inserted so that the connection terminals of the USB plug and the USB socket may be electrically connected together.

In order to ensure the inserted USB plug to be electrically connected to the USB socket, the USB plug and socket have mistake-proof designs. That is, when the USB plug cannot be oppositely inserted, the user has to turn the USB plug and then insert the USB plug so that the electrical connection may be ensured after the insertion.

The user usually randomly inserts the USB plug into the USB socket. So, the possibility of incapable of inserting the USB plug reaches 50%. The user often has to insert the USB plug twice in an inconvenient manner.

Furthermore, the types of the plugs are gradually increased day after day. Also, the USB plugs having the same external shape may have different connection interfaces. If two plugs having the same external shape but different connection interfaces may be inserted into and electrically connected to the same socket, the usage of the socket may be diversified.

SUMMARY OF THE INVENTION

It is therefore an object of the invention to provide a socket structure with duplex electrical connection, wherein a plug may be normally and oppositely inserted into the socket structure to create electrical connection in a simple and easy way.

Another object of the invention is to provide a socket structure with duplex electrical connection, wherein the socket structure may be used as a dual-slot and may be simultaneously electrically connected to two plugs.

Still another object of the invention is to provide a socket structure with duplex electrical connection, wherein the socket structure may be electrically connected to two plugs, which have the same external shapes but different connection interfaces, in a diversified manner.

Yet still another object of the invention is to provide a socket structure with duplex electrical connection, wherein guide-in sheets of terminals on two surfaces of a tongue are vertically staggered so that the terminals on two surfaces of the tongue may be elastically moved alternately, the larger elastic moving chamber may be obtained and the contact of the terminal has the larger surface contact area.

Yet still another object of the invention is to provide a socket structure with duplex electrical connection, wherein at least one side of a metal housing of the socket structure projects inwardly to form at least one laterally elastically movable elastic sheet, and when a plug is inserted into a connection slot, the at least one elastic sheet may rest against the plug or the tongue to prevent the plug from being turned to break the tongue.

To achieve the above-identified objects, the invention provides a socket structure with duplex electrical connection. The socket structure includes a plastic base; a connection slot, disposed on one end of the base and to be connected to one plug having one row of terminals; a tongue disposed on a front end of the base and within the slot so that chambers of the slot on two sides of the tongue may be normally and oppositely inserted and positioned into the slot; one row of first contacts separately arranged on one surface of the tongue, wherein each first contact is electrically connected to a first pin extending out of the base; and one row of second contacts separately arranged on the other surface of the tongue, wherein each second contact is electrically connected to a second pin extending out of the base. When the plug is inserted into the slot, the row of terminals of the plug are electrically connected to the row of first or second contacts.

A metal housing covering the plastic base may further be provided. At least one side of the metal housing projects inwardly to form at least one laterally elastically movable elastic sheet. When the plug is inserted into the connection slot, the at least one elastic sheet may rest against the plug or the tongue to prevent the plug from turning.

The at least one row of first contacts and the first pins are formed on at least one row of first terminals. The at least one row of second contacts and the second pins are formed on at least one row of second terminals. The first contact and the second contact respectively project beyond one surface of the tongue. The row of first terminals and the row of second terminals pertain to the same connection interface and have oppositely arranged serial numbers. The front end of the first contact has a first guide-in sheet. The front end of the second contact has a second guide-in sheet. The first contact and the second contact are vertically aligned, and the first guide-in sheet and the second guide-in sheet are staggered in a left to right direction.

Further scope of the applicability of the present invention will become apparent from the detailed description given hereinafter. However, it should be understood that the detailed description and specific examples, while indicating preferred embodiments of the invention, are given by way of illustration only, since various changes and modifications within the spirit and scope of the invention will become apparent to those skilled in the art from this detailed description.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will become more fully understood from the detailed description given hereinbelow and the accompanying drawings which are given by way of illustration only, and thus are not limitative of the present invention.

FIG. **1** is a pictorial view showing a first embodiment of the invention.

FIG. **2** is a cross-sectional side view showing the first embodiment of the invention.

FIG. **3** is a cross-sectional top view showing the first embodiment of the invention.

FIG. **4** shows the usage state of the first embodiment of the invention.

FIG. **4**A is a front view showing the first embodiment of the invention and the normal state of the USB 2.0 plug.

FIG. **5** shows the usage state of the first embodiment of the invention.

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FIG. **5**A is a front view showing the first embodiment of the invention and the opposite state of the USB 2.0 plug.

FIG. **6** is a cross-sectional side view showing a second embodiment of the invention.

FIG. **7** is a cross-sectional side view showing a third embodiment of the invention.

FIG. **8** is a cross-sectional side view showing a fourth embodiment of the invention.

FIG. **9** is a cross-sectional top view showing the fourth embodiment of the invention.

FIG. **10** is a cross-sectional side view showing a fifth embodiment of the invention.

FIG. **11** is a cross-sectional top view showing the fifth embodiment of the invention.

FIG. **12** is a front view showing the fifth embodiment of the invention.

FIG. **13** is a cross-sectional side view showing a sixth embodiment of the invention.

FIG. **14** is a cross-sectional top view showing the sixth embodiment of the invention.

FIG. **15** is a cross-sectional bottom view showing the sixth embodiment of the invention.

FIGS. **16** and **17** show the usage states of the sixth embodiment of the invention.

FIG. **18** is a pictorial view showing a light and handy mobile disk.

FIG. **19** shows the usage state of the sixth embodiment of the invention.

FIG. **20** is a side view showing another light and handy mobile disk.

FIG. **21** shows the usage state of the sixth embodiment of the invention.

FIG. **22** is a cross-sectional side view showing a seventh embodiment of the invention.

FIG. **23** is a pictorial view showing an eighth embodiment of the invention.

FIG. **24** is a cross-sectional side view showing a ninth embodiment of the invention.

FIG. **25** is a front view showing the ninth embodiment of the invention.

FIG. **26** is a cross-sectional bottom view showing the ninth embodiment of the invention.

FIG. **27** is a cross-sectional top view showing the ninth embodiment of the invention.

FIGS. **28** and **29** show the usage states of the ninth embodiment of the invention.

FIG. **30** is a cross-sectional side view showing a tenth embodiment of the invention.

FIG. **31** is a cross-sectional top view showing the tenth embodiment of the invention.

FIG. **32** is a cross-sectional bottom view showing the tenth embodiment of the invention.

FIG. **33** is a cross-sectional front view showing an eleventh embodiment of the invention.

FIG. **34** is a cross-sectional side view showing the eleventh embodiment of the invention.

FIG. **35** is a pictorially exploded view showing a twelfth embodiment of the invention.

FIG. **36** is a pictorially assembled view showing the twelfth embodiment of the invention.

FIG. **37** is a front view showing the twelfth embodiment of the invention.

FIGS. **38** to **41** are pictorial views showing the usage states of the twelfth embodiment of the invention.

FIG. **42** is a pictorially assembled view showing a thirteenth embodiment of the invention.

FIGS. **43** and **44** are pictorial views showing the usage states of the thirteenth embodiment of the invention.

FIG. **45** is a pictorially assembled view showing a fourteenth embodiment of the invention.

FIGS. **46** and **47** are pictorial views showing the usage states of the fourteenth embodiment of the invention.

FIG. **48** is a pictorially assembled view showing a fifteenth embodiment of the invention.

FIG. **49** is a pictorially assembled view showing a sixteenth embodiment of the invention.

FIG. **50** is a pictorially assembled view showing a seventeenth embodiment of the invention.

FIG. **51** is a pictorially assembled view showing an eighteenth embodiment of the invention.

FIG. **52** is a pictorially exploded view showing a nineteenth embodiment of the invention.

FIG. **53** is a pictorially assembled view showing terminals and a plastic base of the nineteenth embodiment of the invention.

FIG. **54** is a pictorially assembled view showing a 20th embodiment of the invention.

FIG. **55** is a pictorially assembled view showing a 21st embodiment of the invention.

FIG. **56** is a pictorially assembled view showing a 22nd embodiment of the invention.

FIG. **57** is a pictorially assembled view showing a 23rd embodiment of the invention.

FIG. **58** is a pictorially assembled view showing a 24th embodiment of the invention.

FIG. **59** is a pictorially assembled view showing a 25th embodiment of the invention.

FIG. **60** is a pictorially assembled view showing a 26th embodiment of the invention.

FIG. **61** is a pictorially assembled view showing a 27th embodiment of the invention.

FIG. **62** is a pictorially assembled view showing a 28th embodiment of the invention.

FIG. **63** is a pictorially assembled view showing a 29th embodiment of the invention.

FIG. **64** is a pictorially assembled view showing a 30th embodiment of the invention.

FIG. **65** is a pictorially assembled view showing a 31st embodiment of the invention.

FIG. **66** is a pictorially assembled view showing a 32nd embodiment of the invention.

FIG. **67** is a front view showing the 32nd embodiment of the invention.

FIG. **68** is a cross-sectional side view showing the 32nd embodiment of the invention.

FIGS. **69** to **71** show the usage states of the 32nd embodiment of the invention.

FIG. **72** is a pictorially assembled view showing a 33rd embodiment of the invention.

FIG. **73** is a front view showing the 33rd embodiment of the invention.

FIGS. **74** and **75** show the usage states of the 33rd embodiment of the invention.

FIG. **76** is a front view showing a 34th embodiment of the invention.

FIGS. **77** to **79** show the usage states of the 34th embodiment of the invention.

FIG. **80** is a cross-sectional view showing a micro USB 3.0 plug.

FIG. **81** is a front view showing a 35th embodiment of the invention.

FIGS. **82** and **83** show the usage states of the 35th embodiment of the invention.

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FIGS. **84** and **85** show the usage states of a 36th embodiment of the invention.

FIG. **86** is a schematic top view showing terminals when the high frequency of the invention is increased.

FIG. **87** is a schematic side view showing the terminals when the high frequency of the invention is increased.

FIG. **88** is a schematic top view showing terminals when the high frequency of the invention is decreased.

FIG. **89** is a schematic side view showing the terminals when the high frequency of the invention is decreased.

DETAILED DESCRIPTION OF THE INVENTION

The present invention will be apparent from the following detailed description, which proceeds with reference to the accompanying drawings, wherein the same references relate to the same elements.

Referring to FIGS. **1** to **3**, a USB 2.0 socket of this embodiment includes a plastic base **30**, a metal housing **40**, a tongue **50**, one row of first terminals **60** and one row of second terminals **70**.

The plastic base **30** has one row of terminal slots **31**, and a rear cover **32** covers a rear end of the plastic base **30** from bottom to top.

The metal housing **40** covers the plastic base **30**. A front section of the metal housing is formed with a comection slot **45**, which may be electrically comected to a USB 2.0 plug.

The tongue **50** and the plastic base **30** are integrally injection molded together. The tongue **50** has a first surface **501** and a second surface **502** disposed opposite the first surface **501**, and is horizontally disposed on the front end of the plastic base **30** and at a middle of the connection slot **45**, such that the connection slot **45** is formed with compatible and symmetrical profiles on top and bottom sides of the tongue **50** and compatible and symmetrical profiles on left and right sides of the tongue **50**. Thus, the USB 2.0 plug is normally and oppositely inserted and positioned into the connection slot **45** to create the bidirectional insertion and connection, and the tongue **50** has four through slots **51** separately arranged.

One row of four first terminals **60** are separately arranged and fixed to the plastic base **30**. The first terminal is integrally formed with a first contact **61**, a first extension **62**, a first fixing portion **63** and a first pin **64**. The first fixing portion **63** is fixed to the terminal slot **31** of the plastic base **30**. The first contact **61**, arranged on the first surface **501** of the tongue **50**, projects beyond the top of the tongue **50** and is elastically moved in correspondence with the through slot **51**. The first pin **64** extends out of the plastic base **30**.

The one row of second terminals **70** and the one row of first terminals **60** pertain to the same connection interface and the terminals have oppositely arranged serial numbers. Also, there are four second terminals **70** separately arranged and fixed to the plastic base **30**. The second terminal is integrally formed with a second contact **71**, a second extension **72**, a second fixing portion **73** and a second pin **74**. The second fixing portion **73** is fixed to the terminal slot **31** of the plastic base **30**. The second contact **71**, arranged on the second surface **502** of the tongue **50**, projects beyond the bottom of the tongue **50** and is elastically moved in correspondence with the through slot **51**. The second pin **74** extends out of the plastic base **30**. The first contact **61** of the first terminal **60** and the second contact **71** of the second terminal **70** corresponding to the same through slot **51** are aligned with each other in a front to rear direction.

The one row of second terminals **70** and the one row of first terminals **60** have oppositely arranged serial numbers. As shown in FIG. **4**A, the second terminals **70** on the bottom of the tongue have the serial numbers of 1, 2, 3, 4 from left to right, while the first terminals **60** on the top of the tongue have the serial numbers of 4, 3, 2, 1 from left to right. Thus, the same signal sorting may be obtained when the USB 2.0 plug is normally and oppositely electrically connected thereto.

The one row of first terminals **60** and the one row of second terminals **70** are formed by pressing the same metal sheet. So, the first fixing portion **63** and the second fixing portion **73** are located on the same level so that the two rows may be assembled with and fixed to the terminal slots **31** of the plastic base **30** at a time. In addition, the first pin **64** and the second pin **74** are aligned in one row.

According to the above-mentioned structure, FIGS. **4** and **4**A show the usage states of the USB 2.0 plug of a signal line. FIG. **4**A is a front view showing the socket of the invention and the plug **10** in a normal state. The USB 2.0 plug **10** has a plastic base **12** and a metal housing **13** covering the plastic base **12**. A chamber **14** is formed between the metal housing **13** and the plastic base **12**. One surface of the plastic base **12** is formed with one row of connection terminals **11**. In a front view, the one row of connection terminals **11** have the serial numbers of 4, 3, 2, 1 from left to right. When the connection terminals **11** of the USB 2.0 plug **10** face the second surface **502** of the tongue **50** and are normally inserted into the connection slot **45**, its chamber **14** is fitted with the tongue **50**, and its one row of connection terminals **11** are turned into the serial numbers of 1, 2. 3, 4 from left to right, and are electrically connected to the second contact **71** of the one row of second terminals **70** on the bottom of the tongue **50** (the serial numbers are 1, 2, 3, 4 from left to right). As shown in FIGS. **5** and **5**A, when the connection terminals **11** of the USB 2.0 plug **10** face the first surface **501** of the tongue **50** and are oppositely inserted into the connection slot **45**, its chamber **14** is also fitted with the tongue **50**, and its one row of connection terminals **11** are turned into the serial numbers of 4, 3, 2, 1 from left to right and are electrically connected to the first contacts **61** of the one row of first terminals **60** on the top of the tongue **50** (the serial numbers are 4, 3, 2, 1 from left to right). Because the tongue **50** is horizontally disposed at the middle of the connection slot **45**, the profile of the connection slot **45** above the tongue **50** is symmetrical with the profile thereof below the tongue, and the profiles of the connection slot **45** on the left and right sides of the tongue are symmetrical with each other. Thus, the USB 2.0 plug **10** may be normally and oppositely inserted and positioned into the connection slot **45**.

According to the above-mentioned description, it is obtained that the invention may be electrically connected to the USB 2.0 plug, which is normally and oppositely inserted, so that the convenience in use may be obtained.

As shown in FIG. **6**, the second embodiment of the invention is almost the same as the first embodiment except that the plastic base **30** of this embodiment has two rows of terminal slots **31**, and the one row of first terminals **60** and the one row of second terminals **70** are formed by respectively pressing two metal sheets. So, the first fixing portion **63** is engaged with the upper terminal slot **31** of the plastic base **30**, and the second fixing portion **73** is engaged with the lower terminal slot **31** of the plastic base **30**.

As shown in FIG. **7**, the third embodiment of the invention is almost the same as the second embodiment except that the first pins **64** of the one row of first terminals **60** and the first pins **74** of the one row of second terminals **70** of this embodiment are staggered and respectively arranged in two rows.

As shown in FIGS. **8** and **9**, the fourth embodiment of the invention is almost the same as the first embodiment except that the first contact **61** of the first terminal **60** and the second

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contact **71** of the second terminal **70** of this embodiment are parallel to each other in a left to right direction.

As shown in FIGS. **10** to **12**, the fifth embodiment of the invention is almost the same as the first embodiment except that the tongue **50** of this embodiment needs not to be formed with the through slot. The first contact **61** of the first terminal **60** is formed by prodding the plate surface of the first extension **62** and projects beyond the plate surface. The one end of the first contact **61** is connected to the first extension **62** and gradually protrudes to the other end from front to rear and is opened. The plate surface of the first extension **62** has an opening **620**. When the first contact **61** is pressed and flattened, the first contact **61** may lie on the opening **620**. The one row of second terminals **70** and the one row of first terminals **60** have the same structure, pertain to the same connection interface and have oppositely arranged serial numbers. The second contact **71** of the second terminal **70** is formed by prodding the plate surface of the second extension **72** and projects beyond the plate surface. The one end of the second contact **71** is connected to the second extension **72**, and gradually protrudes to the other end from front to rear and is opened. The first contact **61** and the second contact **71** are vertically aligned with each other.

As shown in FIGS. **13** to **15**, the sixth embodiment of the invention is a USB 3.0 socket, which is substantially the same as the third embodiment except that this embodiment further has one row of first contacts **53** disposed in front of the first contacts **61**, and one row of second contacts **57** disposed in front of the second contact **71** in addition to one row of first contacts **61** and one row of second contacts **71**. That is, the tongue **50** is a circuit board assembled and positioned in the plastic base **30**. Five first traces **52** are disposed on the top surface of the tongue **50**, and have first contacts **53** separately arranged on the front section of the tongue and first connection terminals **54** disposed on the rear section of the tongue. The row of first connection terminals **54** are electrically connected to an additional row of first pins **80**. Five second traces **56** are disposed on a bottom surface of the tongue **50**, and have second contacts **57** separately arranged on the front section of the tongue and second connection terminals **58** disposed on the rear section of the tongue. The row of second connection terminals **58** are electrically connected to an additional row of second pins **85**.

The one row of first contacts **53** and the one row of second contacts **57** pertain to the same connection interface and have oppositely arranged serial numbers.

The one row of first pins **80** are bonded to the one row of first connection terminals **54**. The one row of second pins **85** are bonded to the one row of second connection terminals **58**. In addition, the first fixing portion **63** of the one row of first terminals **60** is bonded and fixed to the top surface of the tongue **50**. First fixing portions **73** of the one row of second terminals **70** are bonded and fixed to the bottom surface of the tongue **50**. The one row of first pins **80** and the first pins **64** of the one row of first terminals **60** are arranged in a row. The one row of second pins **85** and the second pins **74** of the one row of second terminals **70** are arranged in a row.

According to the above-mentioned structure, as shown in FIG. **16**, when the USB 3.0 plug **15** is normally inserted, its one row of connection terminals **16** are electrically connected to the second contacts **71** of the second terminals **70**. The other row of connection terminals **17** are electrically connected to the second contacts **57** of the second traces. As shown in FIG. **17**, when the USB 3.0 plug **15** is oppositely inserted, its one row of connection terminals **16** are electrically connected to the first contacts **61** of the first terminals **60**, and the other one row of connection terminals **17** are electrically connected to the first contacts **53** of the first traces.

FIG. **18** is a pictorial view showing a light and handy mobile disk **20**. One end of the disk **20** has a plug **21**, which is a USB 2.0 plug without a metal housing. One surface of the plug **21** has four connection terminals **22**, which are separately arranged and cannot be elastically moved.

FIG. **19** shows the usage state of the light and handy mobile disk **20**. When the plug **21** is connected to the top of the tongue **50**, the one row of connection terminals **22** are electrically connected to the first contacts **61** of the one row of first terminals **60** on the top of the tongue. When the plug **21** is connected to the bottom of the tongue **50**, the one row of connection terminals **22** are electrically connected to the second contacts **71** of the one row of second terminals **70** on the bottom of the tongue. According to the above-mentioned description, it is obtained that the socket structure of the invention, when being connected to the light and handy mobile disk, may serve as a dual-slot so that two light and handy mobile disks may be simultaneously connected thereto.

FIG. **20** is a side view showing another light and handy mobile disk **25**. One end of the disk **25** has a plug **28**, which is a USB 3.0 plug without a metal housing. The plug **28** is substantially the same as the plug **20**. One surface of the plug **28** is formed with one row of four connection terminals **26**, which are separately arranged and cannot be elastically moved, and further formed with one row of five connection terminals **27**, which are separately arranged and may be moved elastically.

FIG. **21** shows the usage state of the light and handy mobile disk **25**. When the plug **28** is electrically connected to the top surface of the tongue **50**, the one row of connection terminals **26** are electrically connected to the first contacts **61** of the one row of first terminals **60** on the top of the tongue. The one row of connection terminals **27** are electrically connected to the first contacts **53** of one row of first traces on the top surface of the tongue. When the plug **28** is electrically connected to the bottom of the tongue **50**, the one row of connection terminals **26** are electrically connected to the first contacts **71** of the one row of second terminals **70** on the bottom of the tongue. The one row of connection terminals **27** are electrically connected to the second contacts **57** of one row of second traces on the bottom surface of the tongue, so that two light and handy mobile disks **25** may be simultaneously connected to the top and bottom sides of the tongue **50**.

As shown in FIG. **22**, the seventh embodiment of the invention is almost the same as the sixth embodiment except that the one row of first pins **80** are not aligned with the first pins **64** of the one row of first terminals **60** in this embodiment, and the one row of second pins **85** are not aligned with the second pins **74** of the one row of second terminals **70**.

As shown in FIG. **23**, the eighth embodiment of the invention is almost the same as the first embodiment except that this embodiment pertains to a multilayer USB 2.0 socket, and the plastic base **30** has two connection slots **35** stacked together.

As shown in FIGS. **24** to **27**, the ninth embodiment of the invention is almost the same as the fifth embodiment, and its tongue **50** is also disposed at the middle of the connection slot **45**, so that the chamber above the tongue **50** of the connection slot **45** is the same as the chamber below the tongue **50**, and the chambers on the left and right sides of the tongue are the same. The difference between the ninth and fifth embodiments is that the one row of first terminals **60** on the top surface of the tongue **50** and the one row of second terminals **70** on the bottom surface of the tongue **50** pertain to different

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connection interfaces in this embodiment. The one row of four second terminals **70** are separately arranged on the bottom surface of the tongue **50**. The second terminals **70** of the ninth and fifth embodiments have the same structure. The second terminal **70** is also integrally formed with a second contact **71**, a second extension **72**, a second fixing portion **73** and a second pin **74**. The one row of nine first terminals **60** are separately arranged on the top surface of the tongue **50**. The structure of the first terminal **60** is almost the same as that of the second terminal **70**, and is also integrally formed with a first contact **61**, a first extension **62**, a first fixing portion **63** and a first pin **64**.

FIG. **28** shows the usage state of the USB 2.0 plug **10** of the signal line. When the connection terminal **11** of the USB 2.0 plug **10** is inserted upwardly into the connection slot **45**, its chamber **14** is fitted with the tongue **50**, and its one row of connection terminals **11** are electrically connected to the second contacts **71** of the second terminals **70** on the bottom of the tongue **50**. FIG. **29** shows the usage state of the plug **18** having the shape the same as that of the USB 2.0 plug but a connection interface different from that of the USB 2.0 plug. The plug **18** has one row of nine connection terminals **19**. When the connection terminal **19** of the plug **18** is inserted downwardly into the connection slot **45**, its one row of connection terminals **19** are electrically connected to the first contacts **61** of the first terminals **60** on the top of the tongue **50**.

According to the above-mentioned description, it is obtained that the socket structure of this embodiment may be electrically connected to two plugs having metal housings and the same shape but different connection interfaces so that the usage thereof may be diversified.

Of course, the socket structure of this embodiment may also be connected to two light and handy mobile disks or storage cards having two different connection interfaces but having no metal housing.

As shown in FIGS. **30** to **32**, the tenth embodiment of the invention is a USB 3.0 socket, which is almost the same as the fifth embodiment except for the difference to be described in the following. This embodiment also has one row of first terminals **60** and one row of second terminals **70**, which have the same connection interface and have oppositely arranged serial numbers. This embodiment further has one row of first terminals **65** and one row of second terminals **90**, which have the same connection interface and have oppositely arranged serial numbers.

The first terminal **65** has a first contact **66**, a first extension **67**, a first fixing portion **68** and a first pin **69**. The one row of five first terminals **65** are disposed on the top surface of the tongue **50** and are arranged between the one row of first terminals **60**. The first contacts **66** of the first terminals **65**, which cannot be elastically moved, lie on the top surface of the tongue. The first contact **66** of the first terminal **65** is disposed in front of the first contact **61** of the first terminal **60**.

The second terminal **90** has a second contact **91**, a second extension **92**, a second fixing portion **93** and a second pin **94**. The one row of five second terminals **90** are disposed on the bottom surface of the tongue **50** and arranged between the one row of second terminals **70**. The second contact **91** of the second terminal **90** cannot be elastically moved and lies on the top surface of the tongue. The second contact **91** of the second terminal **90** is disposed in front of the second contact **71** of the second terminal **70**.

The two rows of first terminals **60** and **65** are formed by pressing the same metal sheet. The two rows of second terminals **70** and **90** are formed by pressing the same metal sheet.

As shown in FIGS. **33** and **34**, the eleventh embodiment of the invention is a mini USB 2.0 socket, which may allow a plug to be normally and oppositely inserted for connection. Compare with the connection interface of USB 2.0, the connection interface of the mini USB 2.0 has an additional terminal. So, the structure of this embodiment is substantially the same as the first embodiment, and similarly has a plastic base **30**, a metal housing **40**, a tongue **50**, one row of first terminals **60** and one row of second terminals **70**. The difference therebetween is that there are one row of five first terminals **60** in this embodiment, and the first terminal **60** has a first contact **61** projecting beyond the top surface of the tongue **50**. There are also one row of five second terminals **70**. Each second terminal has a second contact **71** projecting beyond the bottom surface of the tongue **50**. The one row of second terminals **70** and the one row of first terminals **60** pertain to the same connection interface and have oppositely arranged serial numbers. The structures of the second terminal **70** and the first terminal **60** are also substantially the same as those of the first embodiment.

As shown in FIGS. **35** to **37**, the twelfth embodiment of the invention is a USB 2.0 socket, which allows a plug to be normally and oppositely inserted for connection and is almost the same as the first embodiment. The socket similarly has a plastic base **30**, a metal housing **40**, a tongue **50**, one row of first terminals **60** and one row of second terminals **70**. The differences between the twelfth and first embodiments are described in the following.

Two sides of the metal housing **40** are prodded inwardly to form four laterally elastically movable elastic sheets, which include two outer elastic sheets **41** and two inner elastic sheets **42** respectively disposed above and below the tongue **50**. The two inner elastic sheets **42** are disposed on inner sides of the two outer elastic sheets **41**. The two inner elastic sheets **42** respectively rest against the top and bottom surfaces on one side of the tongue **50**. Each elastic sheet has one end connected to a portion near the front end on the two sides of the metal housing **40** and extends inwardly in an arced manner. Each elastic sheet has a projection **46**. When the projection **46** is pressed, the elastic sheet is elastically moved outwardly.

The front end of the first contact **61** of the first terminal **60** has a first guide-in sheet **611**. The plate surface of the first guide-in sheet **611** is smaller than the plate surface of the first contact **61**. The front end of the second contact **71** of the second terminal **70** has a second guide-in sheet **75**. The plate surface of the second guide-in sheet **75** is smaller than the plate surface of the second contact **71**. The first contact **61** and the second contact **71** are vertically aligned, and the first guide-in sheet **611** and the second guide-in sheet **75** are staggered in a left to right direction. Both the first guide-in sheet **611** and the second guide-in sheet **75** are hooked on the tongue **50**.

As shown in FIG. **39**, when the connection terminal **22** of the light and handy mobile disk **20** is inserted downwardly into the space above the tongue **50**, two elastic sheets on two sides of the top of the tongue **50** are pushed away and elastically moved outwardly, and the inner elastic sheets **42** on two sides of the bottom of the tongue rest against the bottom surface of the tongue **50**. So, when the light and handy mobile disk **20** is improperly inserted to turn downwards, the inner elastic sheets **42** resting against the bottom surface of the tongue **50** can prevent the tongue **50** from being forced downwards and thus broken.

When the first contact **61** of the first terminal **60** is in elastic contact with the connection terminal **22** of the light and handy mobile disk **20** and is elastically moved downwards, the first guide-in sheet **611** cannot touch the second guide-in sheet **75**

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because the first guide-in sheet **611** and the second guide-in sheet **75** are staggered in a left to right direction.

As shown in FIG. **38**, when the connection terminal **22** of the light and handy mobile disk **20** is inserted upwards into the space below the tongue **50**, two elastic sheets on two sides of the tongue **50** are pushed away and elastically moved outwards. Because the inner elastic sheets **42** on two sides of the top of the tongue rest against the top surface of the tongue **50**, the tongue **50** is also protected and cannot be broken when the light and handy mobile disk **20** is improperly inserted.

As shown in FIG. **40**, when the connection terminal of the USB 2.0 plug **10** having the metal housing is inserted upwardly into the connection slot, the USB 2.0 plug **10** occupies the entire chamber below the tongue **50** but does not occupy the entire chamber above the tongue. At this time, the outer elastic sheets **41** on two sides of the top of the tongue rest against the USB 2.0 plug **10** to prevent the USB 2.0 plug **10** from being rotated upwards and thus provide the effect of protecting the tongue **50**.

As shown in FIG. **41**, when the connection terminal of the USB 2.0 plug **10** is inserted downwardly into the connection slot, the USB 2.0 plug **10** occupies the entire chamber above the tongue **50** but does not occupy the entire chamber below the tongue. At this time, the outer elastic sheets **41** on two sides of the bottom of the tongue rest against the USB 2.0 plug **10** to prevent the USB 2.0 plug **10** from being rotated upwards to achieve the effect of protecting the tongue **50**.

The design of this embodiment has the effect of bidirectional insertion, and further has the effects of protecting the tongue and enlarging the contact area of the terminal.

As shown in FIG. **42**, the thirteenth embodiment of the invention is almost the same as the twelfth embodiment except that one of two laterally elastically movable outer elastic sheets **41** is formed on each of two sides of the metal housing **40** above and below the tongue **50** by prodding the metal housing **40** inwardly.

As shown in FIG. **43**, when the connection terminal of the USB 2.0 plug **10** is inserted upwardly into the connection slot, the outer elastic sheets **41** on two sides of the top of the tongue rest against the USB 2.0 plug **10**. As shown in FIG. **44**, when the connection terminal of the USB 2.0 plug **10** is inserted downwardly into the connection slot, the outer elastic sheets **41** on two sides of the bottom of the tongue rest against the USB 2.0 plug **10**.

As shown in FIG. **45**, the fourteenth embodiment of the invention is almost the same as the twelfth embodiment except that each of two sides of the metal housing **40** is prodded inwardly to form a laterally elastically movable middle elastic sheet **43**. The middle elastic sheet **43** is disposed at a middle height on one side of the connection slot **45** and has the structure the same as that of the outer elastic sheet **41**.

As shown in FIG. **46**, when the connection terminal of the light and handy mobile disk **20** is inserted upwardly into the connection slot **45**, the middle elastic sheets **43** on two sides of the tongue rest against one surface **23** of the light and handy mobile disk **20** formed with the connection terminal to prevent the light and handy mobile disk **20** from being rotated upwards. As shown in FIG. **47**, when the connection terminal of the light and handy mobile disk **20** is inserted downwardly into the connection slot, the middle elastic sheets **43** on two sides of the tongue rest against one surface of the light and handy mobile disk **20** formed with the connection terminal to prevent the light and handy mobile disk **20** from being rotated downwards.

As shown in FIG. **48**, the fifteenth embodiment of this invention is almost the same as the thirteenth and fourteenth embodiments. That is, each of two sides of the metal housing **40** is prodded inwardly to form a middle elastic sheet **43** and two outer elastic sheets **41**, which are laterally elastically movable.

As shown in FIG. **49**, the sixteenth embodiment of the invention is almost the same as the twelfth embodiment except that one end of the outer elastic sheet **41** and one end of the inner elastic sheet **42** are connected to two side plate surfaces of the metal housing **40** and extend outwardly in an arced manner. Each elastic sheet has a projection **46**. When the projection **46** is pressed, the elastic sheet is elastically moved outwardly.

As shown in FIG. **50**, the seventeenth embodiment of the invention is almost the same as the thirteenth embodiment except that the one end of the outer elastic sheet **41** of this embodiment is connected to the middle plate surface on each of two sides of the metal housing **40** and extends outwardly in an arced manner.

As shown in FIG. **51**, the eighteenth embodiment of the invention is almost the same as the fourteenth embodiment except that one end of the middle elastic sheet **43** of this embodiment is connected to the middle plate surface on each of two sides of the metal housing **40** and extends outwardly in an arced manner.

As shown in FIGS. **52** and **53**, the nineteenth embodiment of the invention is a USB 3.0 socket, which allows the plug to be inserted normally and oppositely, and is almost the same as the twelfth embodiment except that this embodiment additionally has one row of first terminals **65** and one row of second terminals **90**. The contact **66** of the first terminal **65** lies on the top surface of the tongue **50** and is disposed in front of the contact **61** of the first terminal **60** on the same surface. The contact **91** of the second terminal **90** lies on the bottom surface of the tongue **50** and is disposed in front of the contact of the second terminal **70** on the same surface.

As shown in FIG. **54**, the 20th embodiment of the invention is almost the same as the twelfth embodiment except that the embodiment is a four-layer USB 2.0 socket that allows the USB plug to be normally and oppositely inserted for connection. That is, the plastic base **30** has four connection slots **35**, and the metal housing **40** has four openings corresponding to the four connection slots **35**.

As shown in FIG. **55**, the 21st embodiment of the invention is almost the same as the nineteenth embodiment except that this embodiment is a two-layer USB 3.0 socket that allows the plug to be normally and oppositely inserted. That is, the plastic base **30** has two connection slots **35**, and the metal housing **40** has two openings corresponding to the four connection slots **35**.

As shown in FIG. **56**, the 22nd embodiment of the invention is almost the same as the 20th embodiment except that this embodiment is a three-layer stacked socket. That is, the plastic base has, from bottom to top, a connection slot **35**, a connection slot **36** and a connection slot **37**. The metal housing **40** has three openings corresponding to the three connection slots, wherein the lowest slot is the connection slot **35** of the USB 3.0 socket that allows the plug to be normally and oppositely inserted, the middle slot is the connection slot **36** of the socket shared by the USB 3.0 and eSATA (External Serial ATA) plugs, and the upper slot is the connection slot **37** of the USB 2.0 socket that allows the plug to be inserted unidirectionally.

As shown in FIG. **57**, the 23rd embodiment of the invention is almost the same as the 21st embodiment except that this embodiment is a three-layer stacked socket. That is, the plastic base has, from bottom to top, a connection slot **35**, a connection slot **37** and a connection slot **38**. The metal hous-

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ing **40** has three openings corresponding to the three connection slots, wherein the lowest connection slot **35** allows the USB 3.0 plug to be normally and oppositely inserted for connection, the middle connection slot **37** allows the USB 2.0 plug to be unidirectionally inserted for connection, and the upper connection slot **38** allows the 1394 plug to be inserted.

As shown in FIG. **58**, the 24th embodiment of the invention is a dual-slot USB 2.0 socket for bidirectional insertion and connection and is almost the same as the eighth embodiment except that the two connection slots **35** of this embodiment are arranged from left to right and have the insertion ports facing frontward, and the tongues **50** in the connection slots **35** are in the upright state.

As shown in FIG. **59**, the 25th embodiment of the invention is a dual-slot USB 3.0 socket for bidirectional insertion and connection and is almost the same as the 24th embodiment. The two connection slots **35** are also arranged from left to right, and the tongues **50** in the connection slots **35** are in the upright state.

As shown in FIG. **60**, the 26th embodiment of the invention includes three sockets arranged from left to right and is almost the same as the 25th embodiment except that the leftmost connection slot **35** corresponds to the USB 2.0 socket for bidirectional insertion and connection, the middle connection slot **35** corresponds to the USB 3.0 socket for bidirectional insertion and connection, and the rightmost connection slot **38** corresponds to the 1394 socket.

As shown in FIG. **61**, the 27th embodiment of the invention has three sockets arranged from left to right and is almost the same as the 26th embodiment except that the rightmost connection slot **36** is shared by the USB 3.0 and eSATA plugs.

As shown in FIG. **62**, the 28th embodiment of the invention is a dual-slot USB 2.0 socket for bidirectional insertion and connection, and is almost the same as the 24th embodiment except that this embodiment has upright slots **35**, and the insert ports of the connection slots **35** face upwards.

As shown in FIG. **63**, the 29th embodiment of the invention is almost the same as the 28th embodiment except that this embodiment is a dual-slot USB 3.0 socket for bidirectional insertion and connection.

As shown in FIG. **64**, the 30th embodiment of the invention is almost the same as the 29th embodiment except that this embodiment contains three upright slots. The leftmost connection slot **35** corresponds to the USB 3.0 socket for bidirectional insertion and connection, the middle connection slot **36** corresponds to the socket shared by the USB 3.0 and eSATA plugs, and the rightmost connection slot **38** corresponds to the 1394 socket.

As shown in FIG. **65**, the 31st embodiment of the invention is almost the same as the 30th embodiment except that the rightmost connection slot **39** of this embodiment is shared by the HDMI (High Definition Multimedia Interface) and display ports.

As shown in FIGS. **66** to **68**, the 32nd embodiment of the invention is a micro USB 2.0 socket, which includes a plastic base **30**, a metal housing **40**, one row of first terminals **60** and one row of second terminals **70**.

The plastic base **30** has two rows of terminal slots **31**. The front end of the terminal slot **31** is integrally formed with a projecting tongue **50**, and each of the top and bottom surfaces of the tongue **50** is formed with five terminal slots **59** separately arranged.

The metal housing **40** covers the plastic base **30**, the front section of the metal housing **40** is formed with a connection slot **45**, and the connection slot **45** is disposed on the front end of the plastic base **30** and covers the tongue **50** therein. The top and bottom ends are narrower than the middle section so that the four corners of its profile are formed with symmetric sloped edges **48**, and the top, bottom, left and right sides of the tongue **50** are formed with compatible and symmetrical profiles. Thus, a micro USB 2.0 plug may be bidirectionally inserted for connection. In addition, each of the top and bottom plates of the metal housing **40** is prodded to form two elastic locks **413**, and each of four sloped edges **48** of the front end of the connection slot **45** is formed with a slant guiding plate **47** expanding outwards. When the micro USB plug is inserted into the connection slot and touches the slant guiding plate **47**, it is guided toward the center of the connection slot.

The one row of first terminals **60** have five first terminals. Each first terminal **60** has a first contact **61**, a first fixing portion **63** and a first pin **64**. The first fixing portions **63** are fixed to the upper row of terminal slots **31** of the plastic base **30**. The first contact **61** cannot be elastically moved but lies in the terminal slot **59** on the top surface of the tongue **50**. The first pin **64** extends out of the bottom of the plastic base **30**.

The one row of second terminals **70** have five terminals. Each second terminal **70** has a second contact **71**, a second fixing portion **73** and a second pin **74**. The second fixing portions **73** are fixed to the lower row of terminal slots **31** of the plastic base **30**. The second contact **71** cannot be elastically moved and lies in the terminal slot **59** on the bottom of the tongue **50**. The second pin **74** extends out of the plastic base **30** to the bottom thereof. The at least one row of first contacts **61** and the at least one row of second contacts **71** pertain to the same connection interface and have oppositely arranged serial numbers. That is, the one row of second contacts **71** have the serial numbers of 1, 2, 3, 4 and 5 from left to right, and the one row of first contacts **61** have the serial numbers of 5, 4, 3, 2 and 1 from left to right.

According to the above-mentioned structure, as shown in FIG. **69**, the micro USB 2.0 plug **110** has a plastic base **114** and a metal casing covering the plastic base **114**. The plastic base **114** has a connection slot **111** and one row of five connection terminals **112**, and two elastic locks **113** on the top end surface. When the connection terminals **112** of the micro USB 2.0 plug **110** are upwardly and normally inserted into the connection slot **45**, the connection slot **111** of the micro USB 2.0 plug is fitted with the tongue **50**, and its one row of connection terminals **112** are electrically connected to the one row of second contacts **71** on the bottom side of the tongue **50**. The two elastic projecting hooks **113** may hook on the rear sides of the elastic locks **413** of the top plate of the metal housing **40**. As shown in FIG. **70**, when the connection terminal **112** of the micro USB 2.0 plug **110** is downwardly and oppositely inserted into the connection slot **45**, the one row of connection terminals **112** are electrically connected to the one row of first contacts **61** on the top surface of the tongue **50**, and the two elastic locks **113** may engage with the rear sides of the two elastic locks **413** of the bottom plate of the metal housing **40**. According to the above-mentioned description, it is obtained that the embodiment can allow the micro USB 2.0 plug **110** to be normally and oppositely inserted for electrical connection.

As shown in FIG. **71**, when the micro USB 2.0 plug **110** is inserted into the connection slot **45** but is biased upward and not aligned with the slot, the micro USB 2.0 plug **110** touches the slant guiding plates **47** of two corners on the top of the connection slot **45**. The micro USB 2.0 plug **110** is guided, by the slant surface of the slant guiding plate **47**, to the center of the connection slot **45** so that the plug may be inserted in an aligned manner and the convenience in use may be obtained.

As shown in FIGS. **72** and **73**, the 33rd embodiment of the invention is a mini USB 2.0 socket for bidirectional insertion and connection. The structure of this embodiment is almost

the same as the structure of the eleventh embodiment and includes a plastic base **30**, a metal housing **40**, a tongue **50**, one row of first terminals **60** and one row of second terminals **70**. The difference therebetween is that the front sections of the top and bottom plate surfaces of the metal housing **40** of this embodiment are formed with four projections **49** projecting toward the connection slot **45**. In addition, the structures of the one row of first terminals **60** and the one row of second terminals **70** are the same as the structures of the twelfth embodiment of FIG. **35**. That is, the front end of the contact **61** of the first terminal **60** is formed with a downward guide-in sheet **611**. The plate surface of the guide-in sheet **611** is smaller than the contact **61**. The front end of the second contact **71** of the second terminal **70** is formed with an upward guide-in sheet **75**. The plate surface of the guide-in sheet **75** is smaller than the contact **71**. The guide-in sheets **611** and the guide-in sheets **75** are staggered in a left to right direction.

As shown in FIG. **74**, when the mini USB 2.0 plug **120** is normally inserted into the socket, four projections **49** on the top plate of the metal housing **40** push the mini USB 2.0 plug **120** downwards to prevent the metal casing **121** of the mini USB 2.0 plug **120** from touching the second terminal **70** to cause the short-circuited condition.

As shown in FIG. **75**, when the mini USB 2.0 plug **120** is oppositely inserted into the socket, the four projections **49** on the bottom plate of the metal housing **40** push the mini USB 2.0 plug **120** upwards to prevent the metal casing **121** of the mini USB 2.0 plug **120** from touching the first terminal **60** to cause the short-circuited condition.

As shown in FIG. **76**, the 34th embodiment of the invention is a micro USB socket for the bidirectional insertion and connection of the micro USB 2.0 plug and the unidirectional insertion and connection of the micro USB 3.0 plug. The structure of this embodiment is almost the same as the 32nd embodiment except that the plastic base **30** and the metal housing **40** of this embodiment are wider than those of the 32nd embodiment. The front section of the metal housing **40** is also formed with the wider connection slot **45**. The socket of this embodiment further has a second tongue **510** and one row of five third terminals **100**. The second tongue **510** integrally projects beyond the front end of the plastic base **30**. The second tongue **510** and the tongue **50** are located on the same level and in parallel. However, the chambers above and below the second tongue **510** are not compatible with each other. The lower chamber is larger than the upper chamber. The chambers on the left and right sides of the connection slot **45** are not compatible. The one row of third terminals **100** are fixed to the plastic base **30**. The third terminals **100** have third contacts **101** separately arranged on the bottom surface of the second tongue **510**, and have pins extending out of the plastic base.

As shown in FIG. **77**, when the micro USB 2.0 plug **110** is oppositely inserted into the connection slot **45**, the connection terminal **112** of the micro USB 2.0 plug **110** is electrically connected to the first contact portion **61** on the top of the tongue **50**.

As shown in FIG. **78**, when the micro USB 2.0 plug **110** is normally inserted into the connection slot **45**, the connection terminal **112** of the micro USB 2.0 plug **110** is electrically connected to the second contact portion **71** on the bottom of the tongue **50**.

FIG. **80** is a cross-sectional view showing a micro USB 3.0 plug **115**, which is almost the same as the micro USB 2.0 plug, and includes one row of five elastically movable connection terminals **117** on the left side, and one row of five elastically movable connection terminals **118** on the right side.

As shown in FIG. **79**, when the micro USB 3.0 plug **115** is normally inserted into the connection slot **45**, the one row of connection terminals **117** of the micro USB 3.0 plug **115** are electrically connected to one row of second contact portions **71** on the bottom of tongue **50**, and the other row of connection terminals **118** of the micro USB 3.0 plug **115** are electrically connected to one row of third contact portions **101** on the bottom of the tongue **510**.

As shown in FIG. **81**, the 35th embodiment of the invention is a micro USB 3.0 socket for bidirectional insertion and connection of the micro USB 3.0 plug. The structure of this embodiment is almost the same as that of the 34th embodiment except that the chambers above and below the second tongue **510** are compatible and symmetrical, and the chambers on the left and right sides of the connection slot **45** are also compatible and symmetrical. The structure of this embodiment further has one row of five fourth terminals **105** fixed to the plastic base **30**. The fourth terminals **105** have fourth contacts **106** separately arranged on the top surface of the second tongue **510** and have pins extending out of the plastic base. The one row of first contacts **61** and the at least one row of third contacts **101** pertain to the same connection interface and have oppositely arranged serial numbers. As shown in FIG. **81**, the one row of first contacts **61** have the serial numbers of 10, 9, 8, 7 and 6 from left to right, and the one row of third contacts **101** have the serial numbers of 6, 7, 8, 9 and 10 from left to right. The one row of second contacts **71** and the one row of fourth contacts **106** pertain to the same connection interface and have oppositely arranged serial numbers. The one row of second contacts **71** have the serial numbers of 1, 2, 3, 4 and 5 from left to right, and the one row of fourth contacts **106** have the serial numbers of 5, 4, 3, 2 and 1 from left to right.

In addition, each of the top and bottom plates of the metal housing **40** is prodded to form with elastic pressing sheet **410** symmetrically arranged on the left and right sides. A positioning projection **412** and a guide-in slant sheet **411** are formed near two lateral sides. The elastic pressing sheet **410** extends inwards. Two sides of the two positioning projections **412** are separated from the metal housing **40**, and the front and rear ends of the two positioning projections **412** are connected to the metal housing **40**. When the micro USB 3.0 plug **115** is normally inserted into the connection slot **45**, the two guide-in slant sheets **411** may assist in guiding the plug.

As shown in FIG. **82**, when the micro USB 3.0 plug **115** is normally inserted into the connection slot **45**, the one row of connection terminals **117** of the micro USB 3.0 plug **115** are electrically connected to one row of second contact portions **71** on the bottom of the tongue **50**. The other row of connection terminals **118** of the micro USB 3.0 plug **115** are electrically connected to one row of third contact portions **101** on the bottom of the tongue **510**. The ten connection terminals are correspondingly electrically connected to the contact portions, wherein the connection terminal and the contact portion connected together have the same serial number. At this time, the elastic pressing sheet **410** and the positioning projection **412** of the top plate of the metal housing **40** may rest against the micro USB 3.0 plug **115** to form the better positioning effect. The positioning projection **412** of the bottom plate of the metal housing **40** may be positioned on one side of the micro USB 3.0 plug **115**.

As shown in FIG. **83**, when the micro USB 3.0 plug **115** is oppositely inserted into the connection slot **45**, the one row of connection terminals **117** of the micro USB 3.0 plug **115** are electrically connected to one row of fourth contact portions **106** on the top of the tongue **510**. The other row of connection terminals **118** of the micro USB 3.0 plug **115** are electrically

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connected to the one row of first contact portions **61** on the top of the tongue **50**. The ten connection terminals are correspondingly electrically connected to the contact portions, wherein the connection terminal and the contact portion connected together have the same serial number. At this time, the elastic pressing sheet **410** and the positioning projection **412** of the bottom plate of the metal housing **40** may rest against the micro USB 3.0 plug **115** to form the better positioning effect. The positioning projection **412** of the top plate of the metal housing **40** may be positioned on one side of the micro USB 3.0 plug **115**.

As shown in FIGS. **84** and **85**, the 36th embodiment of the invention is a micro USB 3.0 socket for bidirectional insertion and connection of the micro USB 3.0 plug. The structure of this embodiment is almost the same as the 35th embodiment except that this embodiment does not have the guide-in slant sheet, and only has the positioning projection **412**. The positioning projection **412** has two sides connected to the metal housing **40**, and front and rear ends separated from the metal housing **40**.

Two surfaces of the tongue of the invention are formed with contacts, so there are many terminals arranged densely, and the high-frequency requirement is highly needed. The factors affecting the high frequency include the electroconductivity of the terminal, the cross-sectional area of the terminal, and the length of the terminal. In order to achieve the proper high frequency, the cross-sectional area and the length of the terminal need to be changed and then the high-frequency test has to be performed to obtain the desired high-frequency value.

Taking the USB 3.0 socket for bidirectional insertion and connection as an example, as shown in FIGS. **86** and **87**, when the high-frequency test does not reach the standard, the plate widths or the plate thicknesses of the two rows of first terminals **60** and **65** and the two rows of second terminals **70** and **90** may be increased so as to increase the frequency. As shown in FIGS. **88** and **89**, when the high-frequency test exceeds the standard, the plate widths or the plate thicknesses of the two rows of first terminals **60** and **65** and the two rows of second terminals **70** and **90** may be decreased, or the terminals may be curved to increase the lengths so as to decrease the frequency.

While the invention has been described by way of examples and in terms of preferred embodiments, it is to be understood that the invention is not limited thereto. To the contrary, it is intended to cover various modifications. Therefore, the scope of the appended claims should be accorded the broadest interpretation so as to encompass all such modifications.

What is claimed is:

1. A socket structure with duplex electrical connection, the socket structure comprising:

a plastic base;

a connection slot, which is disposed in front of the plastic base and may be connected to a plug having at least one row of connection terminals;

a tongue, which has a first surface and a second surface disposed opposite the first surface, and is disposed on one end of the plastic base and within the connection slot, such that chambers of the connection slot on two sides of the tongue make the plug be normally and oppositely inserted and positioned into the connection slot;

at least one row of first contacts separately arranged on the first surface of the tongue, wherein each of the first contacts is electrically connected to a first pin extending out of the plastic base; and

at least one row of second contacts separately arranged on the second surface of the tongue, wherein:

each of the second contacts is electrically connected to a second pin extending out of the plastic base;

when the plug is normally inserted into the connection slot with the at least one row of connection terminals of the plug facing the second surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of second contacts; and

when the plug is oppositely inserted into the connection slot with the at least one row of connection terminals of the plug facing the first surface of the tongue, the at least one row of connection terminals of the plug are electrically connected to the at least one row of first contacts.

2. The socket structure according to claim **1**, wherein the at least one row of first contacts and the first pins are formed on at least one row of first terminals; the first terminal is integrally formed with the first contact, a first extension, a first fixing portion and the first pin; the at least one row of second contacts and the second pins are formed on at least one row of second terminals; and the second terminal is integrally formed with the second contact, a second extension, a second fixing portion and the second pin.

3. The socket structure according to claim **2**, wherein the first contacts of the row of first terminals and the second contacts of the row of second terminals respectively project beyond one of the surfaces of the tongue.

4. The socket structure according to claim **1**, wherein the chambers of the connection slot on the two sides of the tongue are formed with compatible profiles, the at least one row of connection terminals are formed on only one of the surfaces of the plug, and the at least one row of connection terminals of the plug are electrically connected to only one of the rows of contacts on one of the surfaces of the tongue.

5. The socket structure according to claim **1**, further comprising a metal housing covering the plastic base, wherein the tongue and the plastic base are integrally formed.

6. The socket structure according to claim **3**, wherein the tongue is formed with through slots separately arranged, and the first contacts of the first terminals and the second contacts of the second terminals are elastically moved in correspondence with the through slots.

7. The socket structure according to claim **6**, wherein the first contact of the first terminal and the second contact of the second terminal corresponding to the same one of the through slots are aligned with each other in a front to rear direction.

8. The socket structure according to claim **6**, wherein the first contact of the first terminal and the second contact of the second terminal are parallel to each other in a left to right direction.

9. The socket structure according to claim **3**, wherein:

the first contact of the first terminal is prodded and projects beyond a plate surface of the first extension, and one end of the first contact is connected to the first extension and gradually protrudes to the other end from front to rear and is opened; and

the second contact of the second terminal is prodded and projects beyond a plate surface of the second extension, and one end of the second contact is connected to the second extension and gradually protrudes to the other end from front to rear and is opened.

10. The socket structure according to claim **9**, wherein the row of first terminals and the row of second terminals pertain to the same connection interface and have oppositely arranged serial numbers, and the first contact and the second contact are vertically aligned with each other.

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11. The socket structure according to claim 1, wherein:

the tongue is a circuit board, first traces are formed on a top side of the tongue, and the first trace has the first contact on a front section of the tongue and a first connection terminal on a rear section of the tongue, the first connection terminal is electrically connected to the first pin; and

second traces are formed on a bottom side of the tongue, the second trace has the second contact on the front section of the tongue and a second connection terminal on the rear section of the tongue, and the second connection terminal is electrically comected to the second pin.

12. The socket structure according to claim 1, wherein the plug has a plastic base and a metal housing, the metal housing covers the plastic base, a chamber is formed between the metal housing and the plastic base, and the chamber is fitted with the tongue when the plug is inserted into the connection slot.

13. The socket structure according to claim 1, wherein the plug does not have a metal housing, and when the plug is inserted into the connection slot, the plug may be connected to a top side or a bottom side of the tongue so that two plugs may be simultaneously connected to the top and bottom sides of the tongue.

14. The socket structure according to claim 1, wherein the at least one row of first contacts and the at least one row of second contacts pertain to the same connection interface and have oppositely arranged serial numbers, and the plug may be normally and oppositely inserted for electrical connection with the connection terminals of the plug facing upward or downward.

15. The socket structure according to claim 14 being a universal serial bus (USB) socket, wherein there are four rows of the first contacts and four rows of the second contacts.

16. The socket structure according to claim 14 being a mini universal serial bus (USB) socket, wherein there are five rows of the first contacts and five rows of the second contacts.

17. The socket structure according to claim 1, wherein the at least one row of first contacts and the at least one row of second contacts pertain to different connection interfaces, and may be respectively electrically connected to the plug and the other plug, which have the different connection interfaces.

18. The socket structure according to claim 1, wherein the tongue is disposed at a middle within the connection slot so that the connection slot is formed with symmetric profiles in up, down, left and right chambers of the tongue.

19. The socket structure according to claim 5, wherein at least one side of the metal housing projects inwardly to form at least one laterally elastically movable elastic sheet, and when the plug is inserted into the connection slot, the at least one elastic sheet may rest against the plug or the tongue to prevent the plug from turning.

20. The socket structure according to claim 19, wherein the at least one elastic sheet is a middle elastic sheet disposed at a middle height on one side of the connection slot, the plug does not have a metal housing, the plug may be connected to a top side or a bottom side of the tongue when the plug is inserted into the connection slot, and the middle elastic sheet rests against one of the surfaces of the plug formed with the connection terminals.

21. The socket structure according to claim 19, wherein the at least one elastic sheet comprises two outer elastic sheets, which are disposed above and below of the tongue on one side of the connection slot, the plug has a plastic base and a metal housing covering the plastic base, a chamber is formed between the metal housing and the plastic base, and when the plug is inserted into the connection slot, the chamber is fitted with the tongue, an elastic sheet on one side of the metal housing is pushed away by the plug, and the other elastic sheet rests against one of the surfaces of the plug.

22. The socket structure according to claim 21, wherein the at least one elastic sheet further comprises two inner elastic sheets disposed on inner sides of the two outer elastic sheets, and the two inner elastic sheets respectively rest against top and bottom surfaces on one side of the tongue.

23. The socket structure according to claim 21, wherein the at least one elastic sheet further comprises a middle elastic sheet disposed on an inner side of the two outer elastic sheets and disposed at a middle height on one side of the connection slot, and when the plug does not have the metal housing, the plug inserted into the connection slot may be connected to a top side or a bottom side of the tongue, and the middle elastic sheet rests against one of the surfaces of the plug formed with the connection terminals.

24. The socket structure according to claim 19, wherein one end of the elastic sheet is connected to one side of the metal housing near a front end of the metal housing and extends inwardly in an arced manner, the elastic sheet has a projection, and the elastic sheet is elastically moved outwardly when the projection is pressed.

25. The socket structure according to claim 19, wherein one end of the elastic sheet is comected to a side plate surface of the metal housing and extends outwardly in an arced manner, the elastic sheet has a projection, and the elastic sheet is elastically moved outwardly when the projection is pressed.

26. The socket structure according to claim 3, wherein a front end of the first contact has a first guide-in sheet, a front end of the second contact has a second guide-in sheet, the first contact and the second contact are vertically aligned with each other, and the first guide-in sheet and second guide-in sheet are staggered in a left to right direction.

27. The socket structure according to claim 1, wherein the plastic base is further formed with at least another connection slot, and the another connection slot has at least one row of terminals to be connected to another plug.

28. The socket structure according to claim 14, wherein top and bottom ends of the connection slot are narrower than a middle section of the connection slot so that four corners of a profile of the connection slot have sloped edges.

29. The socket structure according to claim 28, wherein each of the four sloped edges on the front end of the connection slot is formed with a slant guiding plate expanding outwardly, and when the plug is inserted into the connection slot to touch the slant guiding plate, the plug is guided toward a center of the connection slot.

30. The socket structure according to claim 28 being a micro USB 2.0 socket, wherein each of the at least one row of first contacts and the at least one row of second contacts is a row of five connection terminals, which cannot be elastically moved.

31. The socket structure according to claim 1, further comprising:

a second tongue disposed within the connection slot, wherein the second tongue and the tongue are located on the same level and in parallel;

at least one row of third contacts separately arranged on one surface of the second tongue, wherein each of the third contacts is electrically connected to a pin extending out of the plastic base; and

at least one row of fourth contacts separately arranged on the other surface of the second tongue, wherein each of the fourth contacts is electrically connected to a pin extending out of the plastic base;

wherein the at least one row of first contacts and the at least one row of third contacts pertain to the same connection

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interface and have oppositely arranged serial numbers, the at least one row of second contacts and the at least one row of fourth contacts pertain to the same connection interface and have oppositely arranged serial numbers.

32. The socket structure according to claim **31** being a micro USB 3.0 socket, wherein each of the at least one row of first contacts, the at least one row of second contacts, the at least one row of third contacts and the at least one row of fourth contacts has one row of five connection terminals, which cannot be elastically moved.

33. The socket structure according to claim **14**, further comprising:

a second tongue disposed within the connection slot, wherein the second tongue and the tongue are located on the same level and in parallel; and

at least one row of third contacts separately arranged on one surface of the second tongue, wherein each of the third contacts is electrically connected to a pin extending out of the plastic base.

* * * * *

Electronic Patent Application Fee Transmittal

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Title of Invention:	SOCKET STRUCTURE WITH DUPLEX ELECTRICAL CONNECTION
First Named Inventor/Applicant Name:	Chou Hsien Tsai
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Filing Fees for Reissue (Utility)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
UTILITY REISSUE BASIC	2014	1	160	160
REISSUE OR REISSUE DESIGN CPA SEARCH FEE	2114	1	350	350
REISSUE OR REISSUE DESIGN CPA EXAM. FEE	2314	1	1160	1160
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**1670**

Electronic Acknowledgement Receipt	
EFS ID:	46906412
Application Number:	17974866
International Application Number:	
Confirmation Number:	1048
Title of Invention:	SOCKET STRUCTURE WITH DUPLEX ELECTRICAL CONNECTION
First Named Inventor/Applicant Name:	Chou Hsien Tsai
Customer Number:	22442
Filer:	Jason Vick/Joanne Vos
Filer Authorized By:	Jason Vick
Attorney Docket Number:	10186PAT-1-REI-CON
Receipt Date:	27-OCT-2022
Filing Date:	
Time Stamp:	14:05:18
Application Type:	Reissue (Utility)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$1670
RAM confirmation Number	E20220QE05523119
Deposit Account	191970
Authorized User	Joanne Vos
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.16 (National application filing, search, and examination fees) 37 CFR 1.17 (Patent application and reexamination processing fees)	

37 CFR 1.19 (Document supply fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	WebADS.pdf	192793 a956257175df67ed913cc9997b03588520d6195a	no	8
Warnings:					
Information:					
2	Transmittal Reissue Application	01_FINAL_Reissue_Transmittal_10186PAT-1-REI-CON.pdf	196134 64a6a544e0a87f1c5b4abaa4f0c98305b9f4fcc1	no	1
Warnings:					
Information:					
3	Transmittal Reissue Application	02_FINAL_Reissue_Fee_Transmittal_10186PAT-1-REI_CON.pdf	228896 86e9f56c59558409d3b7d1ef04826450814 0a4f2	no	1
Warnings:					
Information:					
4		04_FINAL_StatementUnder373_w_POA_10186PAT-1-REI-CON.pdf	891952 9835ae50a3757b7b41707c46bb4b28fefb0b87a8	yes	3

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Assignee showing of ownership per 37 CFR 3.73	1	2
	Power of Attorney	3	3

Warnings:					
Information:					
5	Consent of Assignee accompanying the declaration	05_FINAL_Consent_of_Assignee_10186PAT-1-REI-CON.pdf	726478 89209cb56cf8cf92579dc302b20fabc91971e6c8	no	1
Warnings:					
Information:					

6	Reissue Oath or Declaration	06_FINAL_Dec_by_Assignee_10186PAT-1-REI-CON.pdf	1826061 4c4d9698b9eaf260cbe546568d274287502 8c167	no	2
Warnings:					
Information:					
7	Reissue Oath or Declaration	07_FINAL_Dec_by_Inventor_10186PAT-1-REI-CON.pdf	1437784 4c44c9be32abdb29d4f1ba5e12571880ad1 14bfb	no	2
Warnings:					
Information:					
8	Miscellaneous Incoming Letter	08_FINAL_ReissueStatement_173c_10186PAT-1-REI-CON.pdf	80242 daff2d3ab31d56b30ec1c1e2a0e6bdc839f1 f8ef	no	2
Warnings:					
Information:					
9		09_FINAL_AMEND_PRELIM_01_10186PAT-1-REI-CON.pdf	93429 991e8dfd991f877eeae2bcad2dfe266762cf 7c53	yes	7

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Preliminary Amendment	1	1
	Specification	2	2
	Claims	3	6
	Applicant Arguments/Remarks Made in an Amendment	7	7

Warnings:					
Information:					
10		10_FINAL_US8198563_10186PAT-1-REI.pdf	1956010 1b7ba467257843d5972fe93fe67123524015865f	yes	41

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Abstract	1	1

	Drawings-only black and white line drawings		2	30	
	Specification		31	38	
	Claims		39	41	
Warnings:					
Information:					
11	Fee Worksheet (SB06)	fee-info.pdf	44021 d751e378ada12427c23b78e2392c9a996e229eff	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	7673800		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

<u>New Applications Under 35 U.S.C. 111</u>
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.
<u>National Stage of an International Application under 35 U.S.C. 371</u>
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.
<u>New International Application Filed with the USPTO as a Receiving Office</u>
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	10186PAT-1-REI-CON
	Application Number	
Title of Invention	SOCKET STRUCTURE WITH DUPLEX ELECTRICAL CONNECTION	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Chou Hsien		Tsai	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

City	New Taipei City	Country of Residence i	TW

Mailing Address of Inventor:

Address 1	8F.-2, No. 1, Wuquan 1st Rd.		
Address 2	Xinzhuang Dist.		
City	New Taipei City	**State/Province**	
Postal Code	242	**Country** i	TW

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	22442		
Email Address	jvick@sheridanross.com	Add Email	Remove Email

Application Information:

Title of the Invention	SOCKET STRUCTURE WITH DUPLEX ELECTRICAL CONNECTION		
Attorney Docket Number	10186PAT-1-REI-CON	**Small Entity Status Claimed**	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	29	**Suggested Figure for Publication (if any)**	

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	10186PAT-1-REI-CON
	Application Number	
Title of Invention	SOCKET STRUCTURE WITH DUPLEX ELECTRICAL CONNECTION	

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	22442		

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix	Remove
Registration Number					
Prefix	**Given Name**	Middle Name	**Family Name**	Suffix	Remove
Registration Number					

Additional Representative Information blocks may be generated within this form by selecting the **Add** button.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	10186PAT-1-REI-CON
	Application Number	
Title of Invention	SOCKET STRUCTURE WITH DUPLEX ELECTRICAL CONNECTION	

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Patented			Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
	Continuation of	17020359	2020-09-14	RE49287	2022-11-08

Prior Application Status	Patented			Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
	reissued of	12759408	2010-04-13	8198563	2012-06-12

Prior Application Status	Patented			Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
17020359	reissued of	12759408	2010-04-13	8198563	2012-06-12

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX) the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Application Number	Country	Filing Date (YYYY-MM-DD)	Access Code (if applicable)
099100847	TW	2010-01-13	

Application Number	Country	Filing Date (YYYY-MM-DD)	Access Code (if applicable)
098210021	TW	2009-06-05	

Application Number	Country	Filing Date (YYYY-MM-DD)	Access Code (if applicable)
098117405	TW	2009-05-26	

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	10186PAT-1-REI-CON
	Application Number	
Title of Invention	SOCKET STRUCTURE WITH DUPLEX ELECTRICAL CONNECTION	

Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)
098112573	TW	2009-04-15	

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button.

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	10186PAT-1-REI-CON
	Application Number	
Title of Invention	SOCKET STRUCTURE WITH DUPLEX ELECTRICAL CONNECTION	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	10186PAT-1-REI-CON
	Application Number	
Title of Invention	SOCKET STRUCTURE WITH DUPLEX ELECTRICAL CONNECTION	

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

◉ Assignee	○ Legal Representative under 35 U.S.C. 117	○ Joint Inventor
○ Person to whom the inventor is obligated to assign.	○ Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:	

If the Applicant is an Organization check here. ☒

Organization Name	KIWI CONNECTION, LLC

Mailing Address Information For Applicant:

Address 1	7215 Bosque Blvd		
Address 2	Suite a-#102		
City	Waco	**State/Province**	TX
Country [i]	US	Postal Code	76710
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	10186PAT-1-REI-CON
	Application Number	
Title of Invention	SOCKET STRUCTURE WITH DUPLEX ELECTRICAL CONNECTION	

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

If the Assignee or Non-Applicant Assignee is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1			
Address 2			
City		**State/Province**	
Country i		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.

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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	10186PAT-1-REI-CON
	Application Number	
Title of Invention	SOCKET STRUCTURE WITH DUPLEX ELECTRICAL CONNECTION	

Signature:

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e. g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Jason H. Vick/			Date (YYYY-MM-DD)	
First Name	Jason H.	Last Name	Vick	Registration Number	45285

Additional Signature may be generated within this form by selecting the Add button.