分别固定在反射罩807相背的两侧，加热管808与导液介质802之间存在间隙800。

[0114] 反射罩807呈球冠状，能够将加热管808产生的热辐射至导液介质802，反射罩807固定在烟弹管82的内壁上，例如通过间隔设置的固定件或固定杆（图未示）固定在烟弹管82的内壁上。气流可以从反射罩807与烟弹管82之间的间隔进入加热管808与导液介质802之间的间隙800，从而可以携带被雾化的烟液进入通气管道806。在其它实施例中，反射罩807可为其它形状，只要反射罩807能够将加热管808产生的热辐射至导液介质802即可。本实施例中，反射罩807能够将热量集中辐射至导液介质802，进而提高了热量的利用率。

[0115] 本实施例中，加热管808为红外线加热管。在其它实施例中，加热管808可为光电加热管等其它加热管。

[0116] 请参图11，第九实施例提供的一种电子烟90。本实施例的电子烟90的结构与第七实施例的电子烟70的结构基本相同，不同之处在于：本实施例中，电子烟90的导液介质901及发热元件902不同。

[0117] 导液介质901内部开设有直线形通气孔903，直线形通气孔903贯穿导液介质901相背的两端面。直线形通气孔901与通气管道904相通。

[0118] 发热元件902为微波加热装置，发热元件902固定在烟弹管92中并与储液器900连接。发热元件902具有加热腔905、线圈部906及电极部907。加热腔905与电极部907位于线圈部906相背的两端。导液介质901的受热端908位于加热腔905内且与发热元件902之间存在间隙910。由于发热元件902连接在储液器900上，使得加热腔905能够很好被围住，热量散失少，能够使导液介质901吸收更多的热量，提高了热量的使用效率，同时也能提高雾化效果。

[0119] 电极部907与第一连接结构电性连接，例如，电极部907的一个电极与导电柱连接，电极部907的另一个电极与第一导电管连接。

[0120] 发热元件902内部开设有供气流通的通孔909。直线形通气孔903与发热元件902的通孔909及通气管道904为直接轴向相通，使得气流流动更顺畅，而且导液介质901内部的烟液更多地被雾化，进一步提升了雾化效果及效率。

[0121] 以上所述实施例仅表达了本发明的几种实施例，其描述较为具体和详细，但并不能因此而理解为对本发明专利范围的限制。应当指出的是，对于本领域的普通技术人员来说，在不脱离本发明构思的前提下，还可以做出若干变形和改进，这些都属于本发明的保护范围。因此，本发明专利的保护范围应以所附权利要求为准。

NJOY Exhibit 1002.605

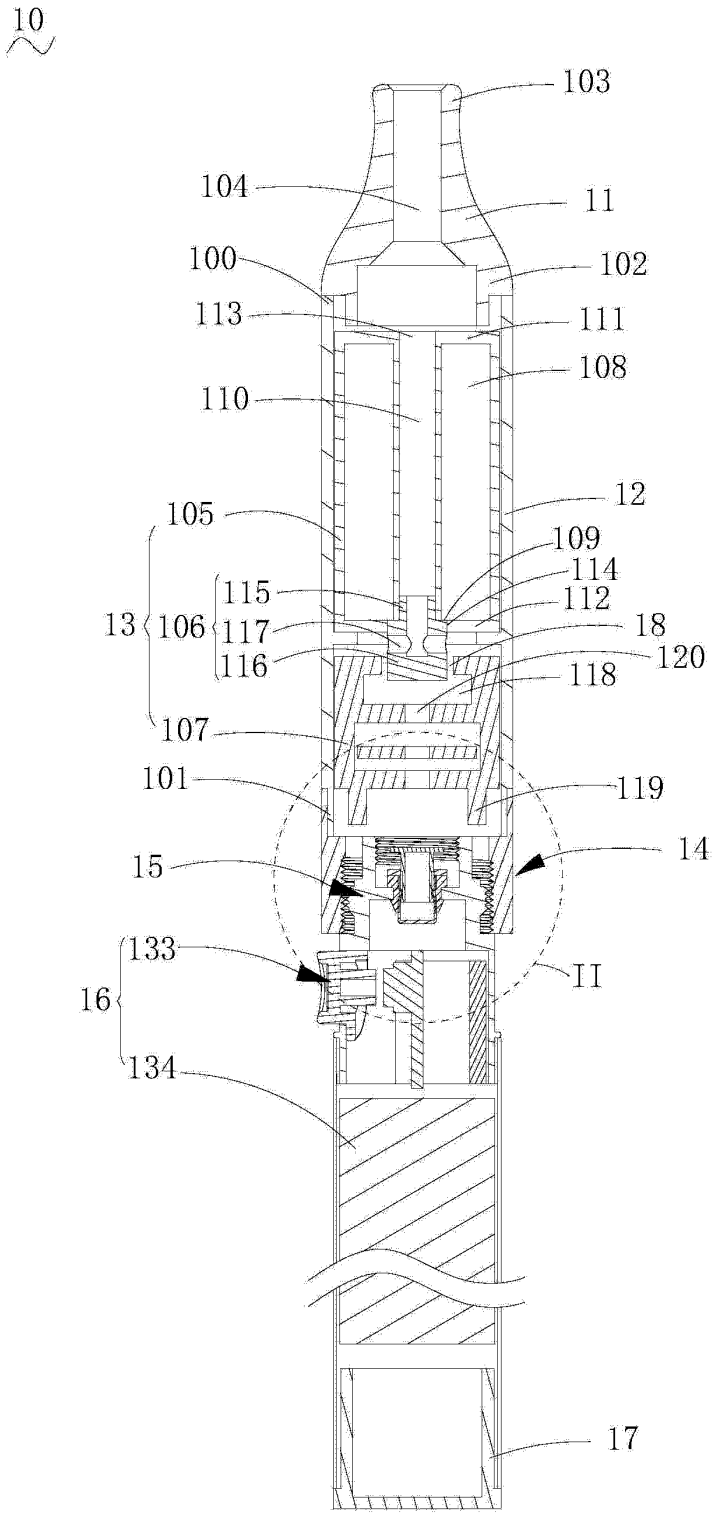


图 1

NJOY Exhibit 1002.606

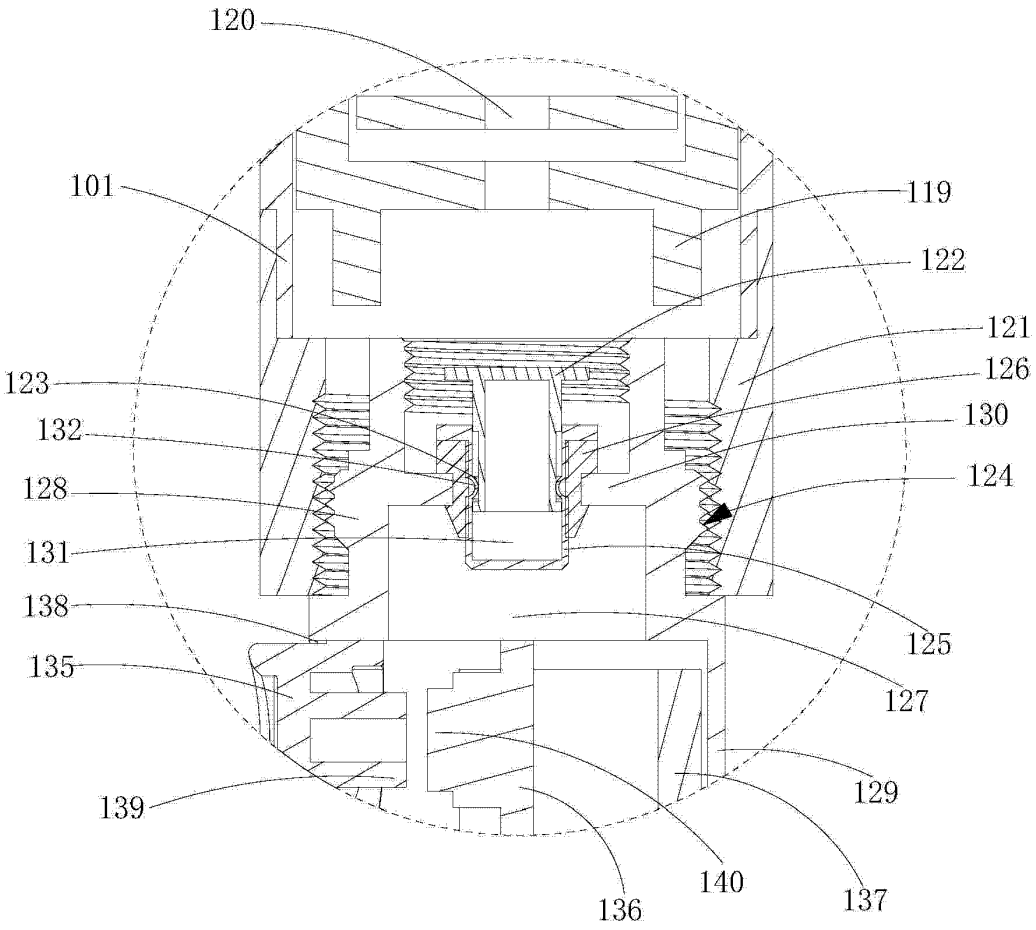


图 2

NJOY Exhibit 1002.607

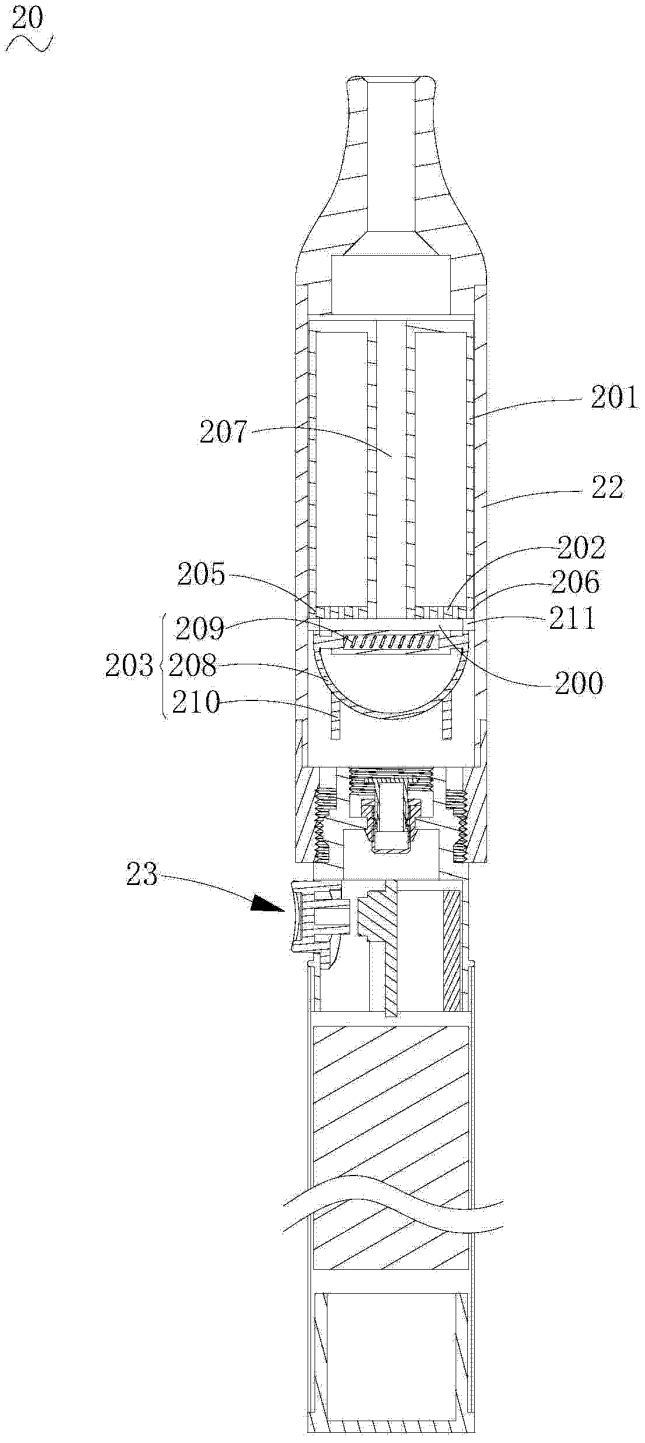


图 3

NJOY Exhibit 1002.608

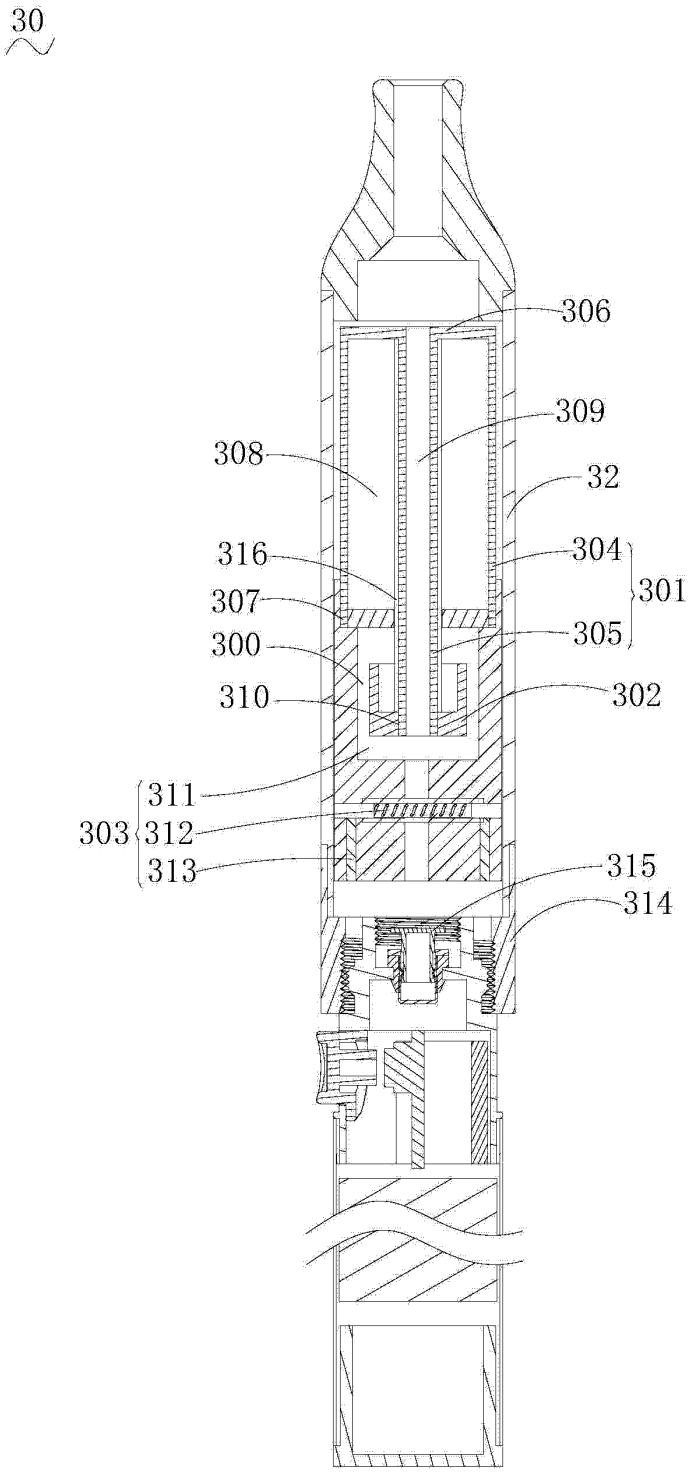


图 4

NJOY Exhibit 1002.609

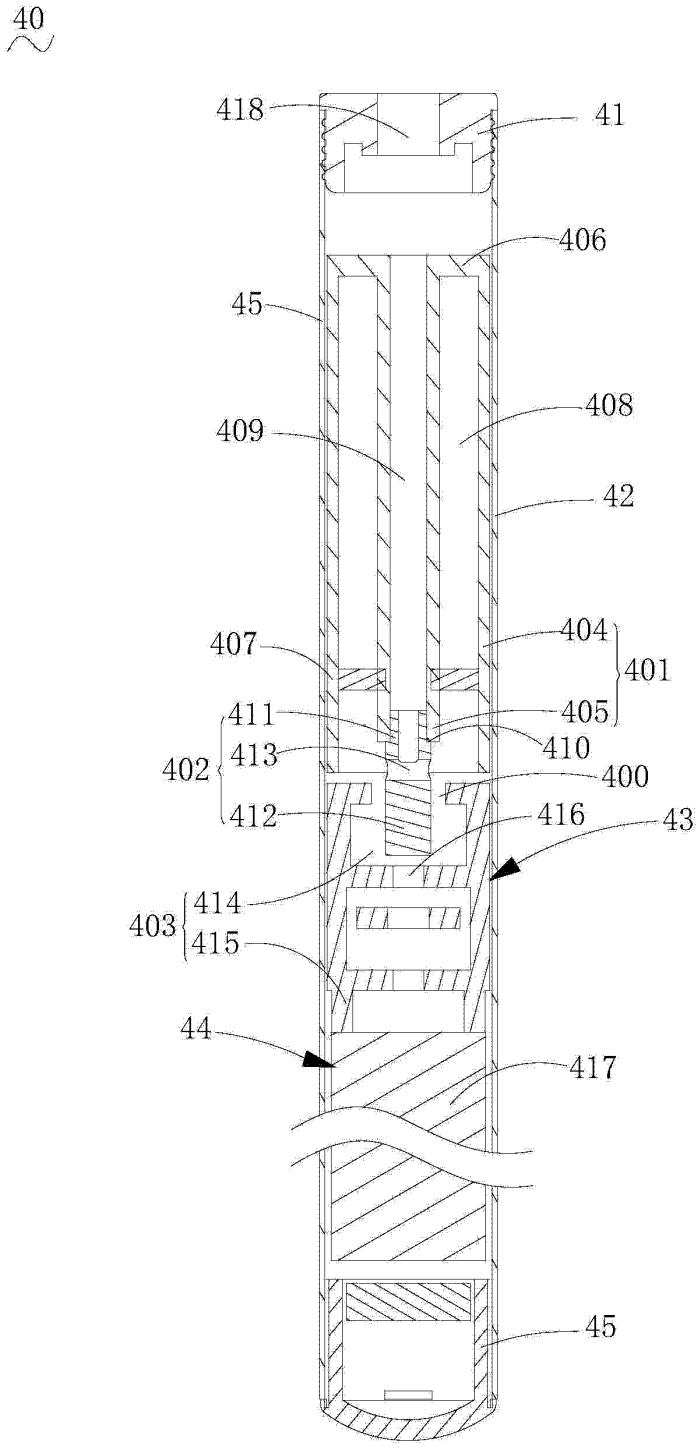


图 5

NJOY Exhibit 1002.610

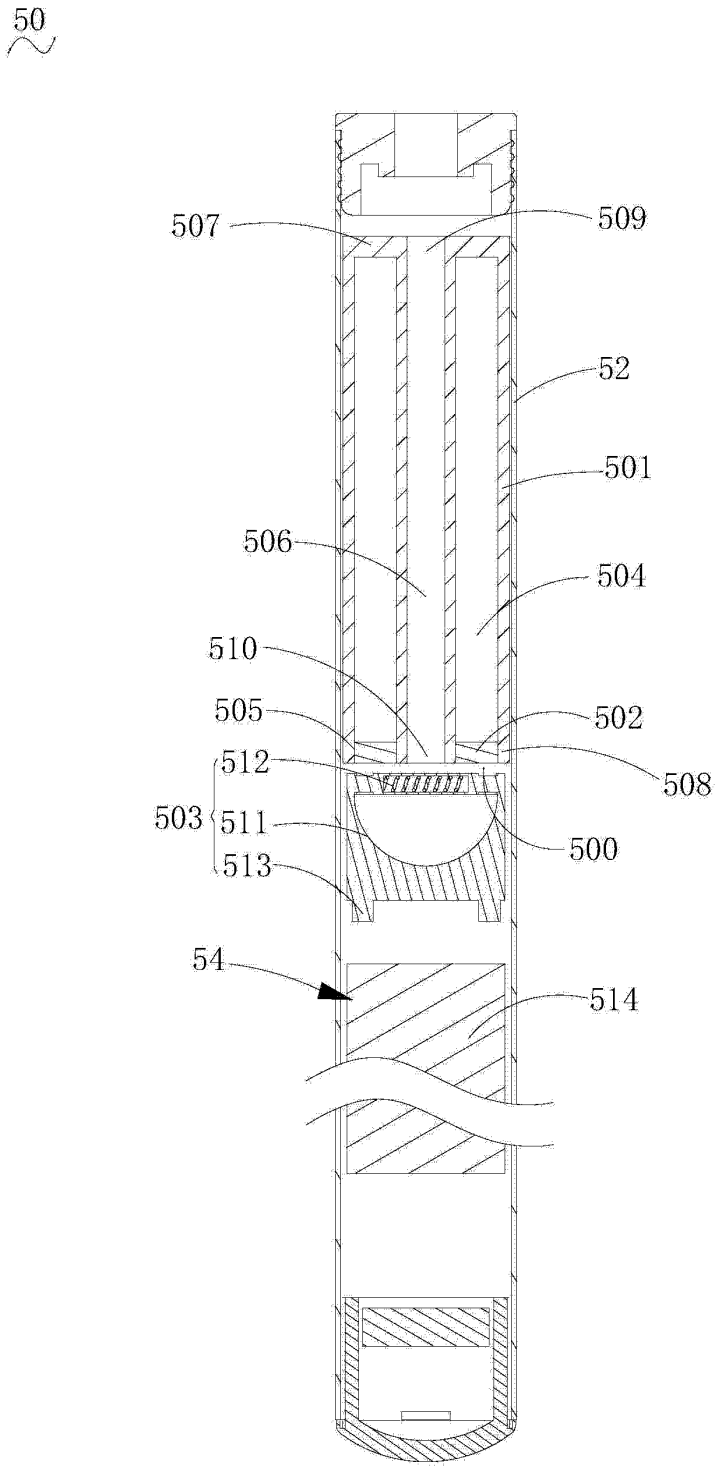


图 6

NJOY Exhibit 1002.611

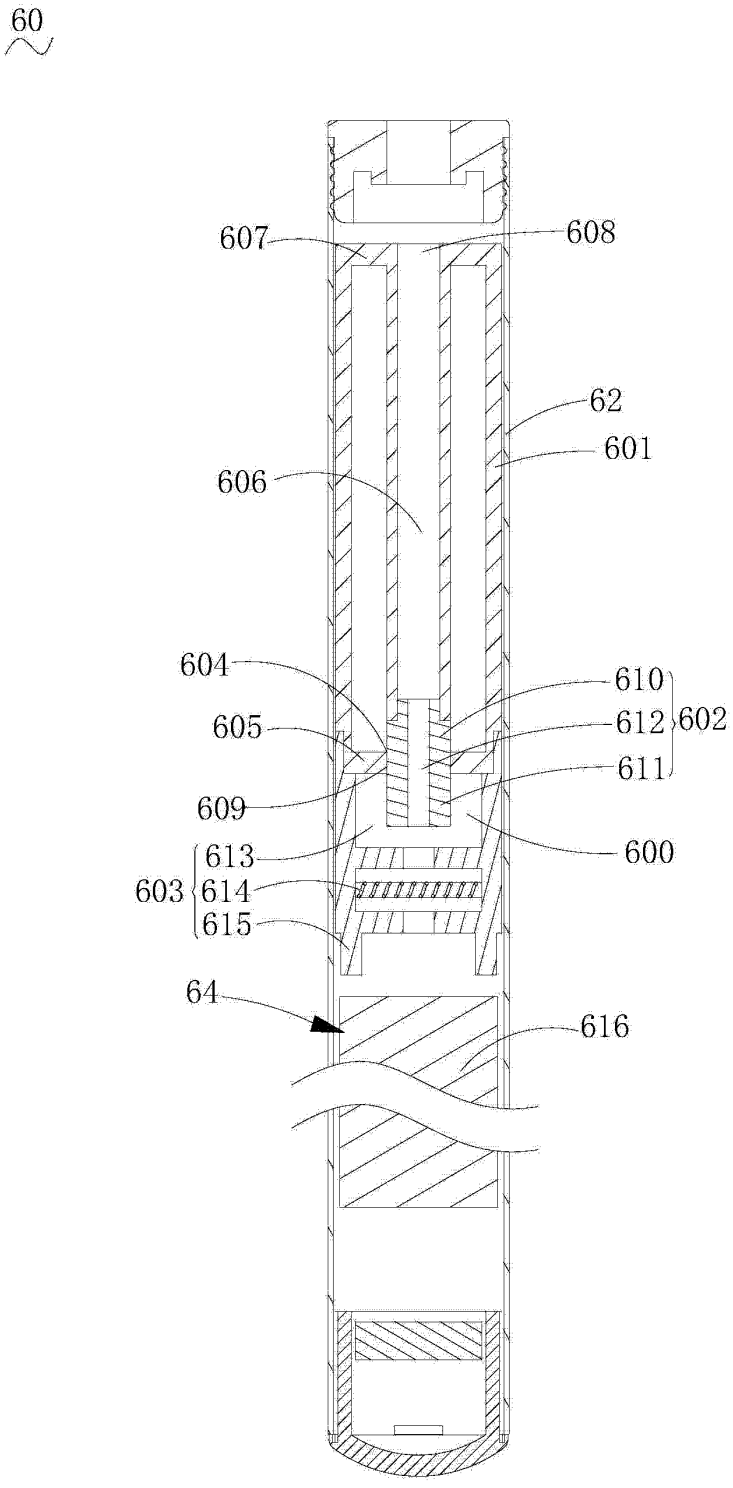


图 7

NJOY Exhibit 1002.612

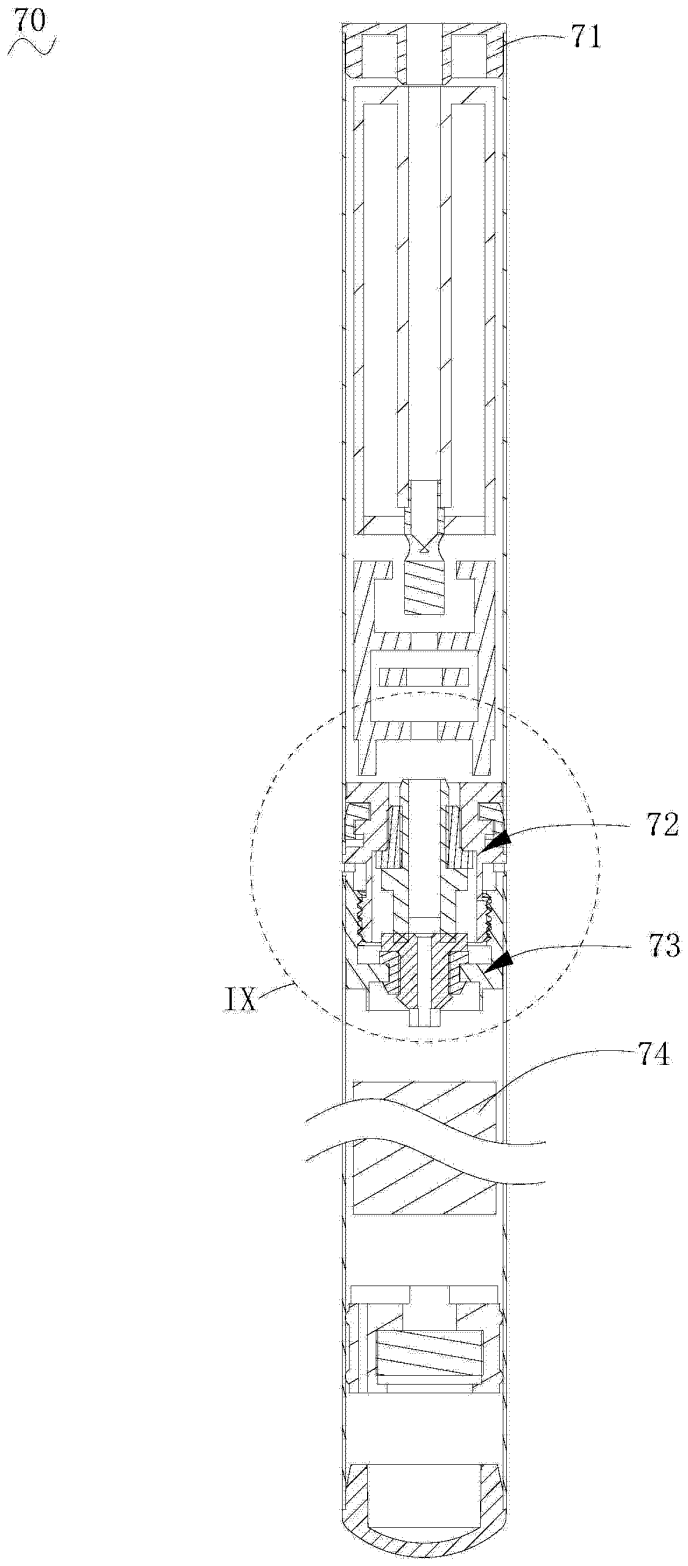


图 8

NJOY Exhibit 1002.613

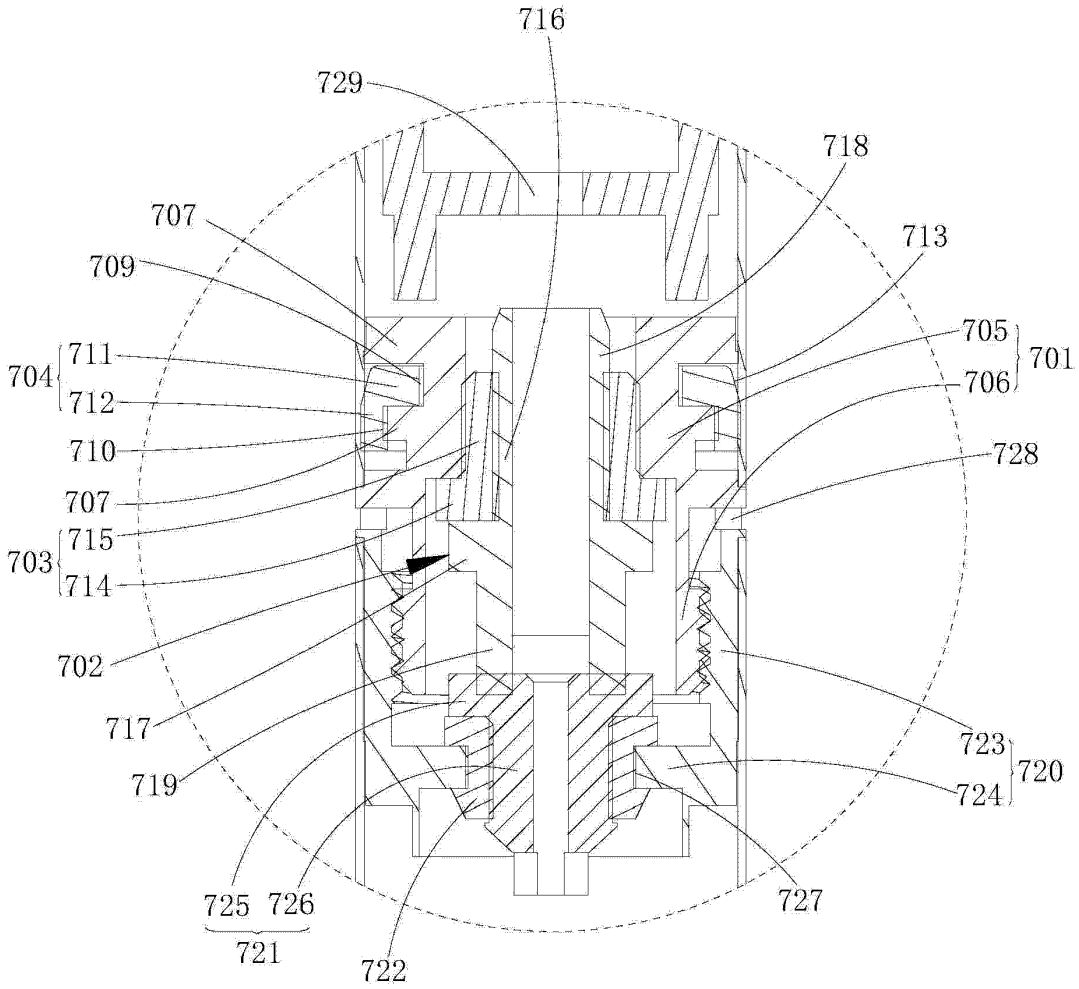


图 9

NJOY Exhibit 1002.614

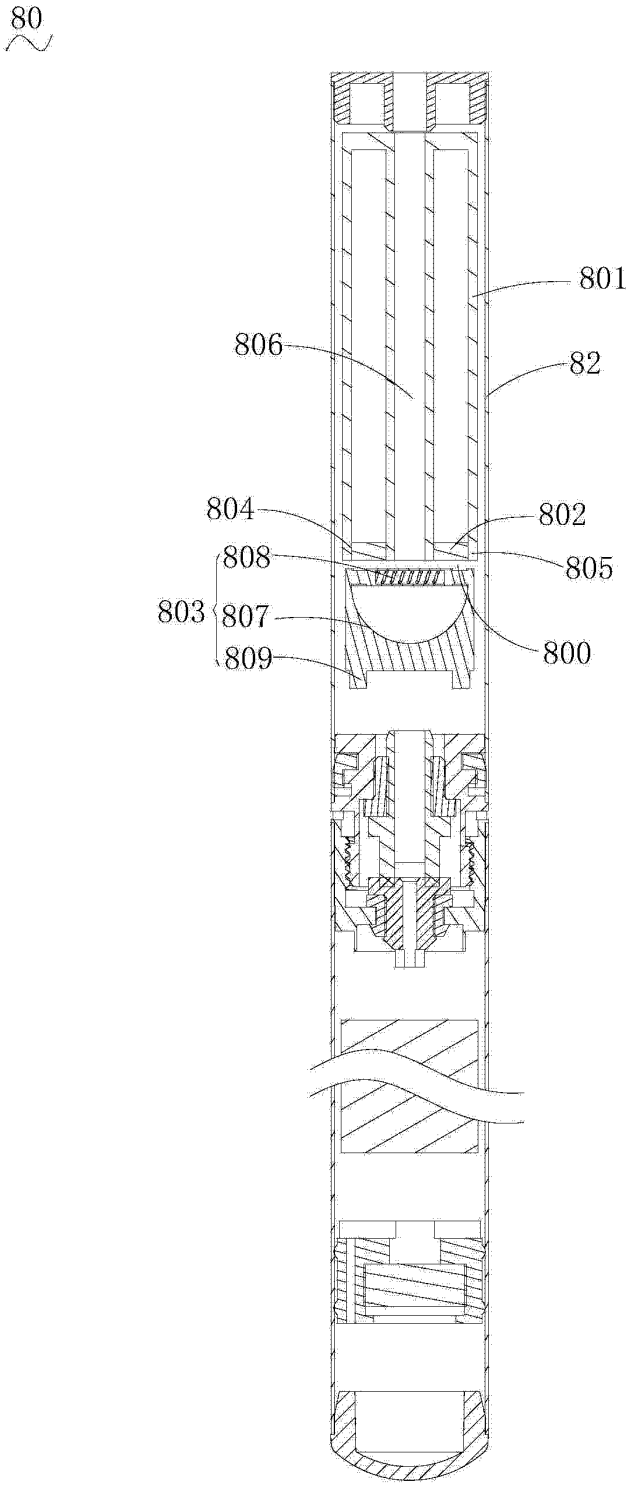


图 10

NJOY Exhibit 1002.615

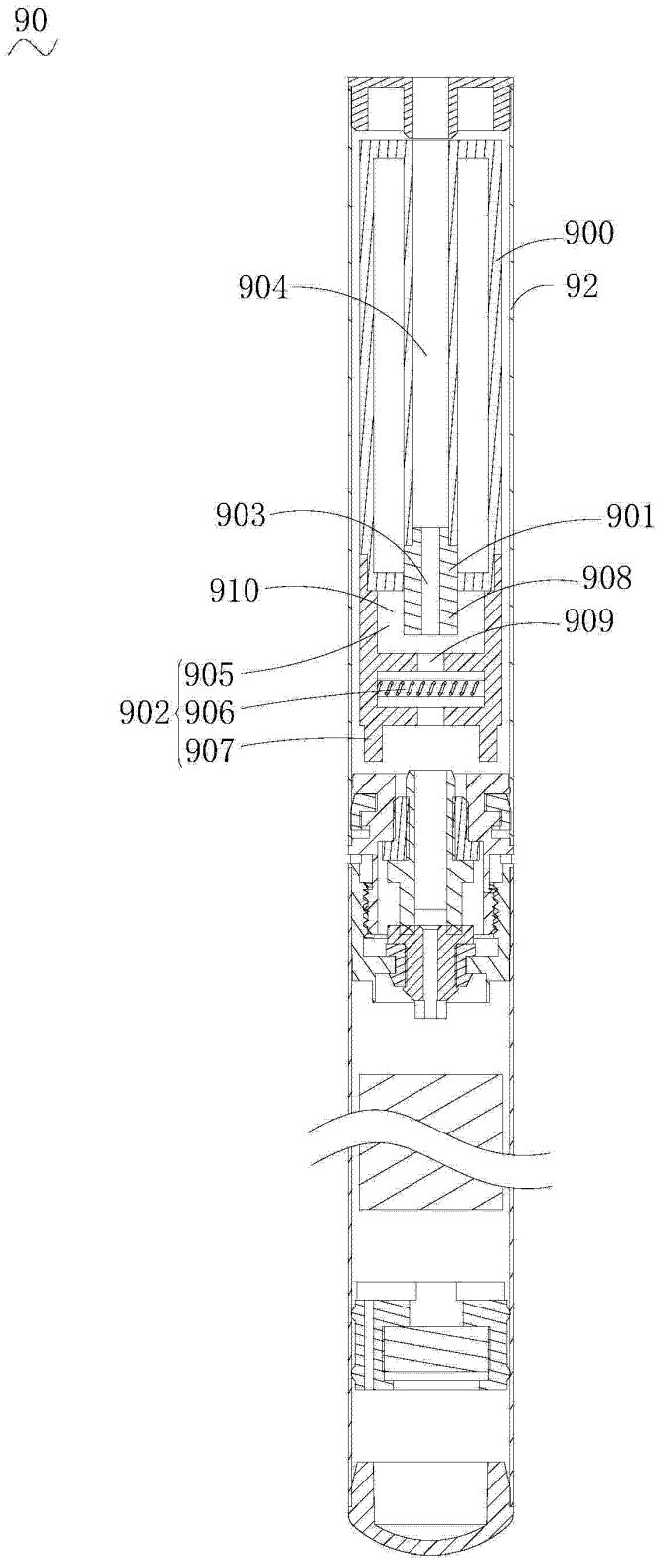


图 11

NJOY Exhibit 1002.616

Espacenet

Bibliographic data: CN104382237 (A) — 2015-03-04

Electronic cigarette

Inventor(s): CHEN ZHIPING ± (CHEN ZHIPING)

Applicant(s): SHENZHEN SMOORE TECHNOLOGY LTD ± (SHENZHEN SMOORE TECHNOLOGY LIMITED)

Classification: **- international:** ***A24F47/00***
- cooperative: **A24F47/008** more
Global Dossier

Application number: CN201410650558 20141114

Priority number(s): CN201410650558 20141114

Abstract of CN104382237 (A)

The invention relates to an electronic cigarette, which comprises a smoke cartridge pipe and an atomizing device, wherein the smoke cartridge pipe comprises a liquid storage cavity and a liquid outlet, the liquid outlet is used for communicating the interior of the liquid storage cavity and the exterior, the atomizing device comprises a liquid storage chamber and a liquid inlet, the liquid inlet is used for communicating the interior of the liquid storage chamber and the exterior, and the smoke cartridge pipe is arranged on the atomizing device, and rotates relative to the atomizing device between a first position and a second position; when the smoke cartridge pipe is in the first position, the liquid outlet corresponds to the liquid inlet, and the liquid storage cavity is communicated with the liquid storage chamber; when the smoke cartridge pipe is in the second position, the liquid outlet is staggered with the liquid inlet, and the liquid storage cavity is separated from the liquid storage chamber. The electronic cigarette has the advantage that the smoke cartridge pipe can rotate relative to the atomizing device between the first position and the second position, and the liquid outlet corresponds to the liquid inlet, or is staggered from the liquid inlet, so the purpose of filling liquid or separating the atomizing device is realized, the liquid filling process is convenient, the liquid filling amount is adjusted in the liquid filling process, the liquid leakage in the transportation and storage process is prevented, and the utilization rate of smoke liquid is improved.

NJOY Exhibit 1002.617

(19)中华人民共和国国家知识产权局

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A24F 47/00(2006.01)

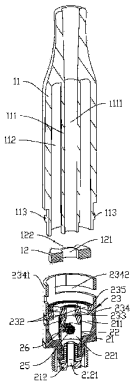
权利要求书2页 说明书5页 附图4页

(54)发明名称

电子烟

(57)摘要

本发明涉及一种电子烟，包括烟弹管、雾化装置。烟弹管包括储液腔以及将该储液腔内部与外部相连通的出液口。雾化装置，包括储液室以及将该储液室内部与外部相连通的进液口。烟弹管安装于雾化装置上，并可相对于雾化装置在一个第一位置和一个第二位置之间转动；烟弹管在第一位置时，出液口与进液口位置相对应，将储液腔与储液室相连通；烟弹管在第二位置时，出液口与进液口相互错位，使得储液腔与储液室相隔断。烟弹管可相对雾化装置在第一位置和第二位置之间转动，以使得出液口和进液口相对应或相错位，起到向雾化装置注液或隔断的目的，方便注液过程，可在注液时调节注液量的大小，可防止在运输和存储过程中漏液，提升了烟液的利用率。



CN 104382237 A

NJOY Exhibit 1002.618

1. 一种电子烟，其特征在于，包括：

烟弹管（10），包括储液腔（112）以及将该储液腔（112）内部与外部相连通的至少一个出液口（122）；

雾化装置（20），包括储液室（211）以及将该储液室（211）内部与外部相连通的至少一个进液口（232）；

所述烟弹管（10）安装于所述雾化装置（20）上，并可相对于所述雾化装置（20）在一个第一位置（A）和一个第二位置（B）之间转动；所述烟弹管（10）在所述第一位置（A）时，所述至少一个出液口（122）与所述至少一个进液口（232）位置相对应，将所述储液腔（112）与所述储液室（211）相连通；所述烟弹管（10）在所述第二位置（B）时，所述至少一出液口（122）与所述至少一个进液口（232）相互错位，使得所述储液腔（112）与所述储液室（211）相隔断。

2. 根据权利要求 1 所述的电子烟，其特征在于，所述烟弹管（10）与所述雾化装置（20）共轴地安装在一起，并能相对所述雾化装置（20）绕其轴线在所述第一位置（A）和所述第二位置（B）之间来回转动；所述至少一个进液口（232）形成于所述雾化装置（20）与所述烟弹管（10）相对的端部上，所述至少一个出液口（122）形成于所述烟弹管（10）与所述雾化装置（20）相对的端部上。

3. 根据权利要求 2 所述的电子烟，其特征在于，所述烟弹管（10）包括纵向设置的第一气流通道（1111），所述储液腔（112）围绕该第一气流通道（1111）；所述雾化装置（20）包括沿纵向设置的第二气流通道（221），所述储液室（211）围绕该第二气流通道（221）；所述第一气流通道（1111）与所述第二气流通道（221）相连通。

4. 根据权利要求 3 所述的电子烟，其特征在于，所述烟弹管（10）包括与所述雾化装置（20）相对的第一壁部，所述至少一个出液口（122）形成于该第一壁部上；所述雾化装置（20）包括与所述烟弹管（10）相对的第二壁部，所述第一壁部可绕所述轴线转动地与所述第二壁部贴合，所述至少一个进液口（232）形成于该第二壁部上。

5. 根据权利要求 4 所述的电子烟，其特征在于，所述至少一个进液口（232）包括两个，并对称设置在所述第二壁部上；所述至少一个出液口（122）包括两个，并对称设置在所述第一壁部上。

6. 根据权利要求 5 所述的电子烟，其特征在于，所述出液口（122）、进液口（232）均呈扇环形，两所述出液口（122）相对所述轴线中心旋转对称；两所述进液口（232）相对所述轴线中心旋转对称。

7. 根据权利要求 4 所述的电子烟，其特征在于，所述烟弹管（10）包括烟弹管本体（11）和设置在所述烟弹管本体（11）端部的第一盖体（12），所述烟弹管本体（11）包括形成所述第一气流通道（1111）的第一通气管（111），所述第一壁部形成于所述第一盖体（12）上，所述第一盖体（12）与所述烟弹管本体（11）过盈配合；所述第一盖体（12）的中部设有套孔（121），所述套孔（121）套设在所述第一通气管（111）外。

8. 根据权利要求 7 所述的电子烟，其特征在于，所述雾化装置（20）包括与所述烟弹管（10）配合的第二盖体（23），所述第二壁部形成于所述第二盖体（23）上；

所述第二盖体（23）包括一体成型形成的塑胶密封座（234）和软胶密封垫（235），所述密封垫（235）夹设在所述密封座（234）和所述第一盖体（12）之间，所述进液口（232）贯穿

NJOY Exhibit 1002.619

所述密封座(234)和密封垫(235)。

9. 根据权利要求 8 所述的电子烟,其特征在于,所述密封垫(235)与所述第一壁部相对的表面设置有降低摩擦用的第一凸起部(2351),所述第一凸起部(2351)包括若干以所述轴线为中心的环状的凸起,所述凸起与所述第一壁部相抵配合。

10. 根据权利要求 8 或 9 所述的电子烟,其特征在于,所述密封垫(235)与所述第一壁部相对一侧的表面设有环绕在所述进液口(232)边缘的第二凸起部(2352),所述第二凸起部(2352)与所述第一壁部相抵配合。

11. 根据权利要求 8 所述的电子烟,其特征在于,所述雾化装置(20)还包括座体(21)、第二通气管(22),所述第二盖体(23)与所述座体(21)相配合,所述第二通气管(22)嵌设在所述座体(21)上,所述第二气流通道(221)形成于所述第二通气管(22)内,所述第二盖体(23)上设有分别与所述第一气流通道(1111)和所述第二气流通道(221)连通的通气口(233);

所述密封垫(235)还包括由所述通气口(233)的外圈朝向所述第二通气管(22)内侧设置的环状第三凸起部(2353),所述第三凸起部(2353)与所述通气管内壁面相配合。

12. 根据权利要求 11 所述的电子烟,其特征在于,所述密封垫(235)还包括由所述通气口(233)的外圈朝向所述第一通气管(111)内侧设置的环状第四凸起部(2354),所述第四凸起部(2354)与所述第一通气管(111)的内壁面相配合。

13. 根据权利要求 2 至 9 任一项所述的电子烟,其特征在于,所述烟弹管(10)与所述雾化装置(20)对应的一端外圈上沿周向设有至少一个卡台(113),所述雾化装置(20)上设有与所述至少一个卡台(113)相配合的至少一个卡槽(2342),所述卡槽(2342)沿周向延伸设置,为所述烟弹管(10)提供转动空间,并对所述烟弹管(10)转动的所述第一位置(A)和所述第二位置(B)进行限位。

14. 根据权利要求 13 所述的电子烟,其特征在于,所述卡台(113)包括两个,并对称设置在所述烟弹管(10)的两相对侧,所述卡槽(2342)包括两个,并对称设置在所述雾化装置(20)的两相对侧。

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电子烟

技术领域

[0001] 本发明涉及吸烟者用品技术领域，更具体地说，涉及一种电子烟。

背景技术

[0002] 相关技术中的电子烟为常见的吸烟替代品，电子烟一般包括雾化装置和电源装置。雾化装置中含有电热丝可以将雾化装置中存储的烟液雾化形成烟雾以供用户吸食。现有的雾化装置中，一般采用液杯或雾化套管内分隔出的容纳空间作为烟液的存储容器。在存储容器上盖设一个隔液件，这样就对存储容器进行密封，同时在隔液件上开设多个烟液渗透孔，供电子烟工作时烟液流出。然而，电子烟在运输或存储过程中易受到震动，从而产生漏液现象，并且由于烟液渗透孔呈完全敞开状态，不仅使用后没有密封的手段使烟液渗出产生烟液的浪费现象，烟液利用率低，而且也不能根据使用者的需求来对烟液出烟量进行调节，灵活性差。

发明内容

[0003] 本发明要解决的技术问题在于，提供一种改进的电子烟。

[0004] 本发明解决其技术问题所采用的技术方案是：构造一种电子烟，包括：

[0005] 烟弹管，包括储液腔以及将该储液腔内部与外部相连通的至少一个出液口；

[0006] 雾化装置，包括储液室以及将该储液室内部与外部相连通的至少一个进液口；

[0007] 所述烟弹管安装于所述雾化装置上，并可相对于所述雾化装置在一个第一位置和一个第二位置之间转动；所述烟弹管在所述第一位置时，所述至少一个出液口与所述至少一个进液口位置相对应，将所述储液腔与所述储液室相连通；所述烟弹管在所述第二位置时，所述至少一出液口与所述至少一个进液口相互错位，使得所述储液腔与所述储液室相隔断。

[0008] 优选地，所述烟弹管与所述雾化装置共轴地安装在一起，并能相对所述雾化装置绕其轴线在所述第一位置和所述第二位置之间来回转动；所述至少一个进液口形成于所述雾化装置与所述烟弹管相对的端部上，所述至少一个出液口形成于所述烟弹管与所述雾化装置相对的端部上。

[0009] 优选地，所述烟弹管包括纵向设置的第一气流通道，所述储液腔围绕该第一气流通道；所述雾化装置包括沿纵向设置的第二气流通道，所述储液室围绕该第二气流通道；所述第一气流通道与所述第二气流通道相连通。

[0010] 优选地，所述烟弹管包括与所述雾化装置相对的第一壁部，所述至少一个出液口形成于该第一壁部上；所述雾化装置包括与所述烟弹管相对的第二壁部，所述第一壁部可绕所述轴线转动地与所述第二壁部贴合，所述至少一个进液口形成于该第二壁部上。

[0011] 优选地，所述至少一个进液口包括两个，并对称设置在所述第二壁部上；所述至少一个出液口包括两个，并对称设置在所述第一壁部上。

[0012] 优选地，所述出液口、进液口均呈扇环形，两所述出液口相对所述轴线中心旋转对

NJOY Exhibit 1002.621

称；两所述进液口相对所述轴线中心旋转对称。

[0013] 优选地，所述烟弹管包括烟弹管本体和设置在所述烟弹管本体端部的第一盖体，所述烟弹管本体包括形成所述第一气流通道的第一通气管，所述第一壁部形成于所述第一盖体上，所述第一盖体与所述烟弹管本体过盈配合；所述第一盖体的中部设有套孔，所述套孔套设在所述第一通气管外。

[0014] 优选地，所述雾化装置包括与所述烟弹管配合的第二盖体，所述第二壁部形成于所述第二盖体上；

[0015] 所述第二盖体包括一体成型形成的塑胶密封座和软胶密封垫，所述密封垫夹设在所述密封座和所述第一盖体之间，所述进液口贯穿所述密封座和密封垫。

[0016] 优选地，所述密封垫与所述第一壁部相对的表面设置有降低摩擦用的第一凸起部，所述第一凸起部包括若干以所述轴线为中心的环状的凸起，所述凸起与所述第一壁部相抵配合。

[0017] 优选地，所述密封垫与所述第一壁部相对一侧的表面设有环绕在所述进液口边缘的第二凸起部，所述第二凸起部与所述第一壁部相抵配合。

[0018] 优选地，所述雾化装置还包括座体、第二通气管，所述第二盖体与所述座体相配合，所述第二通气管嵌设在所述座体上，所述第二气流通道形成于所述第二通气管内，所述第二盖体上设有分别与所述第一气流通道和所述第二气流通道连通的通气口；

[0019] 所述密封垫还包括由所述通气口的外圈朝向所述第二通气管内侧设置的环状第三凸起部，所述第三凸起部与所述通气管内壁面相配合。

[0020] 优选地，所述密封垫还包括由所述通气口的外圈朝向所述第一通气管内侧设置的环状第四凸起部，所述第四凸起部与所述第一通气管的内壁面相配合。

[0021] 优选地，所述烟弹管与所述雾化装置对应的一端外圈上沿周向设有至少一个卡台，所述雾化装置上设有与所述至少一个卡台相配合的至少一个卡槽，所述卡槽沿周向延伸设置，为所述烟弹管提供转动空间，并对所述烟弹管转动的所述第一位置和所述第二位置进行限位。

[0022] 优选地，所述卡台包括两个，并对称设置在所述烟弹管的两相对侧，所述卡槽包括两个，并对称设置在所述雾化装置的两相对侧，

[0023] 实施本发明的电子烟，具有以下有益效果：本发明通过在烟弹管上设置出液口，在雾化装置上设置进液口，烟弹管可相对雾化装置在第一位置和第二位置之间转动，以使得出液口和进液口相对应或相错位，起到将烟弹管内的烟液向雾化装置内注液或隔断的目的，方便注液过程，可在注液时调节注液量的大小，同时，可防止在运输和存储过程中漏液，提升了烟液的利用率。

附图说明

[0024] 下面将结合附图及实施例对本发明作进一步说明，附图中：

[0025] 图 1 是本发明实施例中的电子烟的结构示意图；

[0026] 图 2 是图 2 所示电子烟的分解装置示意图；

[0027] 图 3 是图 2 所示烟弹管在第一位置时的剖面示意图；

[0028] 图 4 是图 2 所示烟弹管在第一位置时，第一盖体与雾化装置的组装示意图；

NJOY Exhibit 1002.622

[0029] 图 5 是图 2 所示烟弹管在第二位置时的剖面示意图；

[0030] 图 6 是图 2 所示烟弹管在第二位置时第一盖体与雾化装置的组装示意图；

[0031] 图 7 是图 3 所示雾化装置的剖面放大示意图。

具体实施方式

[0032] 为了对本发明的技术特征、目的和效果有更加清楚的理解，现对照附图详细说明本发明的具体实施方式。

[0033] 如图 1 至图 6 所示，本发明一个优选实施例中的电子烟包括烟弹管 10、雾化装置 20 以及供电装置 30。烟弹管 10 与雾化装置 20 共轴地安装在一起，并可相对于雾化装置 20 绕轴线在一个第一位置 A 和一个第二位置 B 之间转动，以实现烟弹管 10 与雾化装置 20 之间的导通或关闭。雾化装置 20 与供电装置 30 相连接，以在供电装置 30 的电能的供应下对烟液进行雾化。

[0034] 在一些实施例中，烟弹管 10 包括烟弹管本体 11 和设置在烟弹管本体 11 的与雾化装置 20 相对的端部的第一盖体 12，该第一盖体 12 形成该烟弹管 10 的第一壁部。烟弹管本体 11 包括纵向设置的第一通气管 111、围绕第一通气管 111 设置的储液腔 112，第一通气管 111 的中部形成第一气流通道 1111。在其他实施例中，烟弹管本体 11 和第一盖体 12 也可为一体结构。第一盖体 12 的中部设有套孔 121，套孔 121 套设在第一通气管 111 外。第一盖体 12 与烟弹管本体 11 过盈配合，以达到好的密封效果。在第一盖体 12 上形成有将储液腔 112 内部与外部连通的两个出液口 122，两个出液口 122 优选地为对称设置在第一盖体 12 上。

[0035] 雾化装置 20 在一些实施例中可包括座体 21、第二通气管 22、第二盖体 23、套筒 24、吸液体 25 以及缠绕在吸液体 25 上的发热元件 26。座体 21 呈筒状，第二通气管 22 纵向嵌设在座体 21 的底部，使得座体 21 和第二通气管 22 之间形成一个储液室 211。优选地，座体 21 和第二通气管 22 通过嵌入成型制成一体结构。第二通气管 22 的中部形成第二气流通道 221，以供空气通过。第二盖体 23 与座体 21 的开口端相配合，形成封盖该储液室 211 的第二壁部。且当烟弹管 10 安装于雾化装置 20 上时，第一盖体 12 可绕轴线转动地与第二盖体 23 贴合，以在转动过程中保持两者贴合面之间的密封性。第二盖体 23 上形成有将储液室 211 内部和外部相连通的两个进液口 232、以及分别与第一气流通道 1111 和第二气流通道 221 连通的通气口 233，两进液口 232 优选地对称设置在第二盖体 23 上。

[0036] 烟弹管 10 在第一位置 A 时，出液口 122 与进液口 232 位置相对应，将储液腔 112 与储液室 211 相连通，使得储液腔 112 内的烟液流向储液室 211。烟弹管 10 在第二位置 B 时，出液口 122 与进液口 232 相互错位，使得储液腔 112 与储液室 211 相隔断，让储液腔 112 内的烟液不再流向储液室 211。在其他实施例中，出液口 122、进液口 232 的数量也可分别为一个或多个，以能保证转动过程中两者的位置相互对应即可。

[0037] 优选地，出液口 122、进液口 232 均呈扇环形，两出液口 122 相对轴线中心旋转对称，且出液口 122 的扇环角度不大于 90°；两进液口 232 相对轴线中心旋转对称，且出液口 122 的扇环角度不大于 90°。在烟弹管 10 转动 90° 范围可实现出液口 122、进液口 232 的正对和错位之间的位置转换。同时，不同的转动角度，出液口 122 与进液口 232 之间的连通口的大小不同，可调节注液量的大小。

NJOY Exhibit 1002.623

[0038] 在其他实施例中，烟弹管 10 和雾化装置 20 之间的配合面也可为弧面，出液口 122、进液口 232 分别设置在两相对的弧面配合面上，烟弹管 10 可相对雾化装置 20 侧向来回转动实现出液口 122、进液口 232 的对应或错位，达到向储液室 211 注液或停止注液的目的。

[0039] 如图 7 所示，在一些实施例中，第二盖体 23 包括一体成型形成的塑胶密封座 234 和软胶密封垫 235，密封垫 235 夹设在密封座 234 和第一盖体 12 之间，以利用软胶的软质特性起到密封的目的，进液口 232 贯穿密封座 234 和密封垫 235。

[0040] 密封垫 235 包括在与第一盖体 12 相对的表面设置的第一凸起部 2351、第二凸起部 2352，以及由通气口 233 的外圈朝向第二通气管 22 内侧设置的环状第三凸起部 2353、由通气口 233 的外圈朝向第一通气管 111 内侧设置的环状第四凸起部 2354。第一凸起部 2351 包括若干以轴线为中心的环状的凸起，凸起与第一盖体 12 相抵配合，第一盖体 12 与密封垫 235 相配合的主要受力点在该环状的凸起上，而非密封垫 235 的整个表面上，从而可以降低第一盖体 12 转动时受到密封垫 235 的的摩擦力。如此，在烟弹管 10 来回转动时，该软胶材质的密封垫 235 既能降低第一盖体 12 转动时的摩擦力，又能保证与第一盖体 12 之间密封效果。

[0041] 在一些实施例中，第二凸起部 2352 环绕在进液口 232 的边缘，第二凸起部 2352 与第一盖体 12 相抵配合。在烟弹管 10 转动至第二位置 B 时，保证进液口 232 边缘和第一盖体 12 之间的密封效果。同时，即便第一盖体 12 和第二盖体 23 之间产生轴向细微偏移时，压缩的第二凸起部 2352 仍能恢复形状与第一盖体 12 贴合，达到较佳的密封效果。

[0042] 第三凸起部 2353 与第二通气管 22 内壁面相配合，以保证通气口 233 和第二气流通道 221 之间的密封性。第四凸起部 2354 与第一通气管 111 的内壁面相配合，以保证通气口 233 和第一气流通道 1111 之间的密封性。可以理解地，在一些实施例中，第二凸起部 2352 也可以省略。

[0043] 第二通气管 22 的侧壁上开设有两相对设置的通孔 222，吸液体 25 安装在两通孔 222 上，以吸附储液室 211 内的烟液。发热元件 26 对吸液体 25 上的烟液。

[0044] 再如图 2 至图 7 所示，烟弹管 10 与所述雾化装置 20 对应的一端外圈上沿周向设有两个卡台 113，密封座 234 的外圈朝向烟弹管 10 一侧延伸设置有筒状的卡合部 2341，卡合部 2341 上设有与卡台 113 相配合的两个卡槽 2342，卡槽 2342 沿周向延伸设置，为烟弹管 10 提供定位空间，并对烟弹管 10 转动的第一位置 A 和第二位置 B 进行限位。卡槽 2342 对称设置在卡合部 2341 的两相对侧，且卡槽 2342 的弧度不大于 90°，以限定转动角度，并与出液口 122 和进液口 232 相配合。在其他实施例中，卡合部 2341 也可形成在座体 21 上。套筒 24 套设在座体 21 和第二盖体 23 的外围，对座体 21 和第二盖体 23 进行固定和保护。

[0045] 在一些实施例中，座体 21 包括与供电装置 30 相连接的连接端 212，供电装置 30 与发热元件 26 电性连接并向发热元件 26 提供电能，发热将吸液体 25 上的烟液加热成烟雾状。连接端 212 上设有和第二通气管 22 连通的进气口 2121，供电装置 30 上设有与进气口 2121 相连通的通风口 31。使用者抽烟时，空气经由通风口 31、进气口 2121 进入第二通气管 22，雾化后的烟液随着空气经由第二气流通道 221、通气口 233、第一气流通道 1111 进入使用者的口中。

[0046] 可以理解地，上述各技术特征可以任意组合使用而不受限制。

[0047] 以上所述仅为本发明的实施例，并非因此限制本发明的专利范围，凡是利用本发

NJOY Exhibit 1002.624

明说明书及附图内容所作的等效结构或等效流程变换，或直接或间接运用在其他相关的技术领域，均同理包括在本发明的专利保护范围内。

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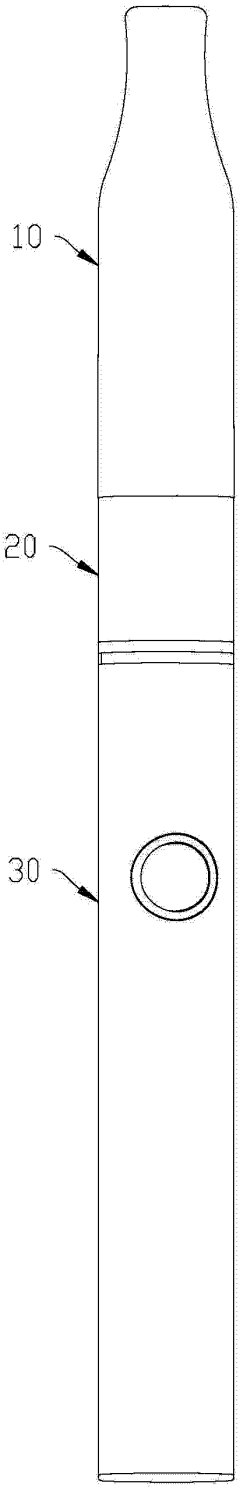


图 1

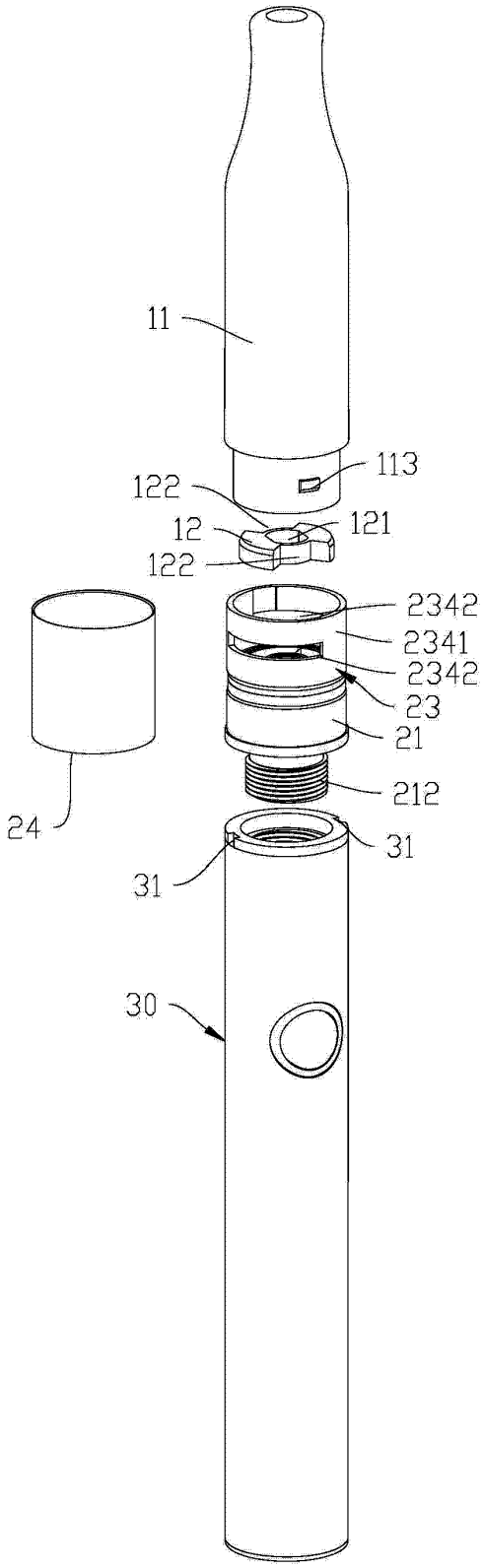


图 2

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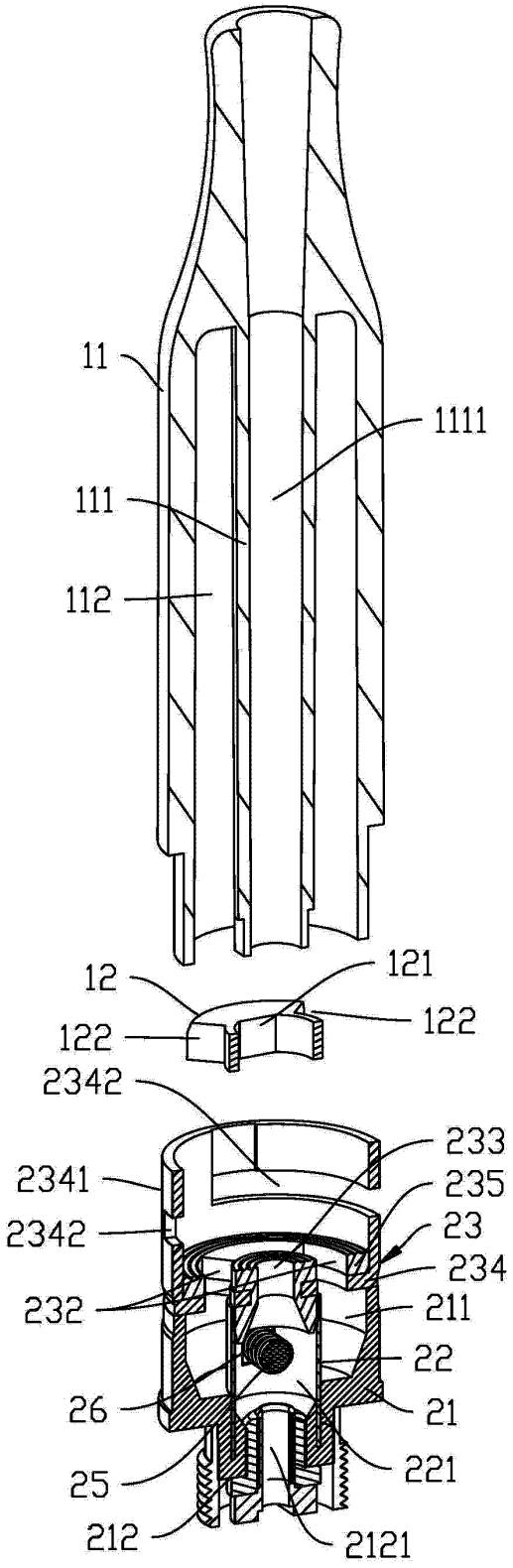


图 3

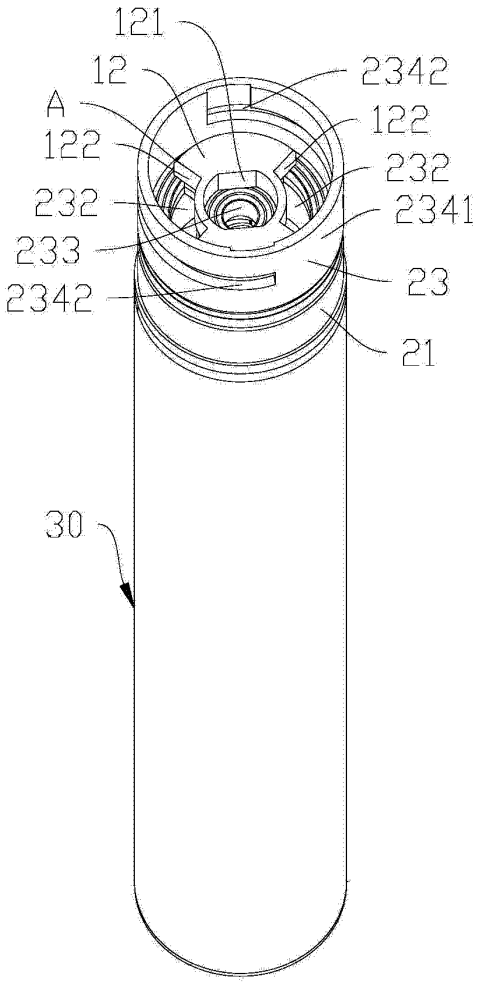


图 4

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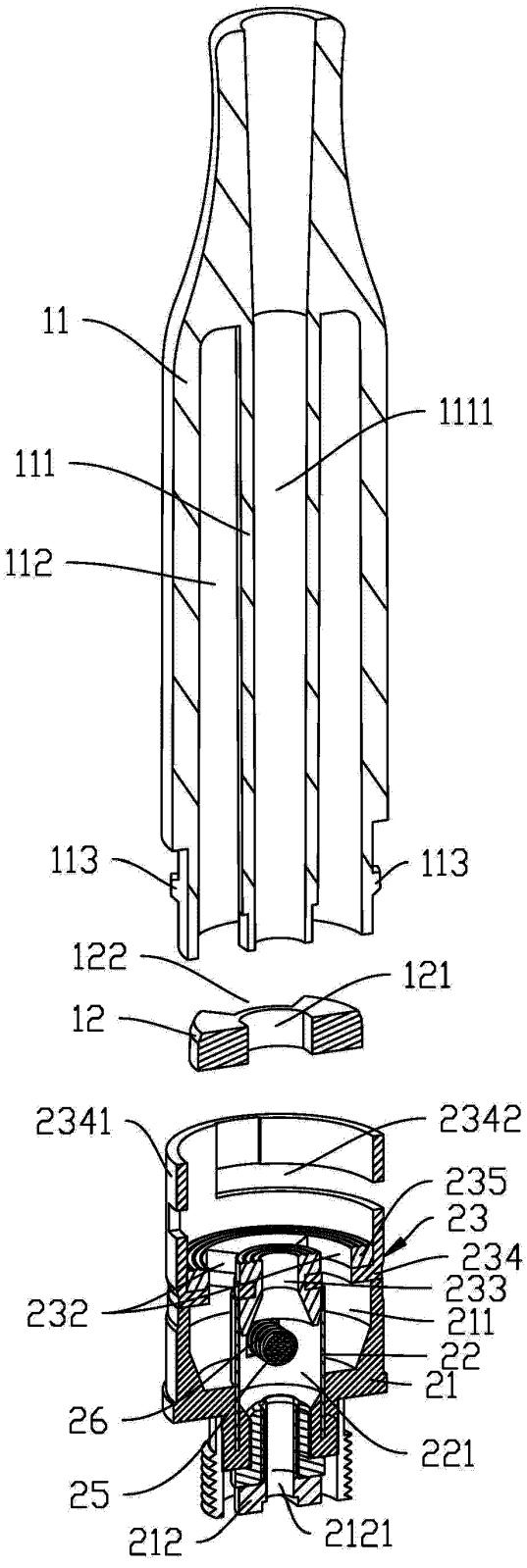


图 5

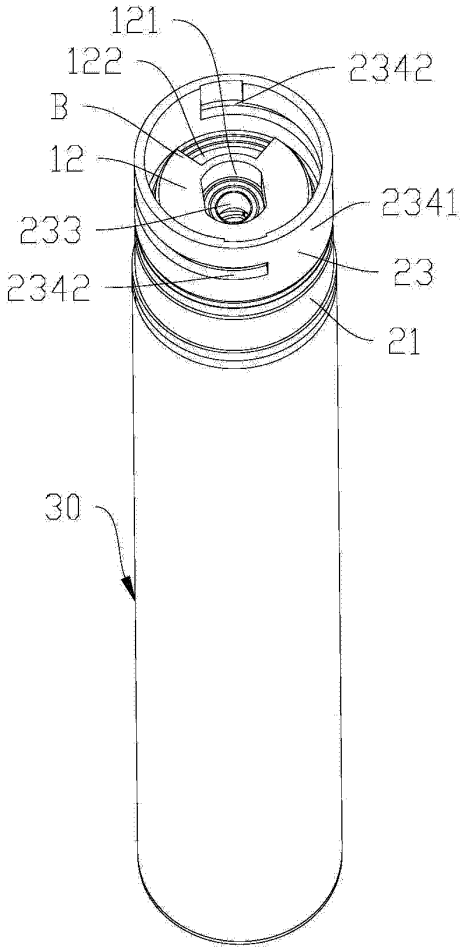


图 6

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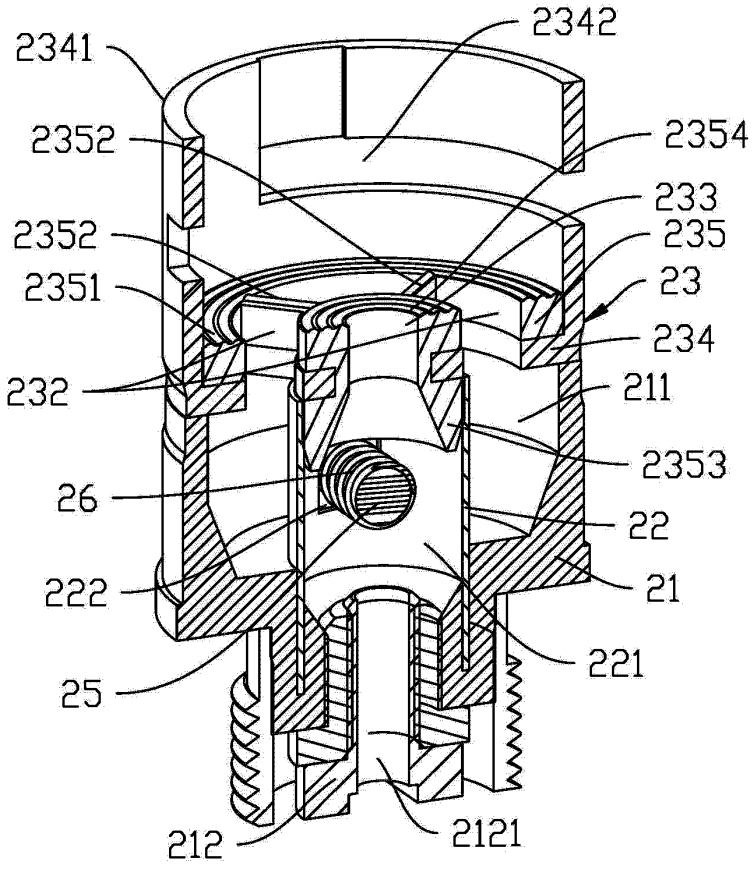


图 7

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Espacenet

Bibliographic data: CN201104488 (Y) — 2008-08-27

Non-ignitability atomizing electric cigarette

Inventor(s): XIAOCHUN ZHU [CN] ± (ZHU XIAOCHUN)

Applicant(s): SHENZHEN KANGER TECHNOLOGY COR [CN] ± (SHENZHEN KANGER TECHNOLOGY CORP)

Classification: **- international:** ***A24F47/00***
- cooperative:

Application number: CN20072057873U 20070930

Priority number(s): CN20072057873U 20070930

Abstract of CN201104488 (Y)

The utility model discloses a noncombustible spray electronic cigarette, which comprises a controller and a generator; wherein, an instructor cover, a power supply device, an integration circuit board, a miniature gas drive switch and a connection conductor are arranged in turn in the controlling components; a connection conductor, a secondary pressure keeping room, a liquid-resisting plate, a secondary liquid-storing room, a heater, a liquid-guide mechanism, a liquid storing room and a suction nozzle are arranged in turn in the generator; an air inlet hole is arranged at one side of the connection conductor; a through hole is arranged at central section of the connection conductor for the controller and the generator. The noncombustible spray electronic cigarette has the advantages that: no harmful substance such as tar and carbon monoxide exists for smoking; risk of causing cancer is greatly lowered; users still have feeling of smoking without needing lighting a smoke and without fire accident danger; in fact, aspirated fume is water steam from medical solution gasifying without environmental pollution.

NJOY Exhibit 1002.630

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[51] Int. Cl.
A24F 47/00 (2006.01)

[12] 实用新型专利说明书

专利号 ZL 200720057873.1

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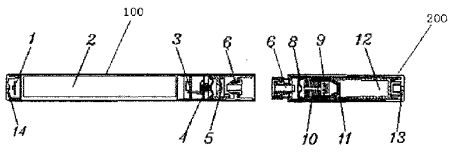
权利要求书 2 页 说明书 9 页 附图 4 页

[54] 实用新型名称

一种非可燃性喷雾电子香烟

[57] 摘要

本实用新型公开了一种非可燃性喷雾电子香烟，包括控制器与发生器，所述控制组件内依次设有指示灯盖、电源装置、集成线路板、微型气体传动开关和连接导体，所述发生器内依次设有连接导体、次级气压保压室、阻液片、次级贮液室、加热器、导液机构、贮液室和吸嘴，所述连接导体一侧上开有进气孔，所述控制器与发生器的连接导体中间开有通孔。 本实用新型的技术效果在于：吸烟无焦油、一氧化碳等有害物，大大降低致癌风险，使用者仍然有吸烟的感觉，无需点燃，无火灾危险，其吸出的烟雾其实是药液气化的水蒸气，无环境污染。



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1、一种非可燃性喷雾电子香烟，其特征在于：包括控制器与发生器，所述控制组件内依次设有指示灯盖、电源装置、集成线路板、微型气体传动开关和连接导体，所述发生器内依次设有连接导体、次级气压保压室、阻液片、次级贮液室、加热器、导液机构、贮液室和吸嘴，所述连接导体一侧上开有进气孔，所述控制器与发生器的连接导体中间开有通孔。

2、如权利要求 1 所述的非可燃性喷雾电子香烟，其特征在于：所述指示灯盖侧边开有一对隐蔽的通气孔，指示灯盖下面设有发光 LED。

3、如权利要求 1 或 2 所述的非可燃性喷雾电子香烟，其特征在于：所述指示灯盖、电源装置、集成线路板、微型气体传动开关和连接导体外侧设有不锈钢壳体，所述连接导体、阻液片、次级贮液室、加热器、导液机构、贮液室和吸嘴外侧设有隔热层和不锈钢外壳。

4、如权利要求 1 所述的非可燃性喷雾电子香烟，其特征在于：所述微型气体传动开关内部设有弹性圆环，将微型气体传动开关开成两个独立的腔室。

5、如权利要求 4 所述的非可燃性喷雾电子香烟，其特征在于：所微型气体传动开关还包括定接触片、塑料底座和动接触片，所述动接触片通过塑料棒连接弹性圆环，弹性圆环固定于塑料底座内，定接触片固定于塑料底座外。

6、如权利要求 1 所述的非可燃性喷雾电子香烟，其特征在于：所述连接导体的右侧还设有一个次级开关气阀，以及由此形成的次级

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气压保压室，侧边设有进气孔。

7、如权利要求 6 所述的非可燃性喷雾电子香烟，其特征在于：所述连接导体包括两个中空的柱形导体、内螺纹与外螺纹，所述中空的柱形导体连接加热器的引入导线的正极，所述内螺纹与外螺纹连接加热器的引入导线的负极。

8、如权利要求 1 所述的非可燃性喷雾电子香烟，其特征在于：所述加热器包括加热丝和其外面的隔热座，在隔热座底部和侧面分别开有喷射孔和溢流孔。

9、如权利要求 1 所述的非可燃性喷雾电子香烟，其特征在于：所述吸嘴外侧延长至阻液器底部，在吸嘴的内侧还开有阻液槽。

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一种非可燃性喷雾电子香烟

技术领域

本实用新型涉一种非可燃性喷雾电子香烟。

背景技术

当今“吸烟有害健康”，已成为人所共知的常识，全世界仍然有10 亿以上的烟民，美国环境保护署目前将空气中的烟草雾宣布为 A 级致癌物。据世界卫生组织等部门公布的数字，全球每年约有 490 万人死于与吸烟有关的疾病；但是由于种种原因，要吸烟者完全戒烟是一件极其困难的事。

烟碱是小分子生物碱，它能使人吸烟成瘾，在小剂量下对人体基本无害，而且在血液中的半衰期极短。烟草中的有害物质如：烟焦油，一氧化碳，苯并芘，多环芳烃，亚硝胺、偶氮杂质等都是强致癌物，对人类的生存和健康造成了巨大的危害，而二手烟对周围人群的危害则更大！而烟草对环境的污染亦不能忽视，意大利科学家的最新研究表明，吸烟冒出的烟雾造成的污染可能超过某些汽车发动机尾气造成的污染！

为了寻找即能满足吸烟对烟瘾的需求，而又将烟草的危害降到最低，最终戒烟。许多实用新型都是将小剂量的烟碱做成诸如：“戒烟贴”、“烟碱嗽口水”、“烟碱口香糖”等产品，这些产品虽然有其

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一定的功效，没有烟焦油等其它有害物质的危害，但与吸烟都多年养成的习惯“抽吸”习惯格格不入，很难为烟民所接受。

发明内容

本实用新型的目的在于提供一种具有香烟代用品作用的环保型非可燃性喷雾电子香烟，避免了上述缺点，更接近真实的人性化香烟，没有环境污染。

本实用新型的目的是通过以下技术方案来实现的：一种非可燃性喷雾电子香烟，包括控制器与发生器，所述控制组件内依次设有指示灯盖、电源装置、集成线路板、微型气体传动开关和连接导体，所述发生器内依次设有连接导体、次级气压保压室、阻液片、次级贮液室、加热器、导液机构、贮液室和吸嘴，所述连接导体一侧上开有进气孔，所述控制器与发生器的连接导体中间开有通孔。

本实用新型的技术方案还包括：所述指示灯盖侧边开有一对隐蔽的通气孔，指示灯盖下面设有发光LED。

本实用新型的技术方案还包括：所述指示灯盖、电源装置、集成线路板、微型气体传动开关和连接导体外侧设有不锈钢壳体，所述连接导体、阻液片、次级贮液室、加热器、导液机构、贮液室和吸嘴外侧设有隔热层和不锈钢外壳。

本实用新型的技术方案还包括：所述微型气体传动开关内部设有弹性圆环，将微型气体传动开关开成两个独立的腔室。

本实用新型的技术方案还包括：所微型气体传动开关还包括定接触片、塑料底座和动接触片，所述动接触片通过塑料棒连接弹性圆环，

NJOY Exhibit 1002.635

弹性圆环固定于塑料底座内，定接触片固定于塑料底座外。

本实用新型的技术方案还包括：所述连接导体的右侧还设有一个次级开关气阀，以及由此形成的次级气压保压室，侧边设有进气孔。

本实用新型的技术方案还包括：所述连接导体包括两个中空的柱形导体、内螺纹与外螺纹，所述中空的柱形导体连接加热器的引入导线的正极，所述内螺纹与外螺纹连接加热器的引入导线的负极。

本实用新型的技术方案还包括：所述加热器包括加热丝和其外面的隔热座，在隔热座底部和侧面分别开有喷射孔和溢流孔。

本实用新型的技术方案还包括：所述吸嘴外侧延长至阻液器底部，在吸嘴的内侧还开有阻液槽。

本实用新形的技术效果在于：吸烟无焦油、一氧化碳等有害物，大大降低致癌风险，使用者仍然有吸烟的感觉，无需点燃，无火灾危险，其吸出的烟雾其实是药液气化的水蒸气，无环境污染。

本实用新型的特征及优点将通过实施例结合附图进行详细说明。

附图说明

图 1 是本实用新型实施例的非可燃性喷雾电子香烟拆分结构示意图；

图 2 是本实用新型实施例的非可燃性喷雾电子香烟整体结构示意图；

图 3 是本实用新型实施例非的可燃性电子喷雾香烟中微型气体

NJOY Exhibit 1002.636

传动开关结构示意图；

图 4 是本实用新型实施例非的可燃性电子喷雾香烟中导液机构与雾化室及与贮液芯的连接结构图；

图 5 是本实用新型实施例的非可燃性喷雾电子香烟中气压传动开关的结构示意图；

图 6 是本实用新型实施例的非可燃性喷雾电子香烟中加热器和导液机构结构示意图；

图 7 是本实用新型实施例的非可燃性喷雾电子香烟中集成线路板电路图。

具体实施方式

请参阅图 1，本实施例的非可燃性喷雾电子香烟包括控制器 100 与发生器 200。

如图 1 所示，在控制器 100 的一端设有一透明信号指示灯盖 14，并在指示灯盖 14 侧边开有一对隐蔽的通气孔，在另一端设有连接导体 6 用于和发生器 200 连成一个整体；在指示灯盖 14 下面有一个发光 LED；在指示灯盖 14 至连接导体 6 依次设有可充电锂电池 2、集成线路板 3、微型气体传动开关 4 、负压腔室 5，控制器 100 外面是不锈钢壳体。可充电锂电池 2 是内置的，控制器 100 的连接导体 6 连入充电器即可实现充电，而与发生器 200 连接后可组成一环保型非可燃性喷雾电子香烟。

发生器 200 的一侧也设有连接导体 6，另一侧设有烟嘴 13，从烟

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嘴 13 一侧起依次设有贮液室 12、导液机构 11、加热器 9、次级贮液室 10、阻液片 8 和次级气压保压室 7；发生器 200 外面分别有隔热层和不锈钢外壳，而吸嘴 13 的延长部份将发生器 200 外包括在其中，在发生器 200 的连接导体 6 的一侧上也开有进气孔，在吸嘴 13 与贮液器 12 中间有气流通道，在吸嘴 13 的底部开有阻液槽。控制器 100 与发生器 200 之间通过边接导体 6 相连，中间开有通气孔，连接着负压腔 5 与次级气压保压室 7；在控制器与发生器连接的侧边开有进气孔；阻液片 8 防止液体倒流；次级贮液室 10 暂存药液，导液机构 11 与药液相接触，在导液机构 11 内部设有雾化工作室；药液芯外围四周开有雾气通道，中间装有药液。

如图 3 所示，微型气体传动开关 4 内部有一弹性圆环 401，弹性圆环 401 剖面呈 W 形，将微型气体传动开关开成两个独立的腔室，在所述弹性圆环 401 上连有一伸出软胶片，软胶片内装有一塑料棒 402 用于连接弹性圆环 401 与动接触片 406。弹性圆环 401 固定于塑料底座 405 内。集成线路板 3 上设有两片伸向弹性圆环 401 的定接触片 403 和 404，定接触片 403 和 404 固定于塑料底座 405 外。

如图 4 所示，在连接导体 6 的右侧还设有一个次级开关气阀 701，侧边设有进气孔 702，在使用者抽吸时，气流从进气孔 702 进入，次级开关气阀 701 被气流打开，在气流的作用下，在弹性圆环 401 的右侧与连接导体 6 之间形成一个负压腔室 5；在负压的作用下弹性圆环 401 向右移动，同时带动连接在塑料棒 402 上的动接触片 406 向右移动，从而与连接在集成线路板 3 上的定接触片 403 导通；而当使用者

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吸力减小时，次级开关气阀 701 关闭，挡住进气孔 702，从而使负压腔室 5 维持一定时间，只有当使用者停止抽吸时，气流从连接导体 6 的中空通道 606 迅速进入负压腔室 5，负压立即消失，弹性圆环 401 在弹力作用下回复原位，塑料棒 402 左移，动接触片 406 与定接触片 403 断开，即可实现在小气流的作用下接通和断开开关，从而控制加热器 9 的实时加热。其中，弹性圆环 401 可用橡胶或硅胶制成。

连接导体 6 分别由内螺纹 603 与外螺纹 604 组成连接的外圈，用于连接加热器的引入导线的负极，由两个中空的柱形导体 601、603 连接加热器的引入导线的正极；在两个连接导体中间用绝缘材圈 605 隔开。控制器 100 与发生器 200 通过螺纹与中通的接触铜帽连接。

如图 5 所示，加热器 9 包括加热丝 901 和其外面的隔热座 902，在隔热座 902 底部和侧面分别开有喷射孔 904 和溢流孔 903，在加热器 9 右侧设有导液机构 11，导液机构 11 由支撑架 1101 与导液体 1102 组成，其支撑架 1101 起固定作用，导液体 1102 由多层泡沫镍网或其它金属多孔体制成，加热器 9 的左侧是次级贮液室 10、阻液片 8，加热丝 901 可用铂丝、镍铬合金或含有稀土元素的铁铬铝合金丝制成，也可制成片状体或环状，隔热座 902 可用陶瓷等制成。次级贮液室 10 为多层泡沫镍网填充在隔热座 902 底部与周边构成，导液机构 11 的一端通过导液体 1101 与次级贮液室 10 相连，另一端与贮液室 12 接触，贮液室 12 是一一端开口的筒状物，中间置入药用棉纤，然后装入药原液，通过导液机构 11 的毛细作用，装存在贮液室 12 内的药液导入次级贮液室 10。在气流的作用下，将小液滴通过隔热座 902

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中的喷射孔 904 吸入隔热座 902 的另一侧，在加热丝 901 的作用下，液体瞬间雾化，然后由开在贮液室 12 外侧的通孔经吸嘴 13 吸出。阻液器 8 可防止次级贮液室内 12 中的液体意外溢出。所述的液导液体 1102 还可用不锈钢纤维毡、高分子多聚物发泡体及泡沫陶瓷制成。

请一并参阅图 6，所述吸嘴 13 外侧的烟嘴套 1301 延长至阻液器 8 底部，其材料可用聚丙烯 PP 等环保材料制成，可有效防止内部热量的传出。在吸嘴 13 的内侧还开有通气孔 1302，在吸嘴孔 1304 的内侧还开有阻液槽 1303 以防止液体吸入口中。

如图 7 所示，所述集成线路板 3 使用 IC 控制，用 3.7V 锂离子电池供电，VCC 接电池正极，GND 接电池负极，S1 为连接微型气体传动，属常开开关，IC1 为核心智能控制单元，主要负责接收并判别输入信号，同时对信号指示灯与加热器进行控制。当 S1（与前面所述微型气体传动开关相连）闭合时，IC1 接收到此信号，首先判断此时电源电压是否高于 3.3V，如果是，则输出控制信号给加热电路，使场效应管导通，发热丝接通电源发热，加热器 9 工作，把液态的烟碱液瞬间加热，同时输出显示信号使 LED 发出红色或橙色光，模拟香烟的火头，也可输出延时信号使 LED 灯渐亮或渐灭。使模拟烟头更加形像；如果电池电压低于 3.3V，则不对加热电路输出信号，此时加热室不产生任何动作，同时 LED 输出闪烁信号，使 LED 发出 1Hz 的闪烁并连续闪烁 20 秒钟，提示电池电量不足，需要充电。当整机无动作时，IC1 进入休眠状态，整机功耗＜5uA，使整机待机时间尽可能延长（理论待机时间 6 年半）；当使用都在一分钟内连续使用本

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装置十五次时，IC1 将发出信号，切断加热电路输出，同时输出信号给 LED 指示灯，连续闪烁 10 秒；当 S1 连续接通 6 秒以上时，则自动切断加热电路，同时输出信号给 LED 等。此单片还可写入其它程序以实现更多的功能和为后序的更新改善提供便利。也可以在信号输出端接一 LCD 显示屏来显示更多的信息。

本实用新型用 IC 来控制其工作过程，保证电子烟工作可靠，吸烟方式更加形象。其吸出的“烟”其实是药液气化后的“水蒸气”，不含烟焦油，一氧化碳，苯并芘，多环芳烃，亚硝胺、偶氮杂质等都是强致癌物，“水蒸气”在空气中很快会液化，不污染环境。其加热部份是低电压低电流下瞬间加热，不燃烧，没有火灾隐患。其外壳用特种不锈钢制成，可有效屏蔽电磁波。

本实用新型的非可燃性喷雾电子香烟工作过程如下：控制器100与发生器200通过连接导体6连接后组成一环保型非可燃性喷雾电子香烟；当使用都抽吸时，气流经连接导体6侧的进气孔进入发生器200，经过次级气压保压室，阻液片8，加热器9，最后由吸嘴13吸出；而控制器100与发生器200的连接导体6中间开有通孔，在使用者抽吸时，控制器100内部的气流流向发生器200，从而带动控制器100的弹性圆环401右侧独立形腔部份低于正常大气压，而在控制器200的另一侧在指示灯盖侧也开有通气孔，使电池部份型腔与大气压相通，这样在控制器200一侧负气压的作用下，开关气嘴向连接导体6一侧拉伸，从而带动其上面的动接触片与静接触片导通，导通电流，此时指示灯IC控制下慢慢变亮，同时电流通过连接导体使加热器工作；在加热室由

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于气流作用药液以微滴形式喷射进雾化室，药液通过加热器9的作用瞬间雾化，雾化后的大直径微滴在涡流的作用下附壁经溢流孔被导液机构11重吸收，小直径微滴悬浮在气流中形成水蒸气经雾汽通道和吸嘴吸出。

以上所述，仅为本实用新型的较佳实例而已，并非用于限制本实用新型的保护范围。任何熟悉本技术领域的技术人员在本实用新型揭露的技术范围内，可轻易想到的变化，都应涵盖在本实用新型的保护范围之内。

NJOY Exhibit 1002.642

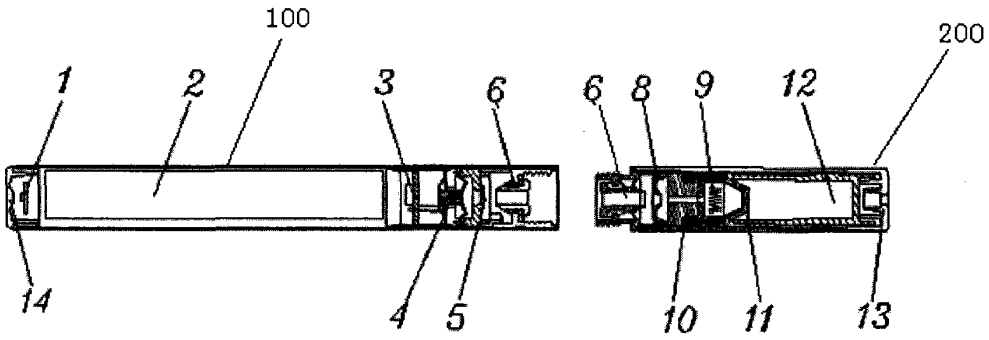


图 1

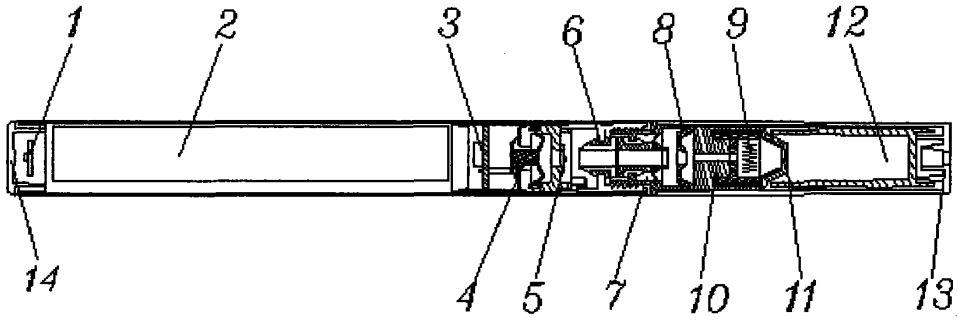


图 2

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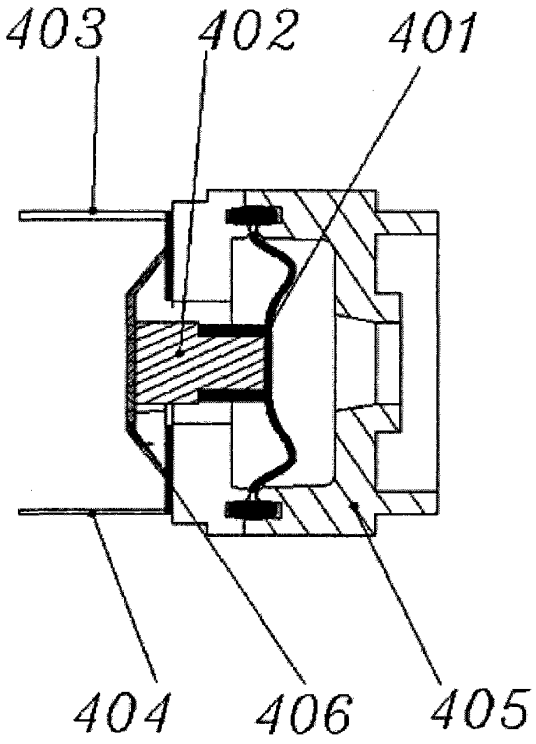


图 3

NJOY Exhibit 1002.644

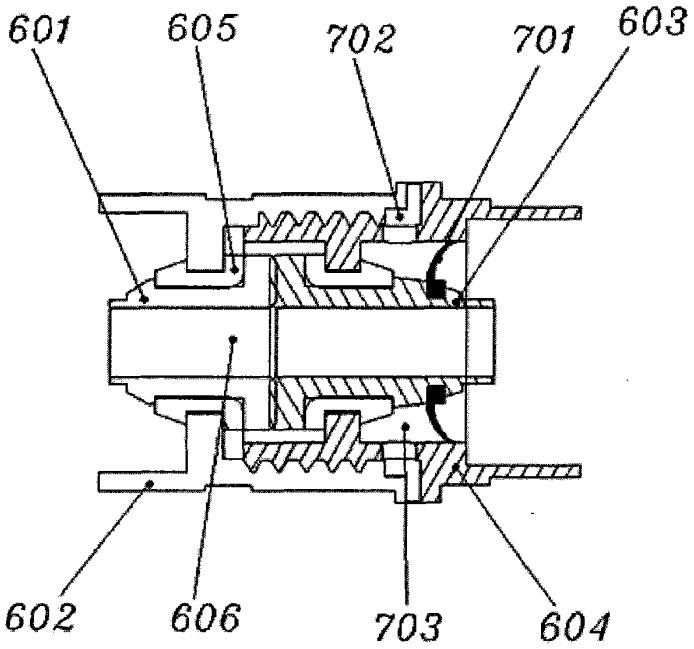


图 4

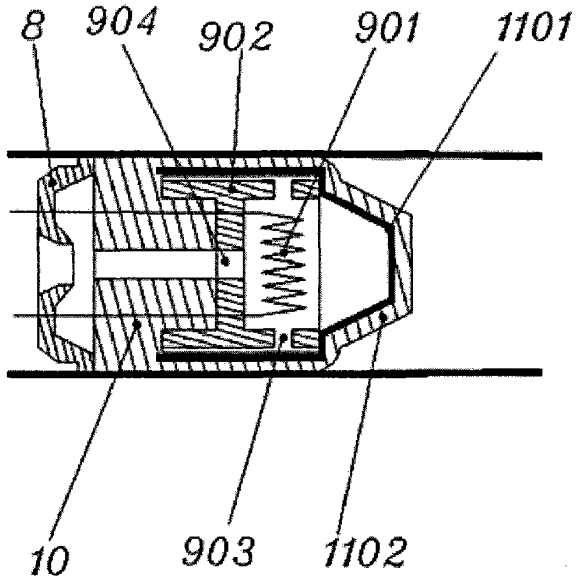


图 5

NJOY Exhibit 1002.645

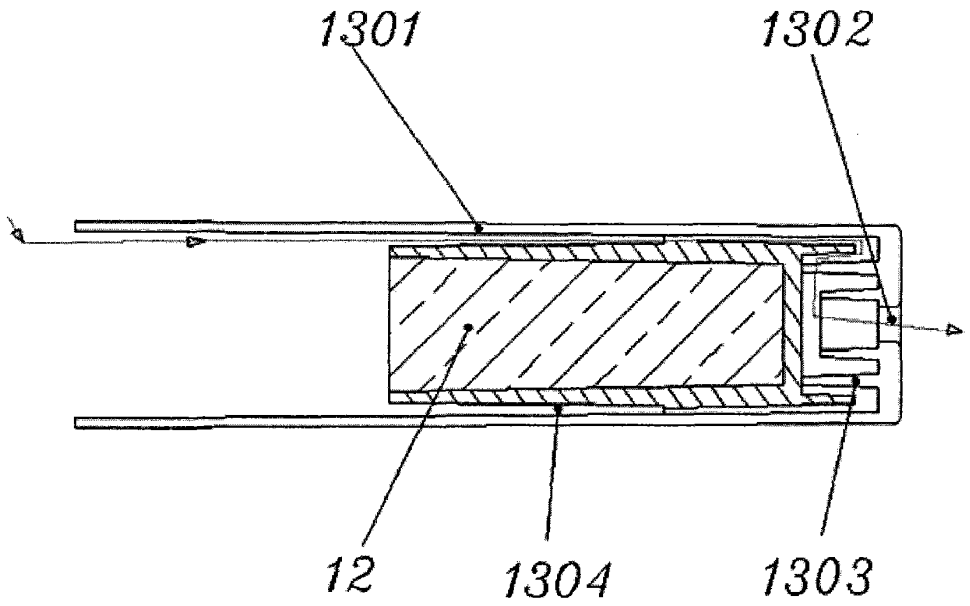


图 6

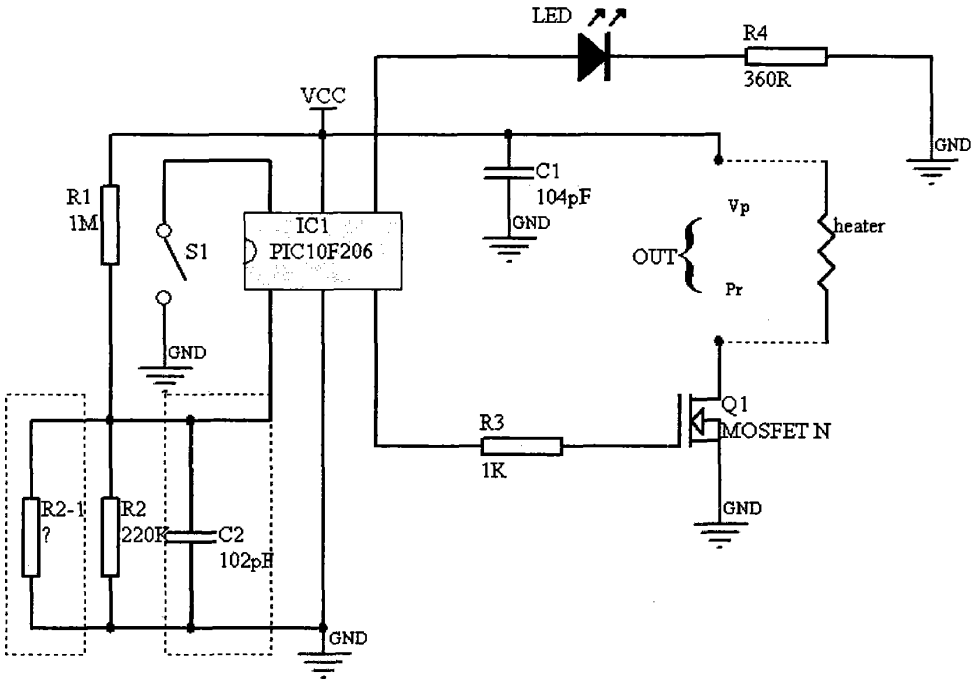


图 7

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Espacenet

Bibliographic data: CN201408820 (Y) — 2010-02-17

Charging device for electronic cigarette

Inventor(s): SIHUI HAN; GAOLIAN CHEN ± (HAN SIHUI, ; CHEN GAOLIAN)

Applicant(s): CIXI E CIG ELECTRONIC TECHNOLOGY CO LTD ± (CIXI E-CIG ELECTRONIC TECHNOLOGY CO., LTD)

Classification: **- international:** ***A24B15/00; A24F47/00; H01M10/44***
- cooperative:

Application number: CN200920118577U 20090428

Priority number(s): CN200920118577U 20090428

Abstract of CN201408820 (Y)

The utility model relates to a charging device for an electronic cigarette, which comprises a main body, wherein a USB plug is arranged at one end of the main body, a connection port matched with an electronic cigarette charging port is arranged at the other end of the main body, and the connection port is electrically connected with the USB plug. The plug of the charging device adopts the USB plug, so that the electronic cigarette can be directly charged on a computer or other places with a USB interface, thereby providing convenience for users who often use computers; the device has small volume and is convenient for carrying; and in addition, an ordinary power plug with a USB interface is also configured, so that the charging device can realizing charging through the power plug when equipment with a USB interface is not available.

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[19] 中华人民共和国国家知识产权局

[51] Int. Cl.
H01M 10/44 (2006.01)
A24F 47/00 (2006.01)
A24B 15/00 (2006.01)

[12] 实用新型专利说明书

专利号 ZL 200920118577.7

[45] 授权公告日 2010 年 2 月 17 日

[11] 授权公告号 CN 201408820Y

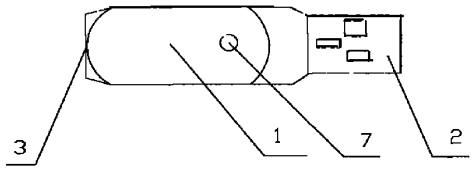
[22] 申请日 2009.4.28
[21] 申请号 200920118577.7
[73] 专利权人 慈溪市依赛格电子科技有限公司
地址 315300 浙江省慈溪市担山北路 145 号高科大楼 4 层
[72] 发明人 韩思慧 陈高联
权利要求书 1 页 说明书 3 页 附图 2 页

[54] 实用新型名称

一种用于电子烟的充电装置

[57] 摘要

本实用新型涉及一种用于电子烟的充电装置，包括本体，本体一端为 USB 插头，另一端设有与电子烟充电端口相匹配的连接端口，连接端口与 USB 插头之间电连接。本实用新型将充电装置的插头设置成 USB 插头，可直接在电脑或其它具有 USB 接口地方充电，方便了一些经常使用电脑的用户，且该充电装置体积小、携带方便。另外还配有带 USB 接口的普通电源插头，在没有 USB 接口的设备下可通过电源插头充电。



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1. 一种用于电子烟的充电装置，包括本体，其特征在于所述的本体（1）一端为 USB 插头（2），另一端设有与电子烟充电端口相匹配的连接端口（3），所述的连接端口与所述的 USB 插头之间电连接。

2. 根据权利要求 1 所述的一种用于电子烟的充电装置，其特征在于所述的连接端口（3）直接设置在本体（1）上。

3. 根据权利要求 1 所述的一种用于电子烟的充电装置，其特征在于所述的连接端口（3）与本体（1）通过连接线（4）连接。

4. 根据权利要求 1 或 2 或 3 所述的一种用于电子烟的充电装置，其特征在于所述的本体（1）上设有指示灯（7）。

5. 根据权利要求 4 所述的一种用于电子烟的充电装置，其特征在于还包括一电源插头（5），电源插头（5）上直接设有 USB 接口（6），电源插头（5）与 USB 接口电连接。

6. 根据权利要求 4 所述的一种用于电子烟的充电装置，其特征在于还包括一电源插头（5），电源插头通过连接线连接一 USB 接口（6），电源插头（5）与 USB 接口电连接。

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一种用于电子烟的充电装置

（一）技术领域

本实用新型涉及一种电子烟装置，特别涉及电子烟的充电装置。

（二）背景技术

随着科学技术的不断发展和人类生活水平的不断提高，人们越来越意识到吸烟对人类健康及社会环境可造成的巨大危害。尽管吸烟可导致严重的呼吸系统疾病和癌症，让吸烟者完全戒烟是及其困难的事。电子烟与普通香烟某些特征相似，能够提神，满足吸烟者的欣快感和多年养成的吸烟习惯。但是，电子烟又与普通香烟有着本质的区别：电子烟无燃烧，无焦油，不含普通香烟中的可导致呼吸系统与心血管系统疾病的许多化学物质，去除了普通香烟中的致癌物。因此，电子烟越来越成为新型健康的香烟替代品。

目前电子烟中需要使用电池及充电器，如公告日为 2008 年 5 月 7 日专利号为 200720003182.3 的中国实用新型专利一种新型雾化电子烟，该种电子烟由进气通道、电池仓、电子线路板、气流传感器、雾化器、贮液瓶、雾气通道、烟嘴等组成，雾化器内设有加热体。其电池仓中即是放入充电电池，使用一段时间后，需要对其充电，目前的充电器为普通的二脚插头或三脚插头，体积较大，携带不方便。

（三）发明内容

为了克服上述技术问题的不足，本实用新型提供一种体积小、充电方便的用于电子烟的充电装置。

本实用新型解决其技术问题的技术方案是：

一种用于电子烟的充电装置，包括本体，本体一端为 USB 插头，

另一端设有与电子烟充电端口相匹配的连接端口，所述的连接端口与所述的 USB 插头之间电连接。

该充电装置不同于现有的充电器，而是采用 USB 插头，体积小，携带方便。由于电脑的普及以及标准的统一，USB 接口在很多场合可以看到。使用时，将充电装置上的连接端口与电子烟的充电端口相连接，将 USB 插头插入电脑或其它装置的 USB 接口上，对电子烟内的充电电池进行充电。

连接端口直接设置在本体上。连接端口直接设置在本体上，结构小巧，携带方便，如同一移动 U 盘。

连接端口与本体通过连接线连接。连接端口与本体也可通过连接线连接。

本体上设有指示灯。指示灯用来显示是否在对电子烟进行充电，在充电状态下，指示灯亮。

还包括一电源插头，电源插头上直接设有 USB 接口，电源插头与 USB 接口电连接。还设置一电源插头，在没有 USB 接口状况下，仍采用电源插头充电以满足不同的需要，将 USB 插头插入电源插头的 USB 接口上，再将电源插头插入插座内进行充电，USB 接口可直接设置在电源插头上。

还包括一电源插头，电源插头通过连接线连接一 USB 接口，电源插头与 USB 接口电连接。还设置一电源插头，在没有 USB 接口状况下，采用电源插头充电以满足不同的需要，将 USB 插头插入电源插头的 USB 接口上，再将电源插头插入插座内进行充电，USB 接口通过连接线连接电源插头。

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本实用新型的有益效果在于：本实用新型将充电装置的插头设置成USB 插头，可直接在电脑或其它具有 USB 接口地方充电，方便了一些经常使用电脑的用户，且该充电装置体积小、携带方便。另外还配有带USB接口的普通电源插头，在没有USB接口的设备下可通过电源插头充电。

（四）附图说明

图 1 是本实用新型实施例一的结构示意图；

图 2 是本实用新型实施例一的侧视结构示意图；

图 3 是本实用新型实施例二的结构示意图；

图 4 是本实用新型的电源插头的结构示意图。

（五）具体实施方式

下面结合附图和具体实施方式对本实用新型作进一步详细说明。

实施例一：如图 1 所示，一种用于电子烟的充电装置，包括本体 1，本体 1 一端为 USB 插头 2，本体 1 另一端为与电子烟充电端口相匹配的连接端口 3，连接端口 3 与 USB 插头 2 之间电连接，且连接端口 3 直接设置在本体 1 上，充电装置上还设有指示灯 7。还设有一电源插头 5，如图 4 所示，电源插头上设有 USB 接口 6，USB 接口 6 可直接设置在电源插头 5 上或通过连接线连接。对电子烟进行充电时，将电子烟插入充电装置的连接端口 3，USB 插头 2 插入电脑的 USB 接口，用电脑上的电源对电子烟进行充电。在没有电脑的情况下，将充电装置的 USB 插头插入电源插头的 USB 接口内，再将电源插头插入插座上进行充电。

实施例二：如图 3 所示，一种用于电子烟的充电装置，充电装置的连接端口 3 通过连接线 4 与本体相连接，其它部分与实施例一相同。

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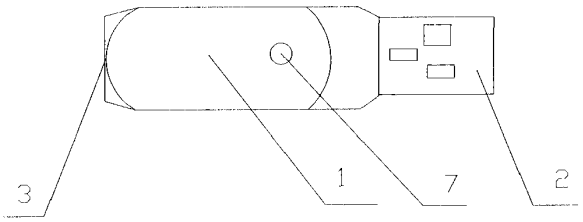


图 1

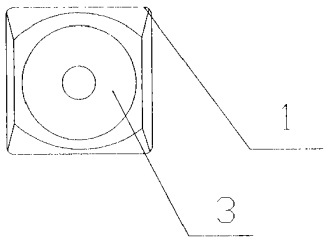


图 2

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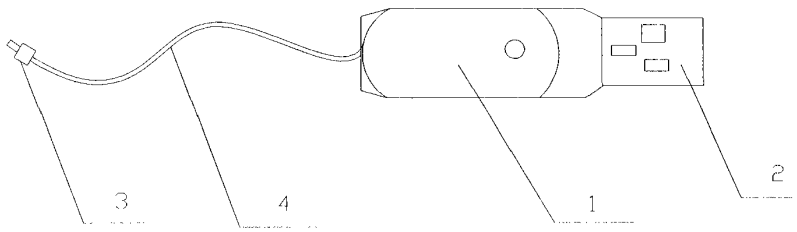


图 3

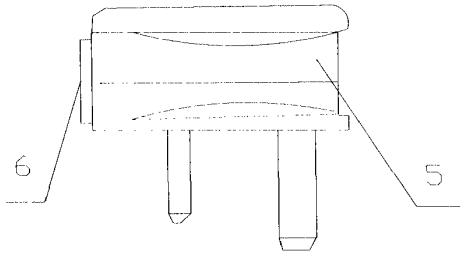


图 4

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Espacenet

Bibliographic data: CN202004499 (U) — 2011-10-05

Bluetooth vertical holder charger with rotary USB (universal serial bus) interface

Inventor(s): QIAN HE ± (HE QIAN)

Applicant(s): QIAN HE ± (HE QIAN)

Classification: **- international:** ***H01R13/46; H01R13/62; H02J7/00***
- cooperative:

Application number: CN20112138339U 20110504

Priority number(s): CN20112138339U 20110504

Abstract of CN202004499 (U)

The utility model discloses a bluetooth vertical holder charger with a rotary USB (universal serial bus) interface, which comprises a charging holder and a USB charging interface which are adaptively installed. A charging socket which is matched with a bluetooth electric device charging plug is arranged on the charging holder. Charging contact pins are arranged in the charging socket. The charging holder is rotatably hinged on the USB charging interface. The charging holder is a holder body which can rotate up and down within 180 degrees on the USB charging interface. The charging holder and the USB charging interface 2 form a split hinged structure which can rotate flexibly. When the bluetooth vertical holder charger is used, the charging holder can rotatably swing up and down within 180 degrees on the USB charging interface, the use process is very flexible and convenient, and people do not need to pull out and inversely install a USB charging structure in order to adjust a charging direction. Moreover, the structure of the product is very simple, a display function can be greatly improved, and the practicability is high.

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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 202004499 U
(45)授权公告日 2011.10.05

(21)申请号 201120138339.X

(22)申请日 2011.05.04

(73)专利权人 何芊
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(72)发明人 何芊

(51)Int.Cl.
H02J 7/00(2006.01)
H01R 13/46(2006.01)
H01R 13/62(2006.01)

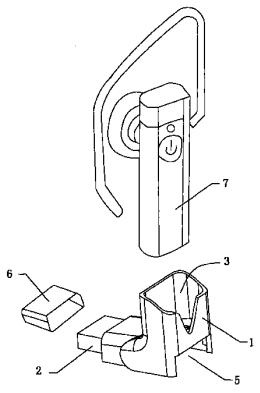
权利要求书 1 页 说明书 2 页 附图 3 页

(54)实用新型名称

一种可旋转式USB接口蓝牙垂直座充

(57)摘要

本实用新型公开了一种可旋转式USB接口蓝牙垂直座充，它包括相配安装的充电座及USB充电接口，充电座上开有与蓝牙电器充电插头相配的充电插口，充电插口内设有充电接触脚，所述充电座旋转铰接在USB充电接口上，该充电座为可在USB充电接口上180度上下摆幅旋转的座体。本实用新型使得充电座和USB充电接口2成为灵活可转的分体铰接结构，在使用过程中，充电座可在USB充电接口上作上下180度上下旋转摆动，使用过程十分灵活方便，人们无需为了调转充电方向而将USB充电结构拔出而倒反安装，而且，该产品结构十分简单，能大大的提高展示功能、实用性强。



CN 202004499 U

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1. 一种可旋转式 USB 接口蓝牙垂直座充它包括相配安装的充电座 (1) 及 USB 充电接口 (2)，充电座 (1) 上开有与蓝牙电器充电插头相配的充电插口 (3)，充电插口 (3) 内设有充电接触脚 (31)，其特征在于：所述充电座 (1) 旋转铰接在 USB 充电接口 (2) 上，该充电座 (1) 为可在 USB 充电接口 (2) 上 180 度上下摆幅旋转的座体。

2. 根据权利要求 1 所述的可旋转式 USB 接口蓝牙垂直座充，其特征在于：所述充电插口 (3) 内设有用于吸附蓝牙电器的充电插头的磁吸附装置 (4)。

3. 根据权利要求 2 所述的可旋转式 USB 接口蓝牙垂直座充，其特征在于：所述磁吸附装置 (4) 设置在充电接触脚 (31) 上。

4. 根据权利要求 2 或 3 所述的可旋转式 USB 接口蓝牙垂直座充，其特征在于：所述磁吸附装置 (4) 为磁铁。

5. 根据权利要求 1 所述的可旋转式 USB 接口蓝牙垂直座充，其特征在于：所述充电座 (1) 上开有与 USB 充电接口 (2) 相配的防干涉空腔 (5)。

6. 根据权利要求 1 所述的可旋转式 USB 接口蓝牙垂直座充，其特征在于：所述充电插口 (3) 为 U 形开口。

7. 根据权利要求 1 所述的可旋转式 USB 接口蓝牙垂直座充，其特征在于：所述 USB 充电接口 (2) 上设有接口盖 (6)。

NJOY Exhibit 1002.657

一种可旋转式 USB 接口蓝牙垂直座充

技术领域

[0001] 本实用新型涉及充电器技术领域，具体地说，它是将立式充电功能以及产品展示功能集于一体，可有效减小充电的使用台面，并且插拔方便的可旋转式 USB 接口蓝牙垂直座充。

背景技术

[0002] 目前，随着商品经济的不断深入与发展，各种功能的电子、通讯产品得到了蓬勃发展，譬如：手机、数码相机、MP3、MP4、MP5 等电子产品的使用已相当普及，尤其是手机及其配套的蓝牙装置也相应得到了快速的发展，尤其包括蓝牙充电器，而现有的蓝牙充电器普遍采用横向或卧式的结构形式，并以其体积小，携带、使用方便的特点而受到广大消费者的普遍认可。但是，鉴于现有的蓝牙充电器还存在结构单一、构造缺乏创新的不足，插拔不方便，更不具备展示功能等缺点，后来，在中国专利 ZL200920238299.9 公开的一种 USB 接口蓝牙垂直座充，该技术方案中的 USB 充电接口与充电座为一体化的 90 度垂直结构，充电座上的充电插口向上。然而，在实际使用或产品展示展示中，充电插口的方向单一，人们要想改变充电插座的方向，只能把 USB 充电结构拔出而倒反安装，这给实际使用带来很大的不便之处，而且，未能最大限度的显示产品的展示功能，产品的实用性仍有待提高。

发明内容

[0003] 本实用新型的目的在于克服现有技术的不足，提供一种使用灵活方便、更能提高展示功能、实用性强且结构简单的可旋转式 USB 接口蓝牙垂直座充。

[0004] 本实用新型的发明目的是这样实现的：一种可旋转式 USB 接口蓝牙垂直座充，它包括相配安装的充电座及 USB 充电接口，充电座上开有与蓝牙电器充电插头相配的充电插口，充电插口内设有充电接触脚，其特征在于：所述充电座旋转铰接在 USB 充电接口上，该充电座为可在 USB 充电接口上 180 度上下摆幅旋转的座体。

[0005] 对于本实用新型所述的可旋转式 USB 接口蓝牙垂直座充，其作为技术方案的进一步改进，所述充电插口内设有用于吸附蓝牙电器的充电插头的磁吸附装置。

[0006] 进一步来说，本实用新型所述的可旋转式 USB 接口蓝牙垂直座充，所述磁吸附装置设置在充电接触脚上。

[0007] 对于本实用新型所述的可旋转式 USB 接口蓝牙垂直座充，其具体来说，所述磁吸附装置为磁铁。

[0008] 期间，在所述可旋转式 USB 接口蓝牙垂直座充的制备过程中，所述充电座上开有与 USB 充电接口相配的防干涉空腔。

[0009] 同时，作为上述可旋转式 USB 接口蓝牙垂直座充的进一步细化，所述充电插口为 U 形开口。

[0010] 另外，作为上述可旋转式 USB 接口蓝牙垂直座充的进一步细化，所述 USB 充电接口上设有接口盖。

NJOY Exhibit 1002.658

[0011] 本实用新型与现有技术中的USB接口蓝牙垂直座充相比，具有以下优点：

[0012] 本实用新型将充电座旋转铰接在USB充电接口上，该充电座为可在USB充电接口上180度上下摆幅旋转的座体，在使用过程中，根据人们的具体使用要求，充电座可在USB充电接口上作上下180度上下旋转摆动，使用过程十分灵活方便，人们无需为了调转充电方向而将USB充电结构拔出而倒反安装，而且，该产品结构十分简单，能大大的提高展示功能、实用性强。

附图说明

[0013] 附图1为本实用新型最佳实施例在使用状态的连接关系图。

[0014] 附图2为本实用新型最佳实施例在向上充电方向的结构示意图。

[0015] 附图3为本实用新型最佳实施例在水平充电方向的结构示意图。

[0016] 附图4为本实用新型最佳实施例在向下充电方向的结构示意图。

具体实施方式

[0017] 下面结合附图对本实用新型作进一步的描述。

[0018] 根据图1所示，本实施例所述的可旋转式USB接口蓝牙垂直座充，它包括相配安装的充电座1及USB充电接口2，充电座1上开有与蓝牙电器7充电插头相配的充电插口3，该蓝牙电器7多为蓝牙耳机，充电插口3内设有充电接触脚31，所述充电座1旋转铰接在USB充电接口2上，该充电座1为可在USB充电接口2上180度上下摆幅旋转的座体。作为技术方案的进一步改进，所述充电插口3内设有用于吸附蓝牙电器7的充电插头的磁吸附装置4，该磁吸附装置4设置在充电接触脚31，如图2所示，其具体来说，所述磁吸附装置4为磁铁。

[0019] 期间，在所述可旋转式USB接口蓝牙垂直座充的制备过程中，所述充电座1上开有与USB充电接口2相配的防干涉空腔5，放置充电座1在进行旋转后与USB充电接口2产生相阻的干涉。同时，所述充电插口3为U形开口，所述USB充电接口2上设有接口盖6，该结构盖是对USB充电接口2的保护，在实际产品中，该接口是非必要结构，可以不需配设。

[0020] 图1所示为蓝牙耳机在向上充电位置的结构示意图，当人们需要调整充电位置，可以将充电座1旋转成水平状态，如图3所示，或者将充电座1调整到向下的状态，如图4所示，充电工作灵活方便。

[0021] 为此，本实用新型由于将充电座1旋转铰接在USB充电接口2上，并将充电座1为可在USB充电接口2上180度上下摆幅旋转的座体，使得充电座1和USB充电接口2成为灵活可转的分体铰接结构，在使用过程中，充电座1可在USB充电接口2上作上下180度上下旋转摆动，使用过程十分灵活方便，人们无需为了调转充电方向而将USB充电结构拔出而倒反安装，而且，该产品结构十分简单，能大大的提高展示功能、实用性强。

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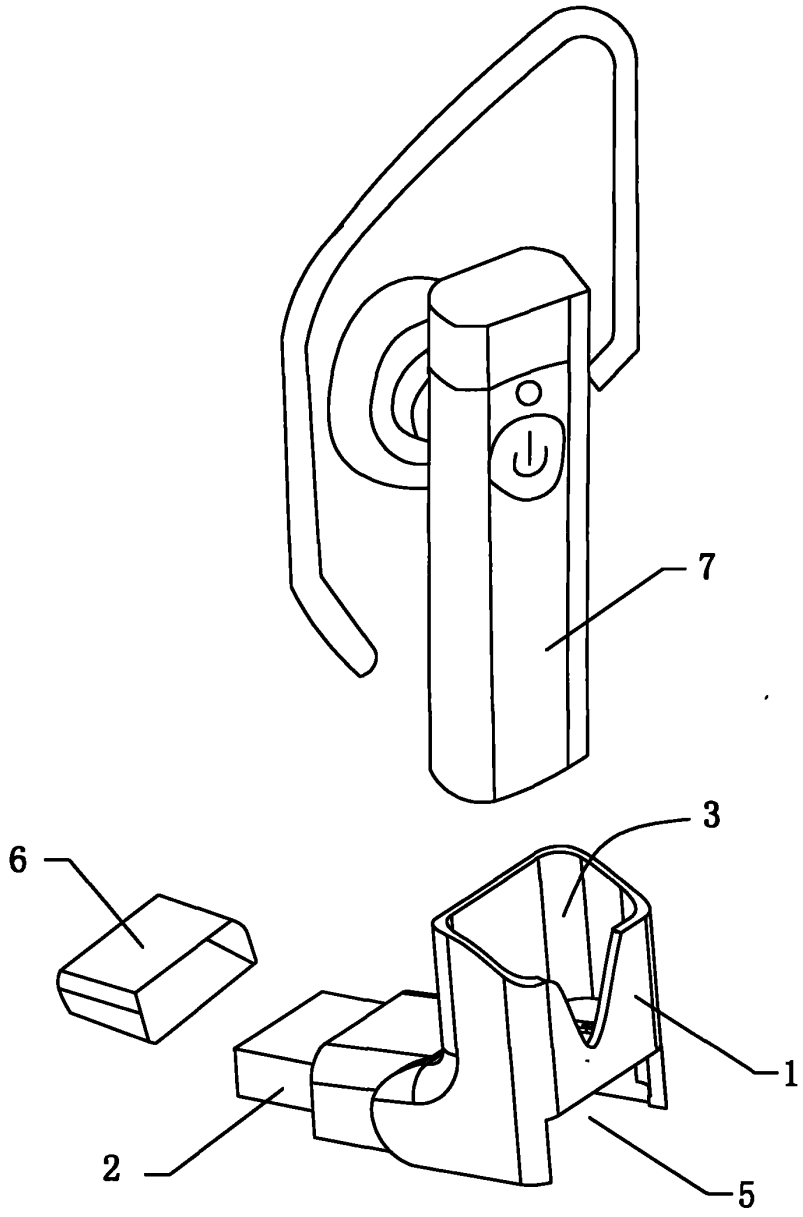


图 1

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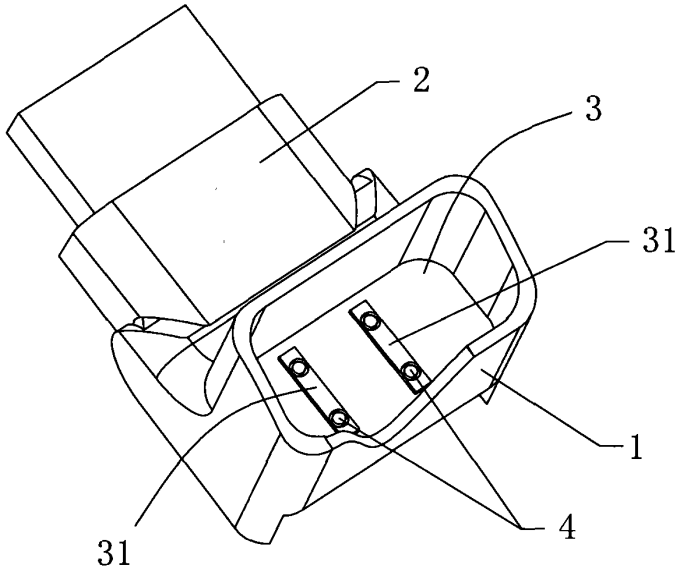


图 2

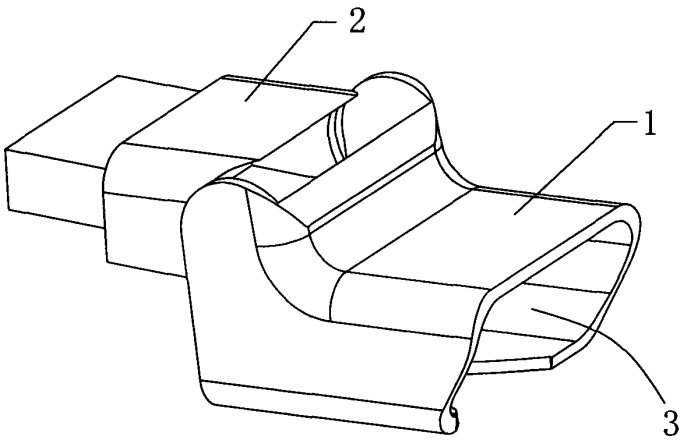


图 3

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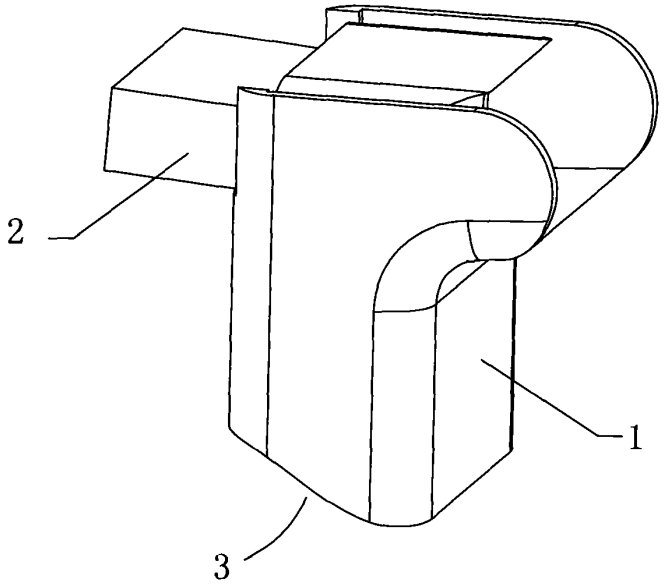


图 4

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Espacenet

Bibliographic data: CN202218034 (U) — 2012-05-09

External docking station for mobile communication equipment

Inventor(s): NING DING ± (DING NING)

Applicant(s): QINGDAO JINHONG MEASUREMENT CONTROL TECHNOLOGY DEV CO LTD ± (QINGDAO JINHONG MEASUREMENT CONTROL TECHNOLOGY DEVELOPMENT CO.,LTD)

Classification: **- international:** ***H02J7/00***
- cooperative:

Application number: CN20112306650U 20110822

Priority number(s): CN20112306650U 20110822

Abstract of CN202218034 (U)

The utility model relates to an accessory of communication equipment, in particular to an external docking station for mobile communication equipment, and solves the problem that an external charging device can not be carried about for use. The external docking station comprises a matrix, a battery and a circuit module, wherein the matrix comprises retaining walls, a plate body and a base; the retaining walls are positioned on two sides of the plate body; the circuit module with a USB interface A, a power management chip and a charging indicator light arranged thereon is arranged in the base, and the power management chip is in electric connection with the charging indicator light; and the battery is arranged on the back side of the plate body and electrically connected with the power management chip through a lead wire. The external docking station can directly charge the mobile communication equipment at any time without replacing the battery of the mobile communication equipment, has a small size, is portable for use, and can be connected with the mobile communication equipment more stably.

NJOY Exhibit 1002.663

(19)中华人民共和国国家知识产权局

(12)实用新型专利

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(51)Int.Cl.
H02J 7/00(2006.01)

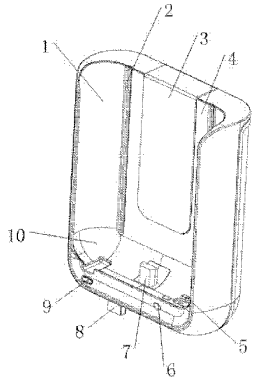
权利要求书 1 页 说明书 2 页 附图 3 页

(54)实用新型名称

一种移动通讯设备的外置扩展坞

(57)摘要

本实用新型涉及一种通讯设备的附件，尤其涉及一种移动通讯设备的外置扩展坞。为解决外置充电装置无法随身携带使用的问题，特提供一种移动通讯设备的外置扩展坞，包括基体、电池和电路模块；基体包括护壁、板体和底座；护壁位于板体两侧；底座内部设有电路模块，电路模块上设有USB接口A、电源管理芯片和充电指示灯，电源管理芯片与充电指示灯电连接；板体背画设有电池，电池通过导线与电源管理芯片电连接。本实用新型可以在不更换移动通讯设备电池的情况下随时直接给移动通讯设备充电，体积小，便于携带使用；与移动通讯设备的连接更加稳固。



CN 202218034 U

NJOY Exhibit 1002.664

1. 一种移动通讯设备的外置扩展坞，其特征在于，包括基体、电池和电路模块；所述基体包括护壁、板体和底座；所述护壁位于板体两侧；所述底座内部设有电路模块，电路模块上设有 USB 接口 A、电源管理芯片和充电指示灯，电源管理芯片与充电指示灯电连接；所述板体背画设有电池，电池通过导线与电源管理芯片电连接。

2. 根据权利要求 1 所述的移动通讯设备的外置扩展坞，其特征在于，所述板体内侧设置防滑绒布，防滑绒布两侧设置导轨槽。

3. 根据权利要求 1 所述的移动通讯设备的外置扩展坞，其特征在于，所述底座底部设有 USB 接口 B，USB 接口 B 与所述电路模块电连接。

4. 根据权利要求 1 所述的移动通讯设备的外置扩展坞，其特征在于，所述底座上还设有弹簧锁扣。

5. 根据权利要求 4 所述的移动通讯设备的外置扩展坞，其特征在于，所述弹簧锁扣包括控制滑键、弹簧和锁扣，弹簧通过控制滑键与锁扣连接。

6. 根据权利要求 1 所述的移动通讯设备的外置扩展坞，其特征在于，所述底座上还设有话筒通道口。

NJOY Exhibit 1002.665

一种移动通讯设备的外置扩展坞

技术领域

[0001] 本实用新型涉及一种通讯设备的附件，尤其涉及一种移动通讯设备的外置扩展坞。

背景技术

[0002] 随着移动通讯设备（例如移动电话）的普及和功能的多样化，其与人们日常生活的联系越来越紧密。但是由于移动通讯设备电池容电量有限，人们开发出各种各样的外置充电装置来对移动通讯设备进行充电。目前市场上的外置充电装置主要存在以下问题：1、只能够在室内进行使用，用户无法随身携带使用；2、操作比较繁琐；3、不能使用移动通讯设备直接进行操作；4、频繁的使用会对移动通讯设备表画造成磨损；5、使用时，外置充电装置与移动通讯设备的连接不够稳定，容易滑落。

发明内容

[0003] 为解决上述外置充电装置无法随身携带使用的技术问题，本实用新型提供一种易于携带、可以在室外使用的移动通讯设备的外置扩展坞。

[0004] 本实用新型的技术方案是：一种移动通讯设备的外置扩展坞，包括基体、电池和电路模块；所述基体包括护壁、板体和底座；所述护壁位于板体两侧；所述底座内部设有电路模块，电路模块上设有 USB 接口 A、电源管理芯片和充电指示灯，电源管理芯片与充电指示灯电连接；所述板体背画设有电池，电池通过导线与电源管理芯片电连接。USB 接口 A 用于与移动通讯设备上相匹配的接口连接，以实现对移动通讯设备进行充电。电源管理芯片用于检测电池电量，对外置扩展坞进行充电时，充电指示灯会根据电源管理芯片内指示发出不同颜色的光来指示正在通电或已充电完毕。

[0005] 所述板体内侧设置防滑绒布，防滑绒布两侧设置导轨槽。

[0006] 所述底座底部设有 USB 接口 B，USB 接口 B 与所述电路模块电连接。USB 接口 B 用于连接充电装置对外置扩展坞进行充电。

[0007] 所述底座上还设有弹簧锁扣，所述弹簧锁扣包括控制滑键、弹簧和锁扣，弹簧通过控制滑键与锁扣连接。当移动通讯设备与外置扩展坞相连接时，锁扣会与移动通讯设备上相匹配的锁孔扣接固定。

[0008] 所述底座上还设有话筒通道口。本实用新型的有益效果在于：1、本实用新型可以在不更换移动通讯设备电池的情况下随时直接给移动通讯设备充电，体积小，便于携带使用；2、本实用新型设有护壁、导轨槽和弹簧锁扣，使得外置扩展坞与移动通讯设备的连接更加稳固；3、防滑绒布的设置避免了因移动通讯设备频繁插拔对移动通讯设备表画造成磨损，同时增大摩擦力，防止移动通讯设备过快的滑入扩展坞内，致使移动通讯设备发生撞击震荡损坏移动通讯设备的细小部件。

附图说明

NJOY Exhibit 1002.666

[0009] 图 1 是本实用新型的整体结构示意图；

[0010] 图 2 是本实用新型背画的结构示意图；

[0011] 图 3 是本实用新型底画的结构示意图；

[0012] 图 4 是本实用新型中电路模块的结构示意图；

[0013] 图 5 是本实用新型中弹簧锁扣的结构示意图。

[0014] 其中，1、护壁，2、导轨槽，3、防滑绒布，4、板体，5、弹簧锁扣，6、话筒通道口，7、USB 接口 A，8、USB 接口 B，9、充电指示灯，10、底座，11、电池，12、电源管理芯片，13、电路模块，14、导线，15、控制滑键，16、弹簧，17、锁扣。

具体实施方式

[0015] 下画结合附图具体说明本实用新型。

[0016] 参见图 1- 图 4，本实用新型包括基体、电池 11 和电路模块 13；基体包括护壁 1、板体 4 和底座 10；所述护壁 1 位于板体 4 两侧；底座 10 内部设有电路模块 13，电路模块 13 上设有 USB 接口 A7、电源管理芯片 12 和充电指示灯 9，电源管理芯片 12 与充电指示灯 9 电连接；所述板体 4 背画设有电池 11，电池 11 通过导线 14 与电源管理芯片 12 电连接。USB 接口 A7 用于与移动通讯设备上相匹配的接口连接，以实现对移动通讯设备进行充电。电源管理芯片 12 用于检测电池 11 电量，对外置扩展坞进行充电时，充电指示灯 9 会根据电源管理芯片 12 指示发出不同颜色的光来指示正在通电或已充电完毕。板体 4 内侧设置防滑绒布 3，防滑绒布 3 两侧设置导轨槽 1。底座 10 底部设有 USB 接口 B8，USB 接口 B8 与电路模块 13 电连接。USB 接口 B8 用于连接充电装置对外置扩展坞进行充电。底座 10 上还设有弹簧锁扣 5 和话筒通道口 6。

[0017] 参见图 5，弹簧锁扣 5 包括控制滑键 15、弹簧 16 和锁扣 17，弹簧 16 通过控制滑键 15 与锁扣 17 连接。当移动通讯设备与外置扩展坞相连接时，锁扣 17 会与移动通讯设备上相匹配的锁孔扣接固定。

[0018] 使用时，移动通讯设备沿导轨槽 2 自上而下插入外置扩展坞中，两侧护壁 1 固定移动通讯设备两侧，移动通讯设备背画与防滑绒布 3 接触，减少对移动通讯设备背画的磨损，同时增大摩擦力，防止移动通讯设备与外置扩展坞发生撞击而发生损坏。移动通讯设备底部的接口与底座 10 上的 USB 接口 A7 相连接，通过移动通讯设备操作实现对移动通讯设备进行充电，同时弹簧锁扣 5 自动与移动通讯设备底部的锁孔扣接固定。当需要对外置扩展坞电池进行充电时，通过底座 10 底部的 USB 接口 B8 与充电装置连接进行充电。电源管理芯片 12 用于检测电池 11 电量，对外置扩展坞进行充电时，充电指示灯 9 会根据电源管理芯片 12 内指示发出不同颜色的光来指示正在通电或已充电完毕。

NJOY Exhibit 1002.667

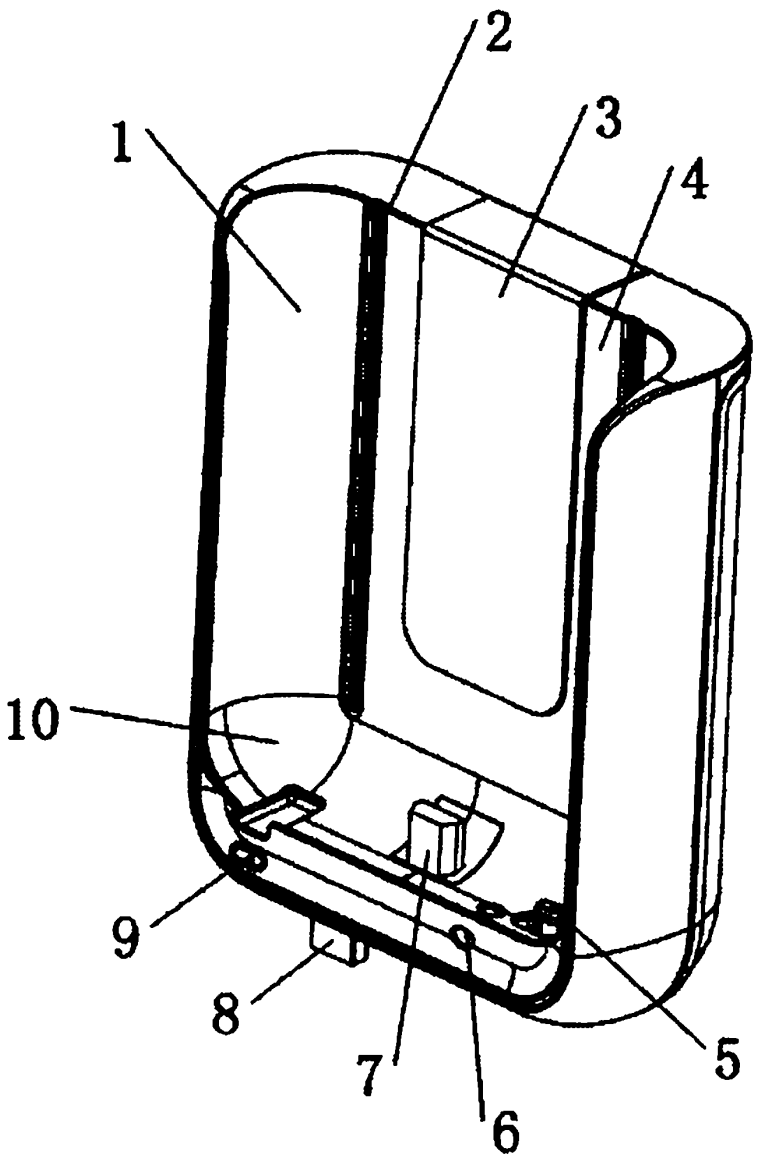


图 1

NJOY Exhibit 1002.668

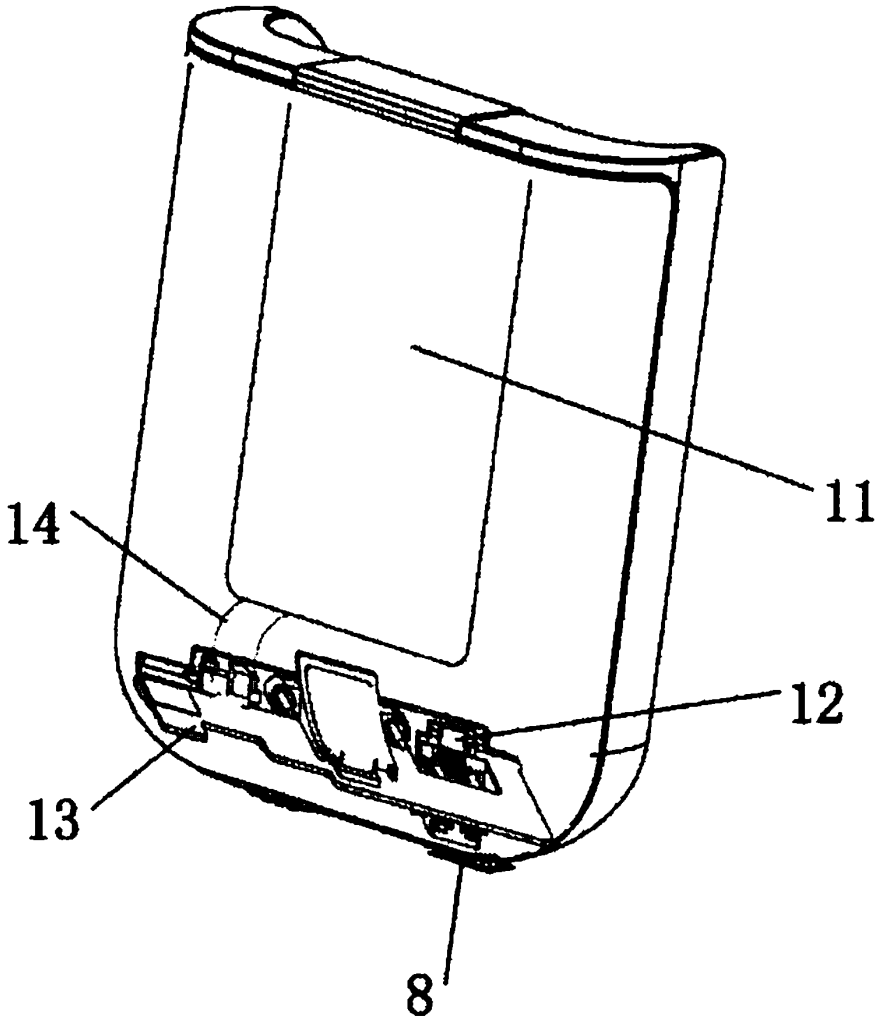


图 2

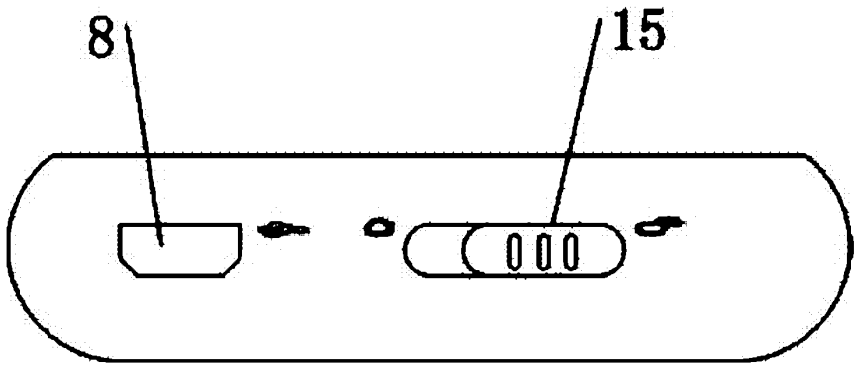


图 3

NJOY Exhibit 1002.669

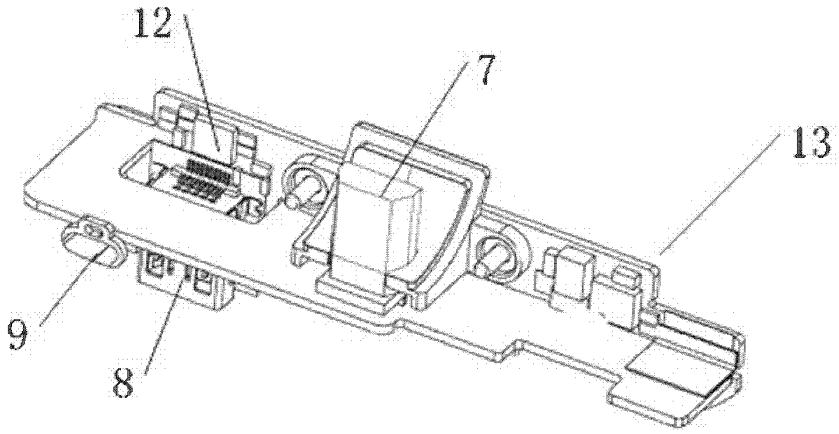


图 4

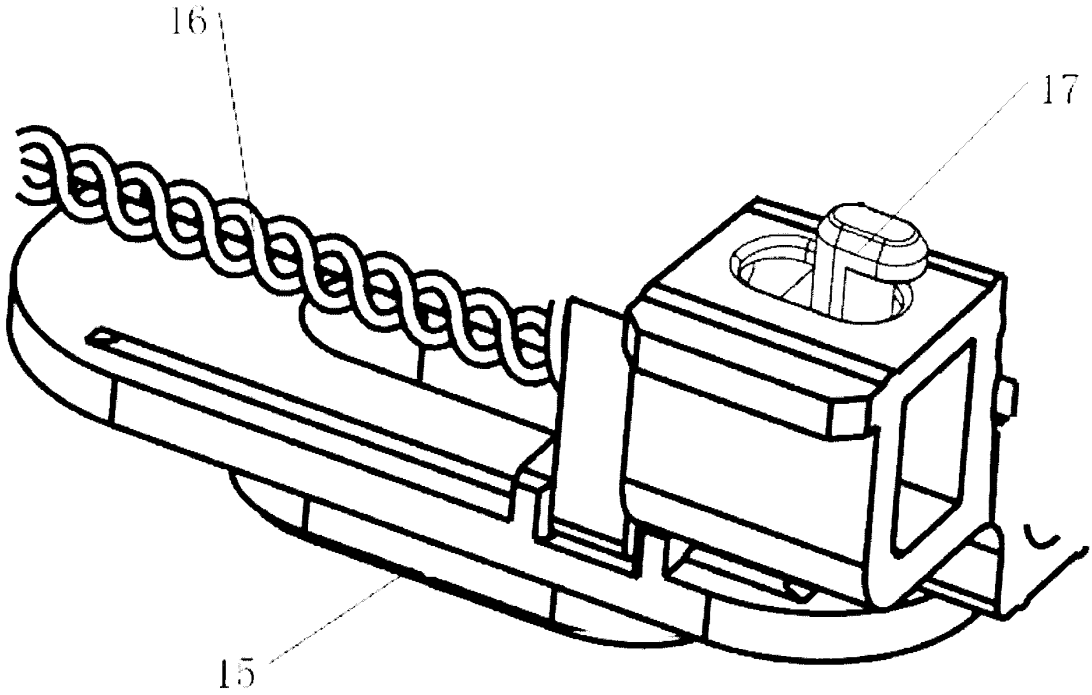


图 5

NJOY Exhibit 1002.670

Espacenet

Bibliographic data: CN202385728 (U) — 2012-08-22

Electronic cigarette with built-in atomizer

Inventor(s): XUEWU ZHOU ± (ZHOU XUEWU)

Applicant(s): XUEWU ZHOU ± (ZHOU XUEWU)

Classification: - international: ***A24F47/00***
- cooperative: **A24F47/008**; **A61M15/02**; **A61M15/06**; **H05B3/03**; A61M2205/8206; A61N1/44

Application number: CN20112476199U 20111125

Priority number(s): CN20112476199U 20111125

Also published as: EP2783589 (A1) EP2783589 (A4) EP2783589 (B1) KR20130006433 (U) US2015034104 (A1) more

Abstract of CN202385728 (U)

The utility model discloses an electronic cigarette with a built-in atomizer. The electronic cigarette comprises the atomizer and a battery rod. The atomizer mainly comprises a cigarette holder and an atomizing rod. A ceramic cup is arranged in the atomizing rod, a fiber line penetrates through a heating wire to be arranged in the ceramic cup, an atomizing cover is arranged on the ceramic cup, an air inlet pipe is arranged on the atomizing cover, a sealing pillar is arranged in the cigarette holder, and the sealing pillar is installed with the atomizing rod by a sealing cap. A liquid cigarette tar atomizing product can be repeatedly added to a flat plastic electronic cigarette adopting the scheme, and liquid cigarette tar can be added only taking out the cigarette holder when the liquid cigarette tar is added. The sealing pillar is tightly fitted in the cigarette holder, the liquid cigarette tar is added by adopting a thin hole with the diameter of 2mm, a plastic sealing pillar with the same diameter is adopted for sealing, and infinitesimal air pressure is generated by the arrangement of relative tar storage and can be ignored almost so as to achieve no tar leakage.

NJOY Exhibit 1002.671

(19)中华人民共和国国家知识产权局

(12)实用新型专利

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(45)授权公告日 2012.08.22

(21)申请号 201120476199.7

(22)申请日 2011.11.25

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(74)专利代理机构 北京乾诚五洲知识产权代理有限责任公司 11042
代理人 付晓青 杨玉荣

(51)Int.Cl.
A24F 47/00(2006.01)

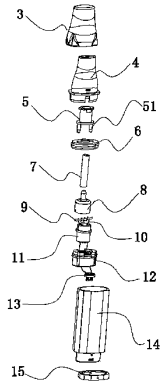
权利要求书 1 页 说明书 2 页 附图 2 页

(54)实用新型名称

内置雾化器电子香烟

(57)摘要

本实用新型公开了一种内置雾化器电子香烟，包括雾化器与电池杆，雾化器主要包括烟嘴和雾化杆组成；雾化杆内设置陶瓷杯；纤维线穿过发热丝设置于陶瓷杯内，陶瓷杯上设置雾化罩，雾化罩上设置进气管，烟嘴内设置一密封柱，该密封柱经密封盖与雾化杆安装，采用上述方案后的扁塑胶电子烟，可反复添加液体烟油雾化品，添加液体烟油时，只需取下烟嘴，即可添加液体烟油。密封柱紧配合于烟嘴内；采用2mm直径的细孔进行添加液体烟油，密封采用同直径的塑胶密封柱进行密封，相对储油设置产生极小气压，几乎可以忽略；从而达到无漏油。



CN 202385728 U

NJOY Exhibit 1002.672

1. 内置雾化器电子香烟，包括雾化器与电池杆，其特征在于：雾化器主要包括烟嘴和雾化杆组成；雾化杆内设置陶瓷杯；纤维线穿过发热丝设置于陶瓷杯内，陶瓷杯上设置雾化罩，雾化罩上设置进气管，烟嘴内设置一密封柱，该密封柱经密封盖与雾化杆安装。

2. 根据权利要求 1 所述的内置雾化器电子香烟，其特征在于：所述的密封柱上设置有两个安装部，密封柱与密封盖安装时，两安装部插入密封盖内固定。

3. 根据权利要求 1 所述的内置雾化器电子香烟，其特征在于：所述的陶瓷杯设置在一密封环上后安装在雾化杆内。

4. 根据权利要求 3 所述的内置雾化器电子香烟，其特征在于：所述的密封环下设置接触片。

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内置雾化器电子香烟

技术领域

[0001] 本实用新型涉及一种可以吸抽的电子香烟，由其是超轻的塑胶件构成的无漏油电子香烟；尤其涉及的是可显示电池电量及吸抽烟口数的电子香烟。

背景技术

[0002] 目前，公知电子香烟分为雾化器及电池杆两部分；外壳大都采用不锈钢管及铝管制作，因为材料的问题其成形工艺有限，材料较重。更无法实现塑胶件的多样化，轻手感。

[0003] 而雾化器为电子烟的核心部分，主要由雾化室、储油杯、密封盖、钢管外壳及烟嘴，但此结构，添加液体烟油时必须先取下外壳，再取下油杯添加液体烟油，此方式极为繁琐，而且容易漏油，给消费者带来不便

[0004] 同时在使用时，雾化器如何便捷的添加液体烟油，抽吸时无漏油现象，并成为众多消费者关注的焦点。

实用新型内容

[0005] 针对现有技术存在的不足，本实用新型提供一种电子烟，可反复添加液体烟油雾化品，添加液体烟油时，只需取下烟嘴，即可添加液体烟油。

[0006] 为了实现上述目的，本实用新型采用以下技术方案：

[0007] 内置雾化器电子香烟，包括雾化器与电池杆，雾化器主要包括烟嘴和雾化杆组成；雾化杆内设置陶瓷杯；纤维线穿过发热丝设置于陶瓷杯内，陶瓷杯上设置雾化罩，雾化罩上设置进气管，烟嘴内设置一密封柱，该密封柱经密封盖与雾化杆安装。

[0008] 所述的密封柱上设置有两个安装部，密封柱与密封盖安装时，两安装部插入密封盖内固定。

[0009] 所述的陶瓷杯设置在一密封环上后安装在雾化杆内。

[0010] 所述的密封环下设置接触片。

[0011] 采用上述方案后的内置雾化器电子香烟，可反复添加液体烟油雾化品，添加液体烟油时，只需取下烟嘴，即可添加液体烟油。密封柱紧配合于烟嘴内。采用 2mm 直径的细孔进行添加液体烟油，密封采用同直径的塑胶密封柱进行密封，相对储油设置产生极小气压，几乎可以忽略；从而达到无漏油。

附图说明

[0012] 图 1 是本实用新型的结构示意图；

[0013] 图 2 是图 1 中雾化器的分解示意图。

具体实施方式

[0014] 下面依据附图对本实用新型做进一步的详细说明：

[0015] 如图 1 和图 2 所示的内置雾化器电子香烟，包括雾化器 1 与电池杆 2，雾化器 1 与

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电池杆 2 的外形均扁平状；电池杆 2 中所有技术均为现有技术，故不详述。

[0016] 其中雾化器 1 主要包括烟嘴 4 和雾化杆 14 组成；雾化杆 14 外设置装饰套 15；烟嘴 4 上安装扁平的烟嘴盖 3；雾化杆 14 内设置陶瓷杯 11；纤维线 9 穿过发热丝 10 设置于陶瓷杯 11 内，陶瓷杯 11 设置在一密封环 12 上后安装在雾化杆 14 内；密封环 12 下设置接触板 13。陶瓷杯 11 上设置雾化罩 8，雾化罩 8 上设置进气管 7，烟嘴 4 内设置一密封柱 5，密封柱 5 上设置有两个安装部 51，密封柱 5 与密封盖 6 安装时，两安装部 51 插入密封盖 6 内固定。

[0017] 上述的各个部件除纤维线 9、发热丝 10、陶瓷杯 11 外均为塑胶材料制成，易于成型，使用起来方便轻巧。

[0018] 采用上述方案后的内置雾化器电子香烟，可反复添加液体烟油雾化品，添加液体烟油时，只需取下烟嘴 4，即可添加液体烟油。密封柱 5 紧配合于烟嘴 4 内。采用 2mm 直径的细孔进行添加液体烟油，密封采用同直径的塑胶密封柱进行密封，相对储油设置产生极小气压，几乎可以忽略；从而达到无漏油。

NJOY Exhibit 1002.675

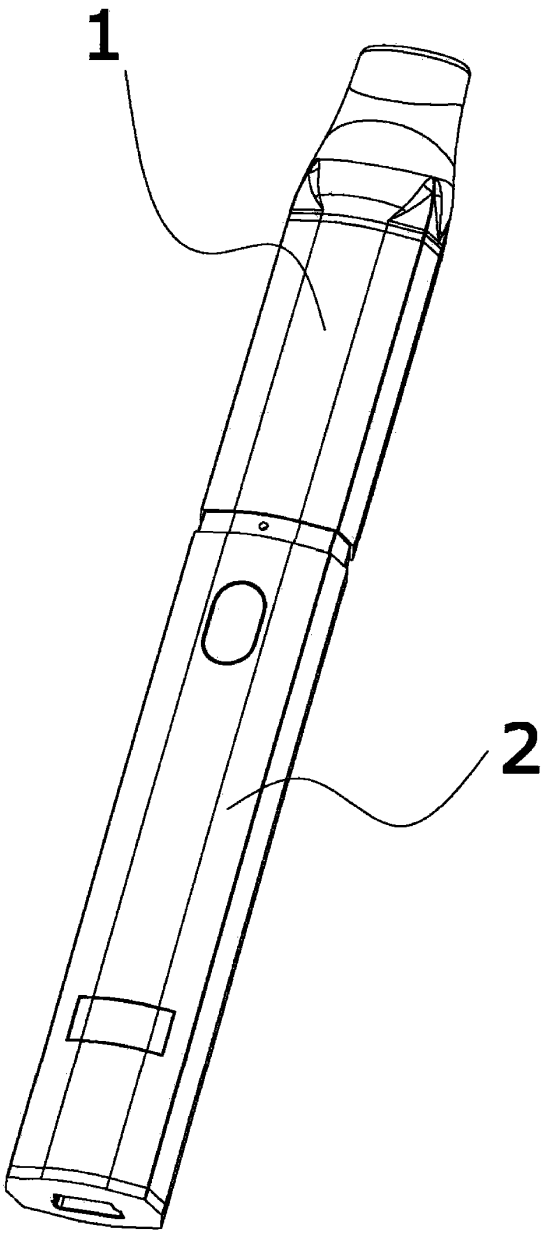


图 1

NJOY Exhibit 1002.676

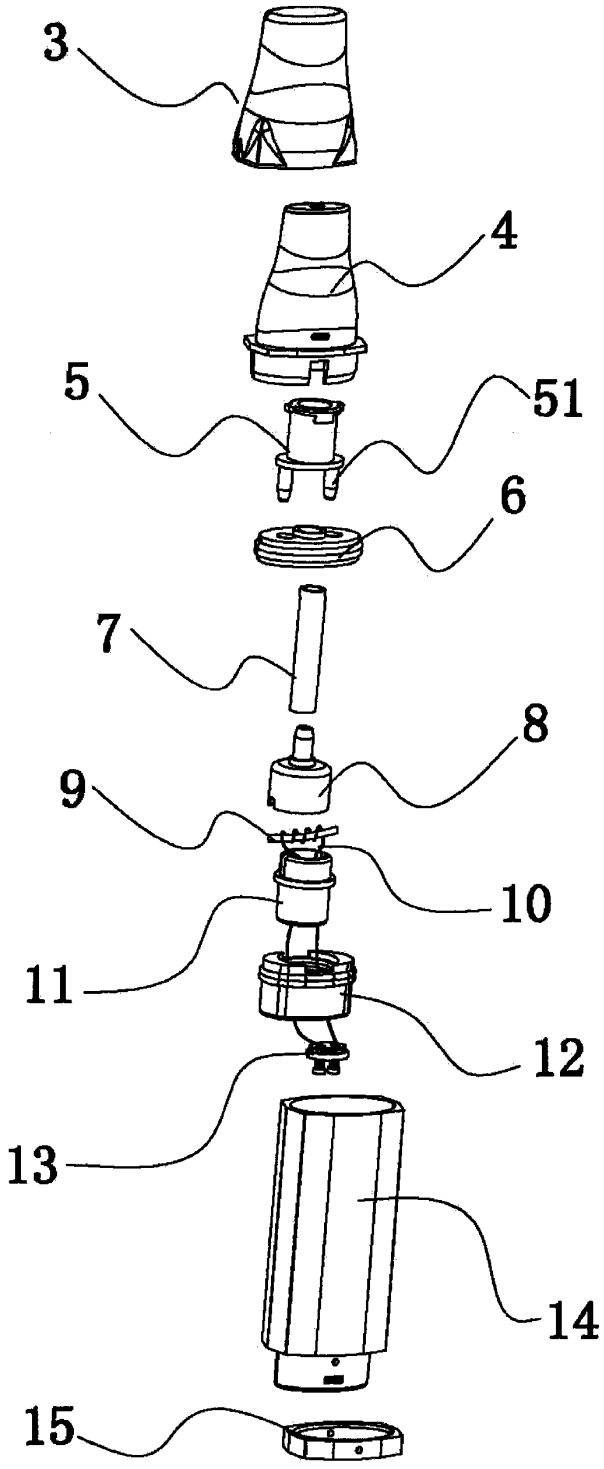


图 2

NJOY Exhibit 1002.677

Espacenet

Bibliographic data: CN202603608 (U) — 2012-12-19

Electronic cigarette

Inventor(s): ZHU XIAOCHUN ± (ZHU XIAOCHUN)

Applicant(s): SHENZHEN KANGER TECHNOLOGY CO LTD ± (SHENZHEN KANGER TECHNOLOGY CO.,LTD)

Classification: **- international:** ***A24F47/00***
- cooperative:

Application number: CN20122223286U 20120517

Priority number(s): CN20122223286U 20120517

Abstract of CN202603608 (U)

The utility model discloses an electronic cigarette, which comprises a cigarette rod, an atomizer and a cigarette holder, wherein the cigarette holder is detachably arranged at the upper end part of the cigarette rod, a fixing rod and a conducting part are fixedly arranged inside the lower end part of the cigarette rod, the conducting part is used for electrically connecting a battery, a first conducting connection part is electrically connected with the conducting part and is fixedly arranged in the fixing rod, the atomizer comprises a second conducting connection part and a fiber rope, the second conducting connection part is fixedly arranged on the atomizer, the fiber rope transversely passes through the outer surface of the atomizer and is provided with a heating wire, one end part of the atomizer is detachably arranged on the fixing rod of the cigarette rod, in addition, the second conducting connection part is electrically connected with the first conducting connection part of the fixing rod, and the second conducting connection part is electrically connected with the heating wire. The electronic cigarette has the advantages that the atomizer can be dismounted from the cigarette rod, and the heating wire can be replaced.

NJOY Exhibit 1002.678

(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 202603608 U
(45)授权公告日 2012.12.19

(21)申请号 201220223286.6

(22)申请日 2012.05.17

(73)专利权人 深圳市康尔科技有限公司
地址 518000 广东省深圳市宝安区沙井街道中心路汇盈商务大厦十一楼1110室

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代理人 李悦

(51)Int.Cl.
A24F 47/00(2006.01)

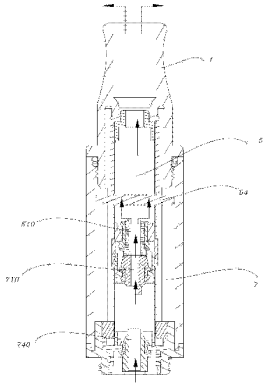
权利要求书 1 页 说明书 3 页 附图 3 页

(54)实用新型名称

电子香烟

(57)摘要

本实用新型公开了一种电子香烟，其包括烟杆、雾化器和可拆卸地装设于烟杆的上端部的烟嘴。该烟杆的下端部内固定装设一固定杆以及一用于电性连接电池的导电部，该第一导接部电性连接该导电部，该固定杆内固定装设一第一导接部。该雾化器包括一固定装设于雾化器的第二导接部和一横向穿过该雾化器外表面且设有发热丝的纤维绳，雾化器的一端部可拆卸地装设于烟杆的固定杆上，且该第二导接部电性连接固定杆的第一导接部，该第二导接部电性连接该发热丝。上述的电子香烟可将雾化器从烟杆上拆卸下以进行更换发热丝。



CN 202603608 U

NJOY Exhibit 1002.679

1. 一种电子香烟，其特征在于，包括：

一烟杆，该烟杆的下端部内固定装设一固定杆以及一用于电性连接电池的导电部，该固定杆的上端部内固定装设一第一导接部，该第一导接部电性连接该导电部；

一雾化器，包括一固定装设于雾化器的下端部内的第二导接部和一横向穿过该雾化器外表面且设有发热丝的纤维绳，雾化器的下端部可拆卸地装设于烟杆的固定杆上，且该第二导接部电性连接固定杆的第一导接部，该第二导接部电性连接该发热丝；以及

一烟嘴，可拆卸地装设于烟杆的上端部。

2. 如权利要求 1 所述的电子香烟，其特征在于：该烟嘴设有外牙接头，烟杆的上端部设有一用于对应连接烟嘴的外牙接头的内牙接头。

3. 如权利要求 2 所述的电子香烟，其特征在于：烟嘴的外牙接头的一端部套设一密封圈。

4. 如权利要求 1 所述的电子香烟，其特征在于：烟杆的下端部设有用于电性连接该电池的外牙接头，烟杆的导电部固定装设于烟杆的一端部内且与该外牙接头电性连接；该导电部包括两端开口且中空的第一导电杆、套设于该第一导电杆外的第一绝缘圈和套设于该第一绝缘圈外的第一导电环。

5. 如权利要求 1 所述的电子香烟，其特征在于：固定杆的上端部设有一外牙接头，且固定杆的上端部内固定装设该第一导接部；该第一导接部包括两端开口且中空的第一导电杆、套设于该第一导电杆外的第一绝缘圈和套设于该第一绝缘圈外的第一导电环，该第一导电环与该外牙接头电性相连。

6. 如权利要求 5 所述的电子香烟，其特征在于：雾化器的下端部设有一用于对应连接固定杆的外牙接头的内牙接头；雾化器的第二导接部包括两端开口且中空的第二导电杆、套设于该第二导电杆外的第二绝缘圈，套设于该第二绝缘圈外的第二导电环，该第二导电环与该内牙接头电性连接。

7. 如权利要求 6 所述的电子香烟，其特征在于：固定杆的下端部外套设一密封圈。

8. 如权利要求 7 所述的电子香烟，其特征在于：该雾化器的上端部套设一密封套。

9. 如权利要求 8 所述的电子香烟，其特征在于：该雾化器的外表面、该固定杆的外表面与该烟杆的内表面之间界定一用于存储烟液的储液腔。

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电子香烟

技术领域

[0001] 本实用新型涉及一种电子香烟。

背景技术

[0002] 电子香烟是一种非燃烧的电子烟，它的功效与普通烟相似，能够提神，满足烟瘾，使吸烟者产生欣快感和放松感，同时有戒烟作用。雾化器为电子香烟的重要组成部分之一，雾化器上设有纤维绳和发热丝，当电子香烟工作时，发热丝发热产生高温，从而将纤维绳上的烟液雾化。由于现有的雾化器固定装设于电子香烟，当雾化器的纤维绳或发热丝损坏时，将使得电子香烟不能再使用。另外，现有的电子香烟的储液管的密封性较差，使得烟液的保质期较短。

实用新型内容

[0003] 针对现有技术的不足，本实用新型的目的旨在于提供一种可更换纤维绳电热丝，且烟液管的密封性好的电子香烟。

[0004] 为实现上述目的，本实用新型采用如下技术方案：

[0005] 一种电子香烟包括：

[0006] 一烟杆，该烟杆的下端部内固定装设一固定杆以及一用于电性连接电池的导电部，该固定杆的上端部内固定装设一第一导接部，该第一导接部电性连接该导电部；

[0007] 一雾化器，包括一固定装设于雾化器的下端部内的第二导接部和一横向穿过该雾化器外表面且设有发热丝的纤维绳，雾化器的下端部可拆卸地装设于烟杆的固定杆上，且该第二导接部电性连接固定杆的第一导接部，该第二导接部电性连接该发热丝；以及

[0008] 一烟嘴，可拆卸地装设于烟杆的上端部。

[0009] 该烟嘴设有外牙接头，烟杆的上端部设有一用于对应连接烟嘴的外牙接头的内牙接头。

[0010] 烟嘴的外牙接头的一端部套设一密封圈。

[0011] 烟杆的下端部设有用于电性连接该电池的外牙接头，烟杆的导电部固定装设于烟杆的一端部内且与该外牙接头电性连接；该导电部包括两端开口且中空的第一导电杆、套设于该第一导电杆外的第一绝缘圈和套设于该第一绝缘圈外的第一导电环。

[0012] 固定杆的上端部设有一外牙接头，且固定杆的上端部内固定装设该第一导接部；该第一导接部包括两端开口且中空的第一导电杆、套设于该第一导电杆外的第一绝缘圈和套设于该第一绝缘圈外的第一导电环，该第一导电环与该外牙接头电性相连。

[0013] 雾化器的下端部设有一用于对应连接固定杆的外牙接头的内牙接头；雾化器的第二导接部包括两端开口且中空的第二导电杆、套设于该第二导电杆外的第二绝缘圈，套设于该第二绝缘圈外的第二导电环，该第二导电环与该内牙接头电性连接。

[0014] 固定杆的下端部外套设一密封圈。

[0015] 该雾化器的上端部套设一密封套。

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[0016] 该雾化器的外表面、该固定杆的外表面与该烟杆的内表面之间界定一用于存储烟液的储液腔。

[0017] 上述实用新型电子香烟的雾化器可拆卸地装设于烟杆内，当雾化器的发热丝损坏时，即可拆下雾化器以更换发热丝，从而使得电子香烟可再正常工作。另外，上述电子香烟的烟嘴的密封圈、雾化器的密封套和固定杆的密封圈使得储液腔密封性更佳，从而使得烟液不易变质。

附图说明

[0018] 图 1 本实用新型电子香烟的剖视图；

[0019] 图 2 为图 1 所示电子香烟的分解剖视图；

[0020] 图 3 为图 1 所示电子香烟的分解立体图。

具体实施方式

[0021] 下面将结合附图以及具体实施方式，对本实用新型做进一步描述：

[0022] 如图 1-3 所示，本实用新型涉及一种电子香烟，其包括烟嘴 1、雾化器 5 和烟杆 7。

[0023] 该烟嘴 1 于其外牙接头 14 的一端部外面套设一密封圈 11。本实施例中，该烟嘴 1 采用无毒塑料。

[0024] 该雾化器 5 的外形大致呈圆柱体，该雾化器 5 包括两端开口的中空雾化杆 50、纤维绳 54、发热丝 57 和第一导接部 510。该雾化杆 50 的上端部外面套设一密封套 52 以固定纤维绳 54，雾化杆 50 的下端部设有一内牙接头 58。该雾化杆 50 横向开设一通孔(图未标示)，该纤维绳 54 穿过该通孔，使得该纤维绳 54 缠绕有发热丝 57 的中间部位收容于该雾化杆 50 内，且该纤维绳 54 的两端部露于该雾化杆 50 外。该第一导接部 510 包括两端开口的中空的第一导电杆 56、套设于该第一导电杆 56 的第一绝缘圈 53，套设于该第一绝缘圈 53 的第一导电环 55，该第一导电杆 56 固定装设于该雾化杆 5 的下端部且该第一导电杆 56 与该雾化杆 50 的轴线一致，该绝缘圈 53 设于该第一导电杆 56 和该第一导电环 55 之间，该第一导电环 55 与该内牙接头 58 电性连接。本实施例中，该发热丝 57 采用耐高温合金材料，该雾化杆采用环保金属材料。

[0025] 该烟杆 7 包括两端开口的中空杆体 73、固定杆 78，第二导接部 710 和导电部 740。该杆体 73 的上端部设有一用于对应连接烟嘴 1 的外牙接头 14 的内牙接头 720，该杆体 73 的下端部设有一用于电性连接电池(图未示)的外牙接头 718。该导电部 740 固定装设于该下端部内且与该外牙接头 718 电性连接，该导电部 740 包括两端开口且中空的第二导电杆 72、套设于该第二导电杆 72 外的第二绝缘圈 79 和套设于该第二绝缘圈 79 外的第二导电环 71，该第二导电杆 72 与杆体 73 的轴线一致。该固定杆 78 呈两端开口的空心圆柱形，该固定杆 78 的上端部设有一用于对应连接雾化器 5 的内牙接头 58 的外牙接头 780，该固定杆 78 的下端部固设于该导电部 740 上，且其上端部外面套设一密封圈 76。该第二导接部 710 装设于该固定杆 78 的上端部内，该第二导接部 710 设有两端开口且中空的第三导电杆 74、套设于该第三导电杆 74 外的第三绝缘圈 75 和套设于该第三绝缘圈 75 外的第三导电环 77，该第三导电杆 74 与杆体 78 的轴线一致，该第三导电环 77 与该外牙接头 780 电性连接。

[0026] 组装该电子香烟时，将雾化器 52 的下端部对准烟杆 7 的固定杆 78 的上端部，再旋

NJOY Exhibit 1002.682

转该雾化器 52 直至雾化器 52 的外牙接头 58 与固定杆 78 的内牙接头 780 紧密连接，从而使得该第一导电杆 56 电性连接该第三导电杆 74，该第一导电环 55 电性连接该第三导电环 77，且雾化器 52 的上端部露出于该烟杆 7 外以方便后续旋转该雾化器 52，如此，即可将该雾化器 52 固定连接于烟杆 7 的固定杆 78 上。接着将该烟嘴 1 的下端部对准该烟杆 7 的上端部，再旋转该烟嘴 1 直至烟嘴 1 的外牙接头与烟杆 7 的内牙接头 720 紧密连接，从而使得烟嘴 1 固定连接于烟杆 7 上。

[0027] 该雾化器 5 的外表面、该固定杆 78 的外表面与该杆体 78 的内表面之间构成一用于存储烟液的储液腔，烟嘴 1 的密封圈 11、雾化器 5 的密封套 52 和烟杆 7 的密封圈 76 使得该储液腔的密封性更佳，以防止烟液外泄及与外界空气接触，从而使得烟液不易变质，可长时间保存。给电子香烟添加烟液时，只需将烟嘴 1 从烟杆 7 上取下，再沿着雾化器 5 的密封套 52 添加烟液，直至烟液覆盖过纤维绳 54 即可停止，接着再将烟嘴 1 装设于该烟杆 7。

[0028] 电子香烟因发热丝 57 损坏需更换发热丝 57 时，旋转烟嘴 1 直至烟嘴 1 的外牙接头 14 脱离烟杆 7 的内牙接头 720，再旋转雾化器 5 直至雾化器 5 的内牙接头 58 脱离固定杆 78 的外牙接头 780，从而将雾化器 5 从烟杆 7 内取出，给雾化器 5 更换完发热丝 57 后，再将雾化器 5 和烟嘴根据上述的组装方式组装于烟杆 7 上。

[0029] 使用该电子香烟时，该电子香烟的电池的电能通过烟杆 7 的外牙接头 718、该导电部 740、该第二导接部 710 和该第一导接部 510 传送至发热丝 57，发热丝 57 发热产生高温，从而将纤维绳 54 的烟液雾化。当使用者通过烟嘴 1 抽吸电子香烟时，外界空气依序经由烟杆 1 的外牙接头 718、第二导电杆 72、第三导电杆 74 和第一导电杆 56 后夹带烟液雾化后产生的气体一起流动。上述混合气体继续穿过烟嘴 1，最终被使用者吸收。图 1 的黑色箭头指向即为使用者使用该电子香烟时的气流方向。

[0030] 上述实用新型电子香烟的雾化器 5 可拆卸地装设于烟杆 7 内，当雾化器 5 的发热丝 57 损坏时，即可拆下雾化器 5 以更换发热丝 57，从而使得电子香烟可再正常工作。另外，上述电子香烟的密封圈 11、密封套 52 和密封圈 76 使得储液腔密封性更佳，从而使得烟液不易变质。

[0031] 对于本领域的技术人员来说，可根据以上描述的技术方案以及构思，做出其它各种相应的改变以及变形，而所有的这些改变以及变形都应该属于本实用新型权利要求的保护范围之内。

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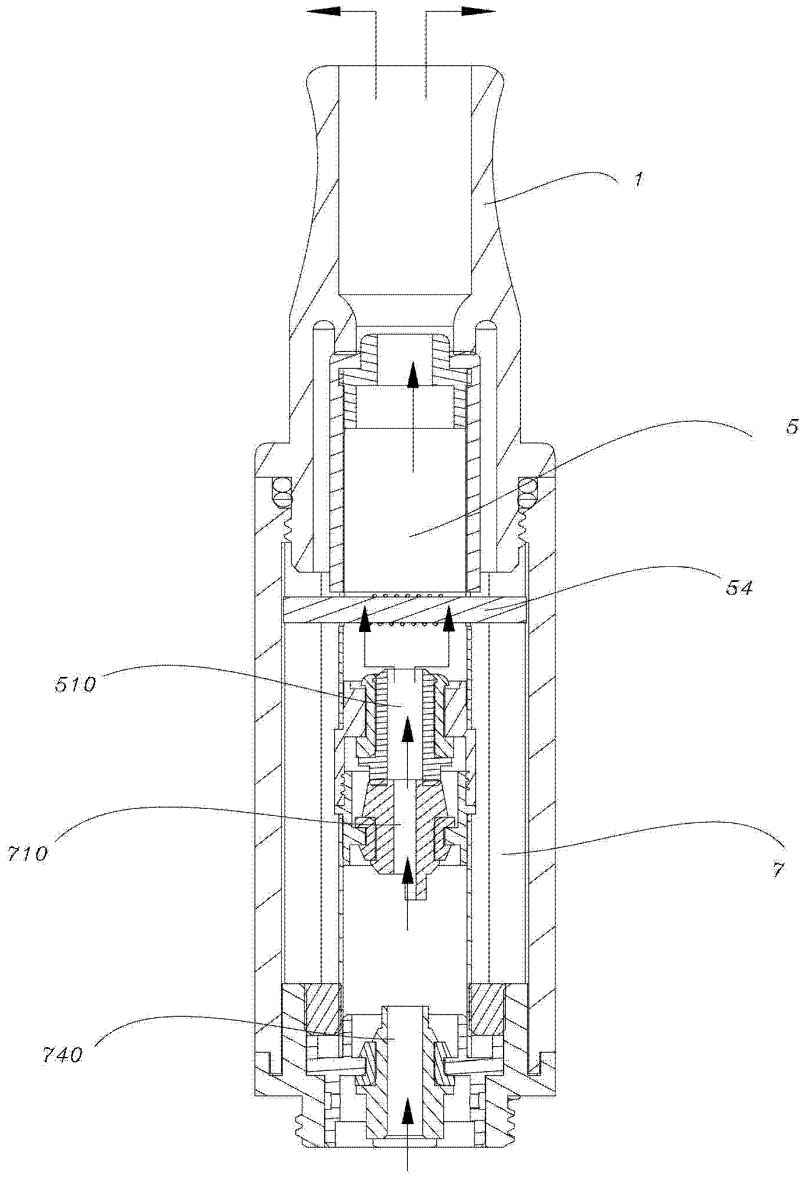


图 1

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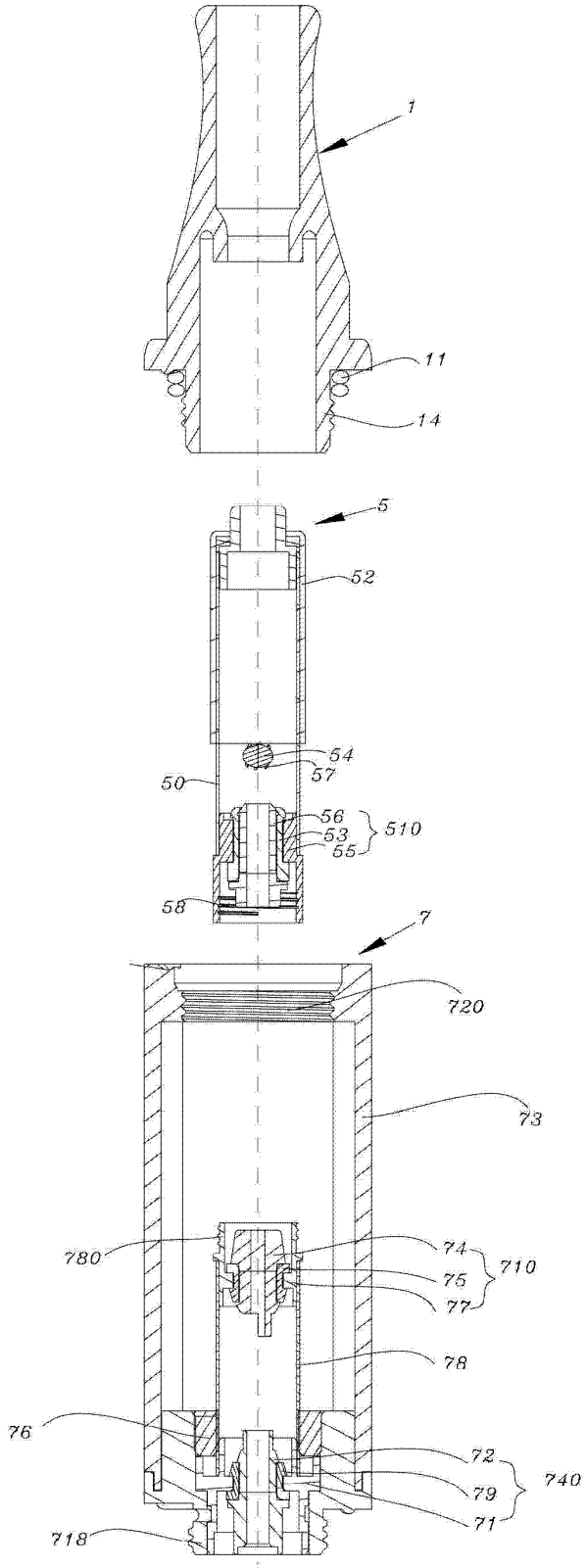


图 2

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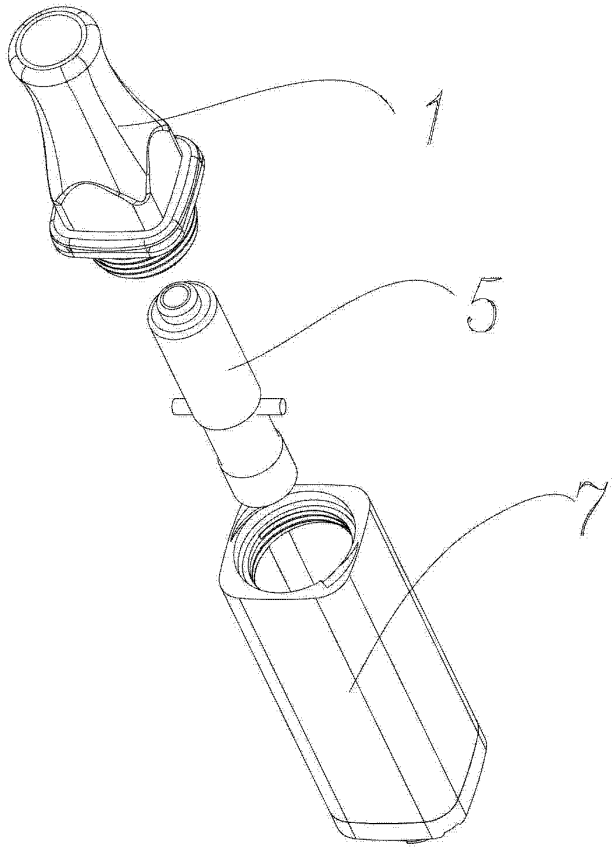


图 3

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Espacenet

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Standby charging power supply integrated with various interfaces

Inventor(s): LUO LIXIN; ZHANG KEHUA; ZENG JINHUI ± (LUO LIXIN, ; ZHANG KEHUA, ; ZENG JINHUI)

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Classification: **- international:** ***H01R27/00; H02J7/00***
- cooperative:

Application number: CN20122307438U 20120628

Priority number(s): CN20122307438U 20120628

Abstract of CN202663148 (U)

The utility model discloses a standby charging power supply integrated with various interfaces. The standby charging power supply comprises a power supply main body, wherein the power supply main body is provided with an energy storage unit and a circuit unit; the power supply main body is provided with an MICROUSB interface for charging input, a 30-pin DOCK connecting female socket, a standard USB interface for charging output and a 30-pin DOCK connecting male plug; and the MICROUSB interface, the 30-pin DOCK connecting female socket, the standard USB interface and the 30-pin DOCK connecting male plug are connected with the energy storage unit through the circuit unit. The standby charging power supply is universal for common mobile equipment and apple mobile equipment and is very convenient to use by a user.

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(12)实用新型专利

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H01R 27/00(2006.01)

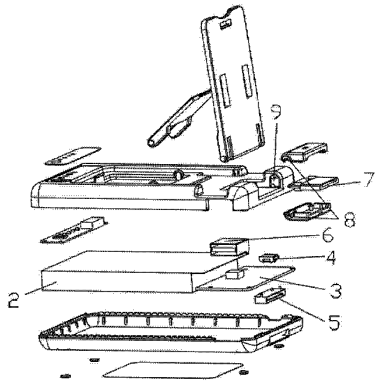
权利要求书 1 页 说明书 2 页 附图 2 页

(54)实用新型名称

一种集成多种接口的备用充电电源

(57)摘要

本实用新型公开了一种集成多种接口的备用充电电源，包括电源主体，电源主体上设置有储能单元和电路单元，所述电源主体上设置有用于充电输入的MICROUSB接口和30针DOCK连接母座以及用于充电输出的标准USB接口和30针DOCK连接公头，MICROUSB接口、30针DOCK连接母座、标准USB接口和30针DOCK连接公头通过电路单元与储能单元连接。本实用新型对于普通移动设备和苹果移动设备来说都是通用的，用户使用十分方便。



CN 202663148 U

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1. 一种集成多种接口的备用充电电源，包括电源主体（1），电源主体（1）上设置有储能单元（2）和电路单元（3），其特征在于所述电源主体（1）上设置有用于充电输入的 MICRO USB 接口（4）和 30 针 DOCK 连接母座（5）以及用于充电输出的标准 USB 接口（6）和 30 针 DOCK 连接公头（7），MICRO USB 接口（4）、30 针 DOCK 连接母座（5）、标准 USB 接口（6）和 30 针 DOCK 连接公头（7）通过电路单元（3）与储能单元（2）连接。

2. 根据权利要求 1 所述的一种集成多种接口的备用充电电源，其特征在于所述 30 针 DOCK 连接公头（7）底缘的两侧设有枢转部（8），电源主体（1）上设有能与所述枢转部（8）轴接的轴座（9）。

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一种集成多种接口的备用充电电源

技术领域

[0001] 本实用新型涉及一种备用充电设备，具体为一种集成多种接口的备用充电电源。

背景技术

[0002] 目前手机、随身音乐播放器、掌上电脑、笔记本电脑等移动用电设备所用到的电池容量有限，为了增加电池的续航时间，市面上出现了各式各样的备用充电电源。当移动用电设备电量用完后，人们可以方便地利用备用充电电源对移动用电设备进行充电。

[0003] 目前的一般备用充电电源只有一路或多路标准USB接口输出。由于苹果移动设备的接口并非为标准USB接口，因此当备用充电电源需对苹果移动设备充电时，需另外连接USB充电线。当用苹果充电器给备用电源充电时也需另外连接一条普通USB输入充电线进行转接。用户使用很不方便。

发明内容

[0004] 针对上述问题，本实用新型提供一种功能多样、用户使用方便的集成多种接口的备用充电电源。

[0005] 本实用新型为解决其技术问题所采用的技术方案是：

[0006] 一种集成多种接口的备用充电电源，包括电源主体，电源主体上设置有储能单元和电路单元，所述电源主体上设置有用于充电输入的MICRO USB接口和30针DOCK连接母座以及用于充电输出的标准USB接口和30针DOCK连接公头，MICRO USB接口、30针DOCK连接母座、标准USB接口和30针DOCK连接公头通过电路单元与储能单元连接。

[0007] 所述30针DOCK连接公头底缘的两侧设有枢转部，电源主体上设有能与所述枢转部轴接的轴座。

[0008] 本实用新型的有益效果是：本实用新型的MICRO USB接口适用于普通移动用电设备的充电器连接输入，30针DOCK连接母座适用于苹果移动用电设备所用的充电器连接输入，标准USB接口适用于向普通移动用电设备充电输出，30针DOCK连接公头适用于向苹果移动用电设备充电输出，因此本实用新型对于普通移动设备和苹果移动设备来说都是通用的，用户使用十分方便。

附图说明

[0009] 下面结合附图和具体实施方式进行进一步的说明：

[0010] 图1为本实用新型的整体结构示意图；

[0011] 图2为本实用新型的分解结构示意图。

具体实施方式

[0012] 参照图1和图2，本实用新型的备用充电电源，其用于向手机、随身音乐播放器、掌上电脑、笔记本电脑等移动用电设备进行备用充电，从而提高移动用电设备的续航能力。

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[0013] 备用充电电源包括电源主体 1，电源主体 1 上设置有储能单元 2 和电路单元 3。储能单元 2 可以利用蓄电池来实现。电源主体 1 上设置有用于充电输入的 MICRO USB 接口 4 和 30 针 DOCK 连接母座 5 以及用于充电输出的标准 USB 接口 6 和 30 针 DOCK 连接公头 7，MICRO USB 接口 4、30 针 DOCK 连接母座 5、标准 USB 接口 6 和 30 针 DOCK 连接公头 7 通过电路单元 3 与储能单元 2 连接。本实用新型这种两路输入和两路输出的结构能够适用于苹果系列移动设备以及除苹果系统移动设备外的大多数移动设备。具体实现时，MICRO USB 接口 4、30 针 DOCK 连接母座 5、标准 USB 接口 6 和 30 针 DOCK 连接公头 7 在电源主体 1 上的分布位置都可以灵活设置，但为了避免连接的麻烦，它们一般集中分布在电路单元 3 的外侧位置处。

[0014] 优选的是，30 针 DOCK 连接公头 7 底缘的两侧设有枢转部 8，电源主体 1 上设有能与所述枢转部 8 轴接的轴座 9。在本实施例中，枢转部 8 为设于 30 针 DOCK 连接公头 7 底缘两侧的圆柱突轴，所述轴座 9 为与圆柱突轴形状相匹配的圆孔。这种轴接的结构使得电能输出接口 4 能够相对电源主体翻转，方便充电的连接。

[0015] 本实用新型的实施方式并不受上述实施例的限制，只要其以基本相同的手段达到本实用新型的技术效果，都应属于本实用新型的保护范围。

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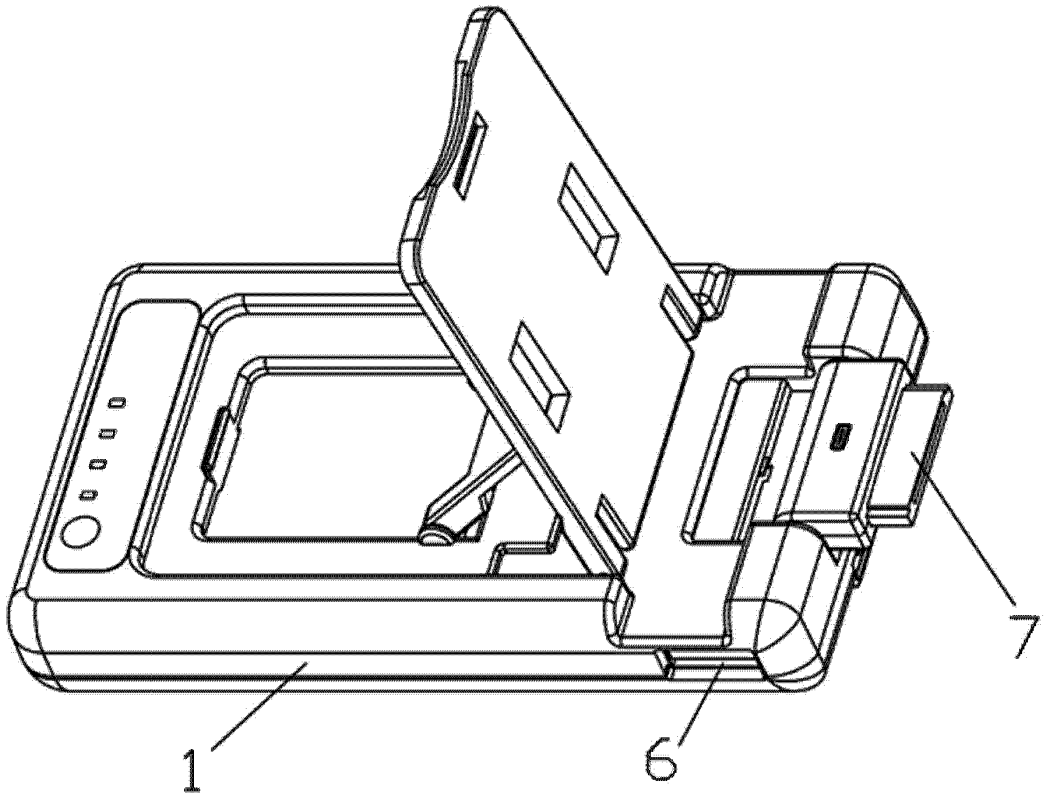


图 1

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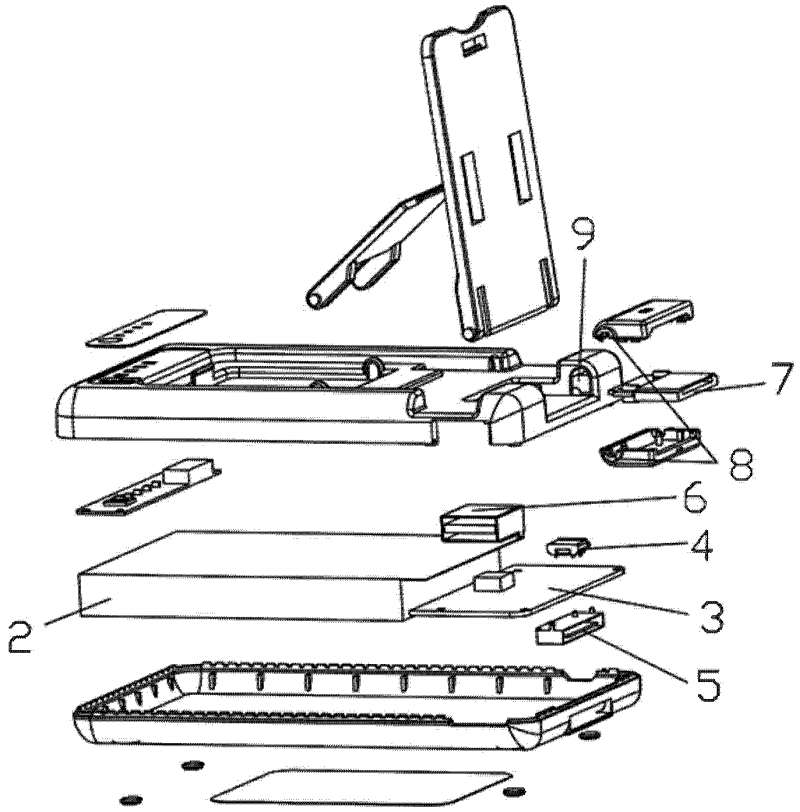


图 2

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Espacenet

Bibliographic data: CN202890462 (U) — 2013-04-24

Electronic cigarette

Inventor(s): ZHU XIAOCHUN ± (ZHU XIAOCHUN)

Applicant(s): SHENZHEN KANGER TECHNOLOGY CO LTD ± (SHENZHEN KANGER TECHNOLOGY CO., LTD)

Classification: **- international:** ***A24F47/00***
- cooperative:

Application number: CN20122563623U 20121030

Priority number(s): CN20122563623U 20121030

Abstract of CN202890462 (U)

An electronic cigarette comprises a cigarette rod and a battery bin which is used for containing of batteries. A catching groove is formed in the upper end portion of the battery bin. An opening extending transversely is formed in one side of the catching groove. A fastening flange matched with the catching groove is arranged on the outer periphery of the bottom end portion of the cigarette rod. A heating wire assembly is arranged on the interior of the cigarette rod. The bottom end portion of the heating wire assembly is detachably installed on a connecting rod assembly in a hanging mode. The connecting rod assembly is fixed the inner cavity of the cigarette rod. A cigarette holder is detachably installed on the upper end portion of the cigarette rod in a buckled mode. The inner cavity of the cigarette holder is communicated with the inner cavity of the heating wire assembly. The heating wire assembly is defined between the cigarette holder and the connecting rod assembly. An air inlet hole is formed on the side wall of the cigarette rod. The air inlet hole is communicated into the inner cavity of the connecting rod assembly. The inner cavity of the connecting rod assembly is communicated with the inner cavity of the heating wire assembly. The cigarette rod and the battery bin are fixed in a plug-in mounting connecting mode. The cigarette rod and the battery bin are convenient to install, and electrodes can be fully contacted, and good conductivity of a circuit is ensured. In addition, the heating wire assembly is installed in a rapid plug-in mounting mode, and replacement is more convenient and fast.

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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

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代理人 李悦

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A24F 47/00(2006.01)

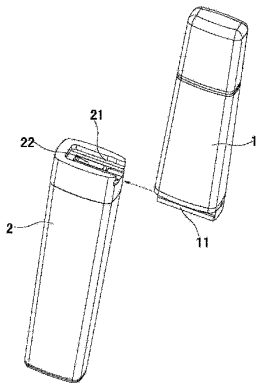
权利要求书1页 说明书4页 附图5页

(54)实用新型名称

电子香烟

(57)摘要

电子香烟,包括烟杆,以及用于容纳电池的电池仓,电池仓的上端部设置有由其一侧开口并横向延伸的扣槽,烟杆的底端部外周缘设置有与扣槽匹配的扣接凸缘;烟杆的内部设置有一发热丝组件,该发热丝组件的底端部可拆卸的挂装在固定于烟杆内腔的连接杆组件上,烟杆的上端部可拆卸的扣装有一内腔与发热丝组件内腔导通的烟嘴,发热丝组件被限定在烟嘴和连接杆组件之间,烟杆的侧壁上开设有一导通至连接杆组件内腔的进气孔,连接杆组件的内腔与发热丝组件的内腔导通。本实用新型烟杆和电池仓采用插装的连接方式固定,其安装方便,电极能够充分接触,保证电路具有良好的导通性;此外,发热丝组件采用快速插装的方式安装,更换较为方便快捷。



CN 202890462 U

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1. 电子香烟，包括烟杆，以及用于容纳电池的电池仓，烟杆的底端部和电池仓的上端部设置有互相对应的接触电极，其特征在于，电池仓的上端部设置有由其一侧开口并横向延伸的扣槽，烟杆的底端部外周缘设置有与扣槽匹配的扣接凸缘；烟杆的内部设置有一发热丝组件，该发热丝组件的底端部可拆卸的挂装在固定于烟杆内腔的连接杆组件上，烟杆的上端部可拆卸的扣装有一内腔与发热丝组件内腔导通的烟嘴，发热丝组件被限定在烟嘴和连接杆组件之间，烟杆的侧壁上开设有一导通至连接杆组件内腔的进气孔，连接杆组件的内腔与发热丝组件的内腔导通。

2. 如权利要求 1 所述的电子香烟，其特征在于，烟嘴的底端部外侧设置有第一挂接凸缘，该第一挂接凸缘可拆卸的挂装在烟杆内壁上开设的第一台阶部上。

3. 如权利要求 1 所述的电子香烟，其特征在于，发热丝组件的底端部外周缘设置有第二挂接凸缘，该第二挂接凸缘可拆卸的挂装在连接杆组件内壁上开设的第二台阶部上。

4. 如权利要求 3 所述的电子香烟，其特征在于，连接杆组件包括固定在烟杆内的连接杆，以及套接在连接杆上部的内铜套，第二台阶部设置在内铜套的内壁。

5. 如权利要求 4 所述的电子香烟，其特征在于，发热丝组件包括上端部穿接在烟嘴内部的接触铜帽、固定在接触铜帽底端部的外铜套、穿接在外铜套内部的上接触圈、套在上接触圈和外铜套之间的上绝缘套、对接在上接触圈底端部的下接触圈、套接在下接触圈外部的下绝缘套，第二挂接凸缘位于下绝缘套的外壁；接触铜帽与外铜套互相套接的部分具有一沿其二者径向穿射的安装孔，安装孔内置有发热丝。

6. 如权利要求 5 所述的电子香烟，其特征在于，接触铜帽的外部套接有第一密封圈，该第一密封圈与烟嘴的底端部内壁密闭接触；上绝缘套的外部套接有第二密封圈，该第二密封圈与内铜套的内壁密闭接触。

7. 如权利要求 5 所述的电子香烟，其特征在于，内铜套内部还安装有一弹簧，该弹簧的上端部与外铜套的底部电性接触。

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电子香烟

技术领域

[0001] 本实用新型涉及一种电子香烟。

背景技术

[0002] 随着人们对传统香烟危害的认知，电子香烟已经逐渐普及，现有的电子香烟大多与传统点燃式的香烟外观接近、味道相似，能像传统香烟一样吸出、吐出烟雾，能够减轻人们对尼古丁等有害物质的依赖，从而达到戒掉烟瘾的目的。

[0003] 现有的电子烟通常包括雾化器和电池，雾化器内置发热丝，发热丝在接通电路后产生高温，将纤维绳上的烟液雾化。由于现有的电子烟中，设置雾化器的烟杆部分与电池仓采用螺纹旋钮的方式固定连接，烟杆上的电极接触片很难保证与电池仓的接触片充分接触，影响使用。同时，发热丝或发热丝组件采用旋钮的方式安装在烟杆内部，更换过程较为复杂。

实用新型内容

[0004] 针对现有技术的不足，本实用新型的目的旨在于提供一种可以保证电路良好接触、便于更换发热丝的电子香烟。

[0005] 为实现上述目的，本实用新型采用如下技术方案：

[0006] 电子香烟，包括烟杆，以及用于容纳电池的电池仓，烟杆的底端部和电池仓的上端部设置有互相对应的接触电极，电池仓的上端部设置有由其一侧开口并横向延伸的扣槽，烟杆的底端部外周缘设置有与扣槽匹配的扣接凸缘；烟杆的内部设置有一发热丝组件，该发热丝组件的底端部可拆卸的挂装在固定于烟杆内腔的连接杆组件上，烟杆的上端部可拆卸的扣装有一内腔与发热丝组件内腔导通的烟嘴，发热丝组件被限定在烟嘴和连接杆组件之间，烟杆的侧壁上开设有一导通至连接杆组件内腔的进气孔，连接杆组件的内腔与发热丝组件的内腔导通。

[0007] 烟嘴的底端部外侧设置有第一挂接凸缘，该第一挂接凸缘可拆卸的挂装在烟杆内壁上开设的第一台阶部上。

[0008] 发热丝组件的底端部外周缘设置有第二挂接凸缘，该第二挂接凸缘可拆卸的挂装在连接杆组件内壁上开设的第二台阶部上。

[0009] 连接杆组件包括固定在烟杆内的连接杆，以及套接在连接杆上部的内铜套，第二台阶部设置在内铜套的内壁。

[0010] 发热丝组件包括上端部穿接在烟嘴内部的接触铜帽、固定在接触铜帽底端部的外铜套、穿接在外铜套内部的上接触圈、套在上接触圈和外铜套之间的上绝缘套、对接在上接触圈底端部的下接触圈、套接在下接触圈外部的下绝缘套，第二挂接凸缘位于下绝缘套的外壁；接触铜帽与外铜套互相套接的部分具有一沿其二者径向穿射的安装孔，安装孔内置有发热丝。

[0011] 接触铜帽的外部套接有第一密封圈，该第一密封圈与烟嘴的底端部内壁密闭接

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触；上绝缘套的外部套接有第二密封圈，该第二密封圈与内铜套的内壁密闭接触。

[0012] 内铜套内部还安装有一弹簧，该弹簧的上端部与外铜套的底部电性接触。

[0013] 本实用新型的有益效果在于：

[0014] 相比于现有技术，本实用新型烟杆和电池仓采用插装的连接方式固定，其安装方便，电极能够充分接触，保证电路具有良好的导通性；此外，发热丝组件采用快速插装的方式安装，更换较为方便快捷。

附图说明

[0015] 图 1 为本实用新型一种电子香烟的结构示意图；

[0016] 图 2 为图 1 所示电子香烟的剖视图；

[0017] 图 3 为本实用新型气体流向示意图；

[0018] 图 4 为本实用新型电子香烟的安装示意图；

[0019] 图 5 为本实用新型带有弹簧的发热丝组件的安装示意图；

[0020] 图 6 为图 5 的剖视图；

[0021] 其中：1、烟杆；11、扣接凸缘；12、上接触电极；13、进气孔；14、连接杆；15、内铜套；151、第二台阶部；16、第一台阶部；2、电池仓；21、扣槽；22、下接触电极；3、烟嘴盖；4、发热丝组件；40、弹簧；41、接触铜帽；42、第一密封圈；43、外铜套；44、发热丝；45、第二密封圈；46、上绝缘套；47、上接触圈；48、下接触圈；49、下绝缘套；491、第二挂接凸缘；5、烟嘴；51、第一挂接凸缘；52、密封胶圈；53、密封胶圈。

具体实施方式

[0022] 下面，结合附图以及具体实施方式，对本实用新型做进一步描述：

[0023] 如图 1、2 所示，为本实用新型一种电子香烟，其包括烟杆 1，以及用于容纳电池的电池仓 2，电池仓 2 的顶端部具有下接触电极 22，烟杆 1 的底端部具有上接触电极 12，电池仓 2 的上端部设置有由其一侧开口并横向延伸的扣槽 21，对应的，在烟杆 1 的底端部外周缘设置有横向延伸的扣接凸缘 11，在烟杆 1 和电池仓 2 对接时，扣接凸缘 11 从扣槽 21 的开口部位滑入，实现烟杆 1 和电池仓 2 的对接，并利用其二者塑胶材料带有一定弹性的特性，实现卡紧连接，在电池仓 2 和烟杆 1 对接后，下接触电极 22 和上接触电极 12 向着彼此突出的部分互相接触，实现电性导通。

[0024] 在烟杆 1 的内部安装有一发热丝组件 4，上述的下接触电极 22 和上接触电极 12 电性导通后，由电池仓 2 内部的电池为发热丝组件 4 提供电能。发热丝组件 4 的底端部可拆卸的挂装在固定于烟杆 1 内腔的连接杆组件，烟杆 1 的上端部可拆卸的扣装有一内腔与发热丝组件 4 内腔导通的烟嘴 5，发热丝组件 4 被限定在烟嘴 5 和连接杆组件之间，如此，当需要更换发热丝组件 4 时，可将烟嘴 5 从烟杆 1 的上端部拆卸下来，直接将发热丝组件 4 从连接杆组件上拔掉，更换新的发热丝组件 4 之后，将其由烟杆 1 的上端部开口处直接插入，保证其底端部与连接杆组件挂装到位后，再次在烟杆 1 顶端部开口处扣装烟嘴 5，将发热丝组件 4 固定即可。烟杆 1 的侧壁还开设有一导通至连接杆组件内腔中的进气孔 13，连接杆组件的内腔与发热丝组件 4 的内腔导通，在使用时，参见图 3 所示，气体从进气孔 13 进入，在经过连接杆组件的内腔到达发热丝组件 4 中，在发热丝组件 4 中为烟液燃烧提供氧气，燃烧

NJOY Exhibit 1002.698

后产生雾化烟气经由烟嘴 5 进入使用者口腔中。

[0025] 上述结构中烟杆 1 和烟嘴 5 的连接采用如下方式，在烟嘴 5 的底端部外侧设置有第一挂接凸缘 51，对应的，在烟杆 1 的内壁开设有第一台阶部 16，安装时，将烟嘴 5 的下端部由烟杆 1 上部的开口插入，当第一挂接凸缘 51 与第一台阶部 16 配合时，第一挂接凸缘 51 发生形变并挂接在第一台阶部 16 处。

[0026] 结合图 2、4，上述的连接杆组件是由位于烟杆 1 内部的连接杆 14 和内铜套 15 组成，连接杆 14 固定在烟杆 1 内部，内铜套 15 固定在连接杆 14 的上部，具体的是，连接杆 14 的上端部固定的套合在内铜套 15 下端部的外壁上，在内铜套 15 的内壁设置有第二台阶部 151。发热丝组件 4 包括上端部穿接在烟嘴 5 内部的接触铜帽 41、固定的穿接在接触铜帽 41 底端部的外铜套 43、穿接在外铜套 43 底端内部的上接触圈 47、套接在上接触圈 47 外部并将上接触圈 47 与外铜套 43 固定在一起的上绝缘套 46、对接在上接触圈 47 底端部的下接触圈 48、以及套接在下接触圈 48 外部的下绝缘套 49。接触铜帽 41 与外铜套 43 互相套接的部位具有一沿其二者径向穿射的安装孔，在该安装孔内置有发热丝 44，发热丝 44 上的纤维绳上浸有烟液，在使用过程中，发热丝 44 在通电情况下产生热量，使纤维绳上的烟液与空气中的氧气接触燃烧后产生雾化的烟气。发热丝组件 4 与连接杆组件的连接采用如下方式，在上述的下绝缘套 49 外部设置有第二挂接凸缘 491，下绝缘套 49 置于内铜套 15 中，下接触圈 48 置于下绝缘套 49 中，第二挂接凸缘 491 挂装在第二台阶部 151 上，使下绝缘套 49 与内铜套 15 固定，从而将下接触圈 48 固定在内铜套 15 中。发热丝组件 4 上除下绝缘套 49 和下接触圈 48 以外的其他部件组合成的总成，由烟杆 1 的上部开口插入，使得上接触圈 47 与下接触圈 48 电性接触、内铜套 15 和外铜套 43 电性接触，从而将发热丝 44 两端分别电性连接到电池的两极。上接触圈 47 还起到支撑发热丝 44 的作用，从而更好的雾化烟液。上绝缘套 46 和下绝缘套 49 起到绝缘隔热的作用。当发热丝组件 4 插装完成后，外铜套 43 外部的翼缘与内铜套 15 的顶端面接触，实现电性的导通。发热丝组件 4 的上部由烟嘴 5 限定，由此，将发热丝组件 4 固定在烟杆 1 内部。

[0027] 接触铜帽 41 的外部套接有第一密封圈 42，该第一密封圈 42 与烟嘴 5 的底端部内壁密闭接触，起到防止烟液以及烟气外流的作用。上绝缘套 46 的外部套接有第二密封圈 45，该第二密封圈 45 与内铜套 15 的内壁密闭接触，可防止漏气。

[0028] 参见图 5、6，为了确保即插式的发热丝组件 4 在轻微的插装不到位时，也能保证其正常工作，发热丝组件 4 还包括一弹簧 40，该弹簧 40 的底端部固定在内铜套 15 的内壁上，也就是说，弹簧 40、下绝缘套 49 以及下接触圈 48 被预先固定在内铜套 15 中；当发热丝组件 4 插入时，下接触圈 48 与上接触圈 47 接触并电性导通，在插装过程中，可能会由于第二密封圈 45 与内铜套 15 产生相互摩擦，导致发热丝组件 4 的实际位置距离理想位置具有微小差距，但由于弹簧 40 的底端部已经提前接触到内铜套 15 内壁预设的台阶面，并且外铜套 43 底端部挤压弹簧 40 的上端部，即使发热丝组件 4 插装不到位导致的内铜套 15 顶端不能与外铜套 43 外部的翼缘接触，也能够利用弹簧 40 与外铜套 43 底端部接触，将内铜套 15 和外铜套 43 电性导通。

[0029] 为了方便使用，本实用新型的烟嘴 5 上端部还连接有一端盖 53。烟嘴 5 与烟杆 1 结合的位置设置有一密封胶圈 52，防止漏气。烟嘴 5 的外部还套接有一烟嘴盖 3，在不使用时，将烟嘴盖 3 套在烟嘴 5 外部，防止烟嘴 5 被污染。

NJOY Exhibit 1002.699

[0030] 对于本领域的技术人员来说，可根据以上描述的技术方案以及构思，做出其它各种相应的改变以及变形，而所有的这些改变以及变形都应该属于本实用新型权利要求的保护范围之内。

NJOY Exhibit 1002.700

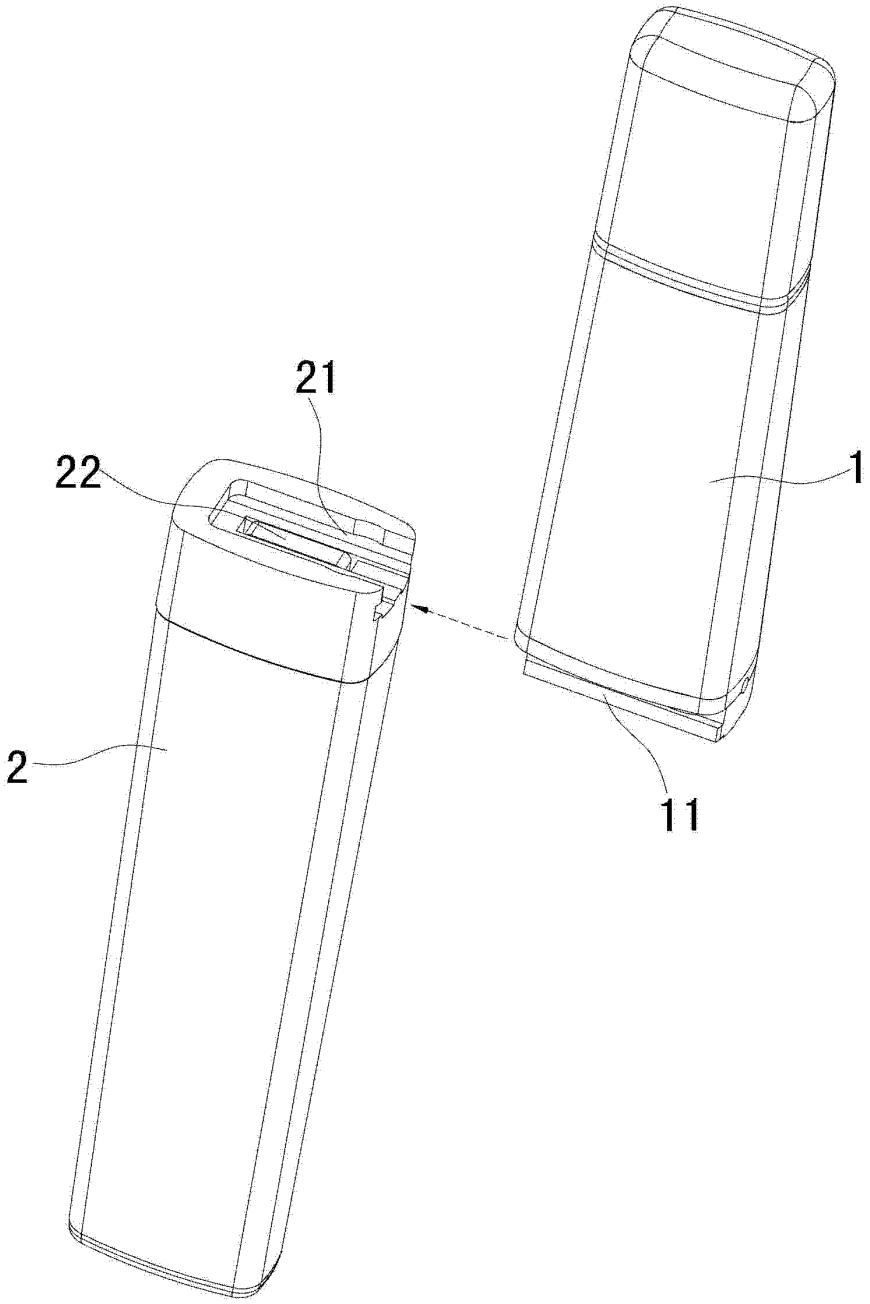


图 1

NJOY Exhibit 1002.701

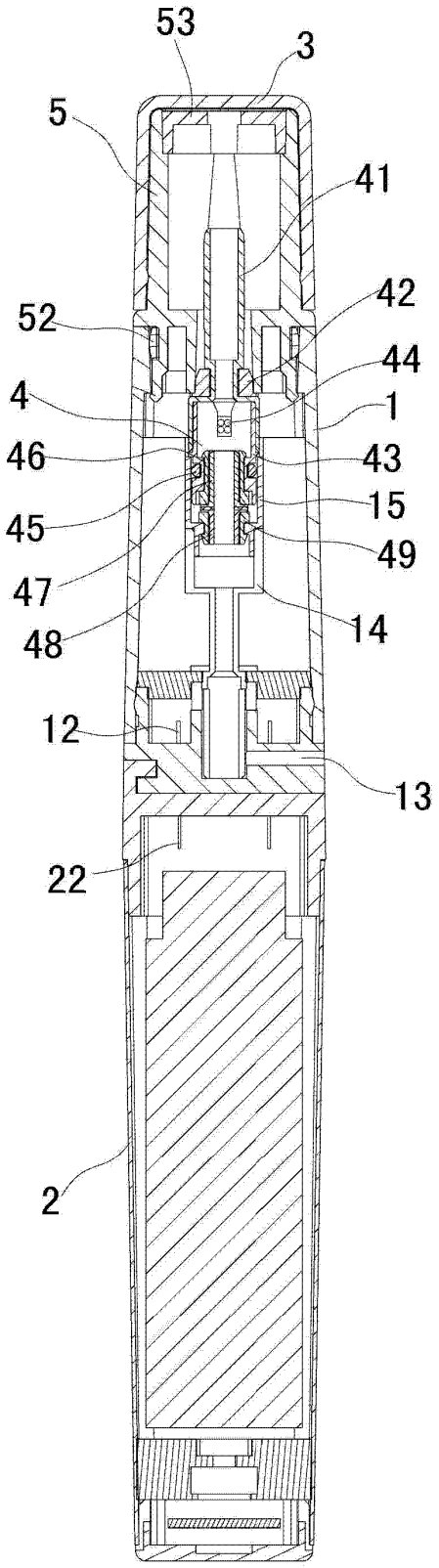


图 2

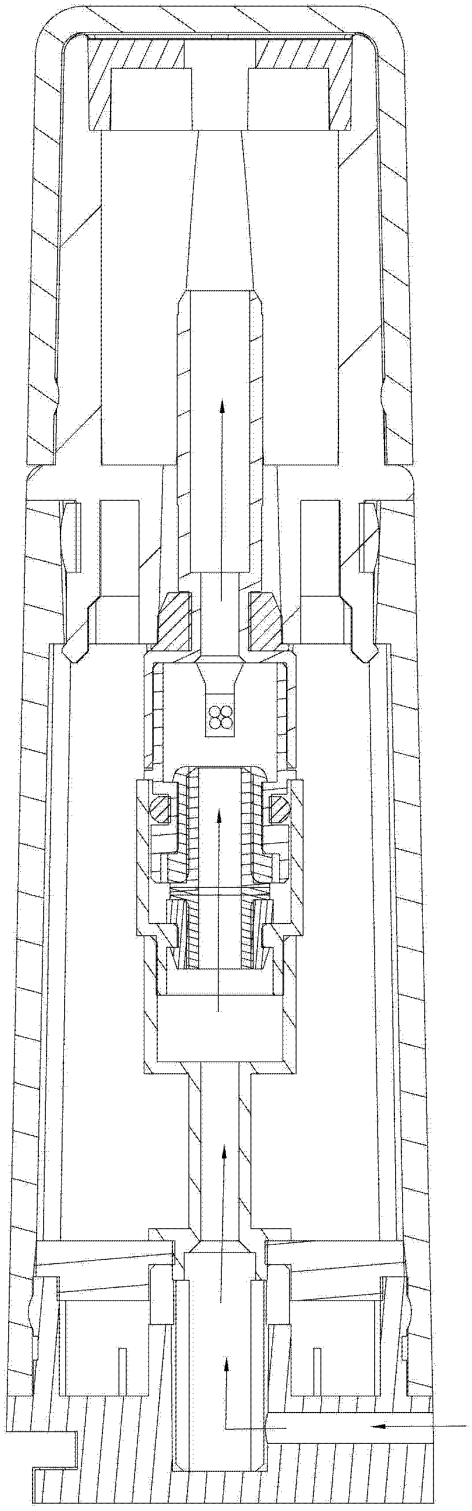


图 3

NJOY Exhibit 1002.702

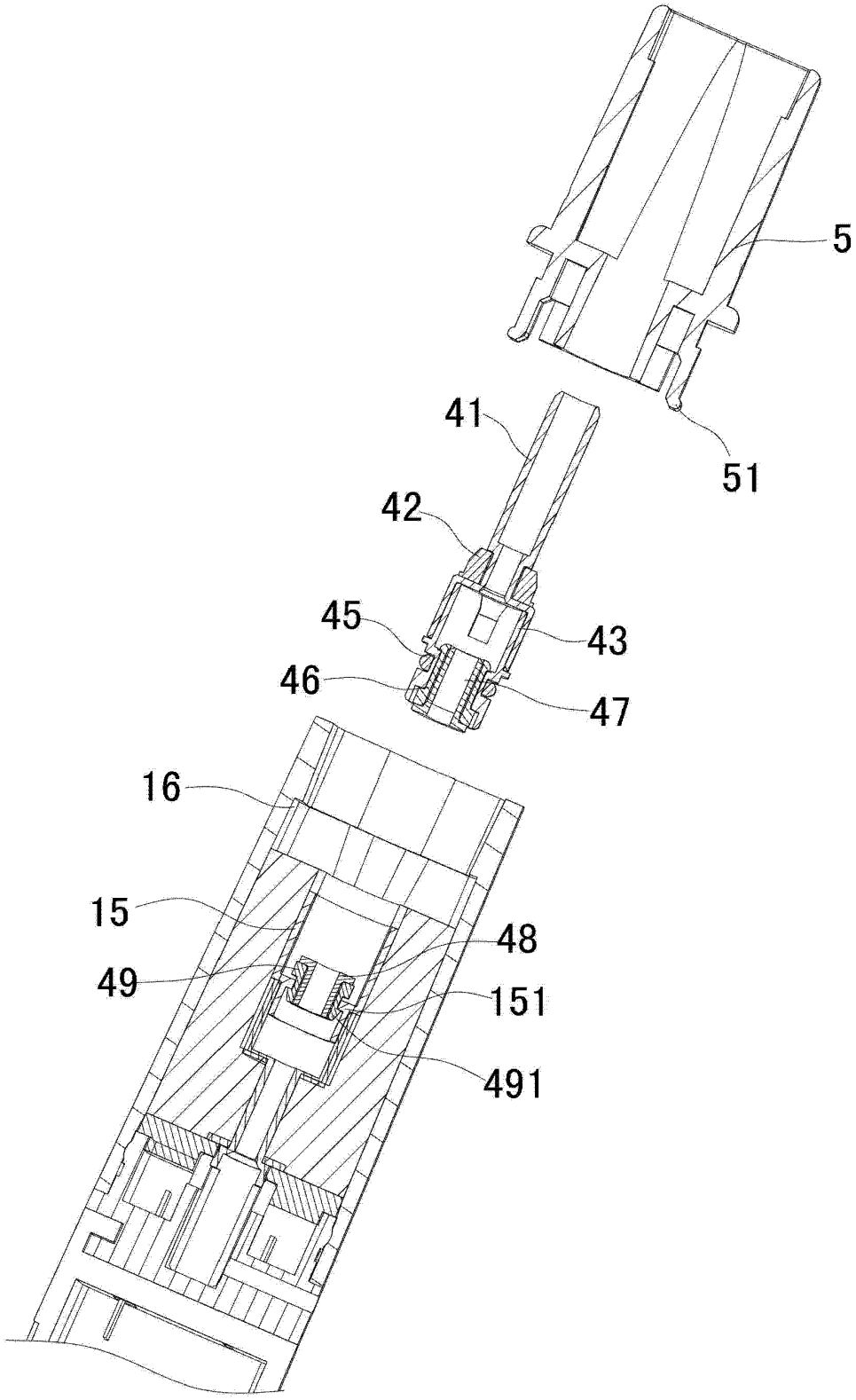


图 4

NJOY Exhibit 1002.703

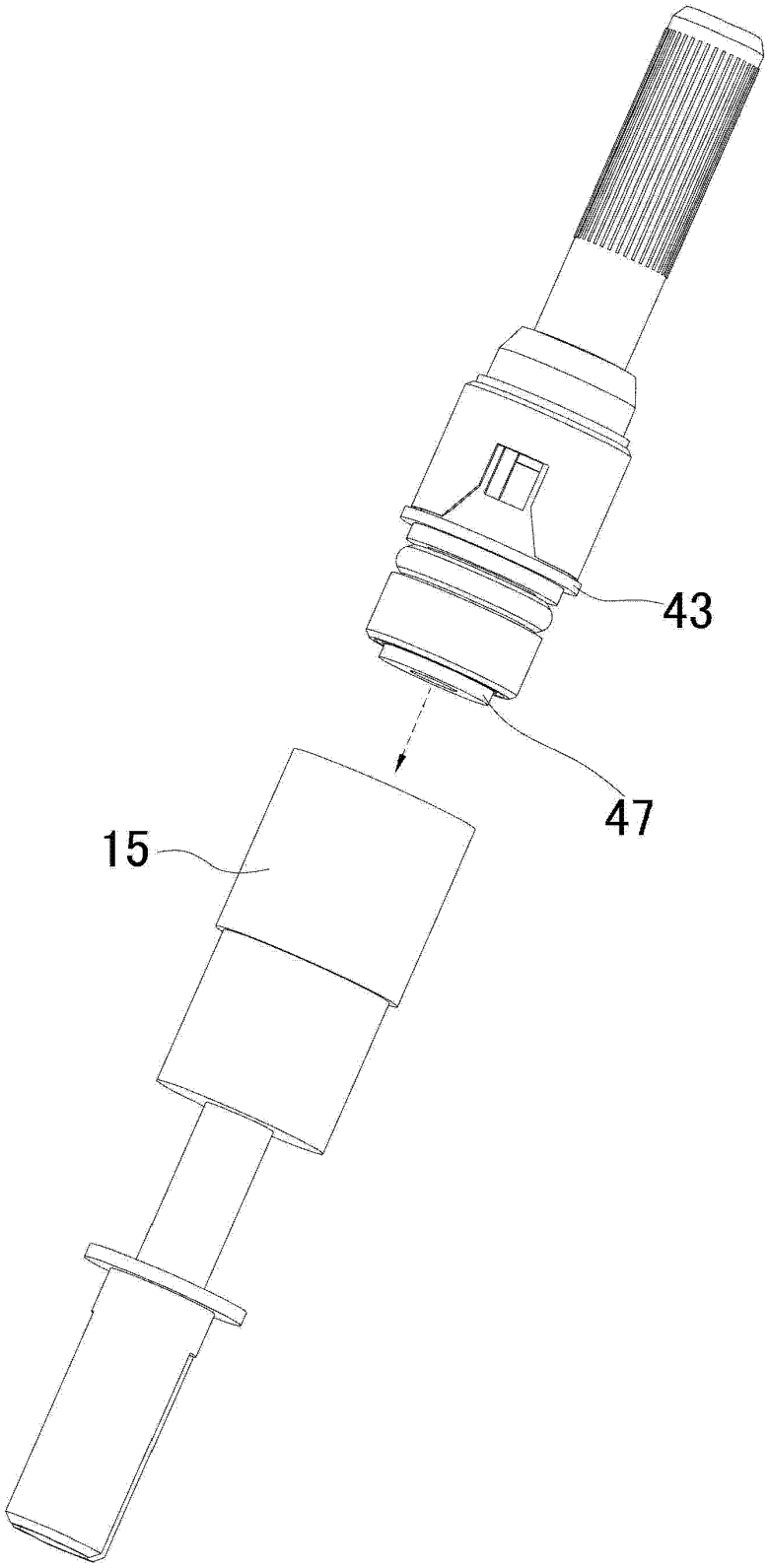


图 5

NJOY Exhibit 1002.704

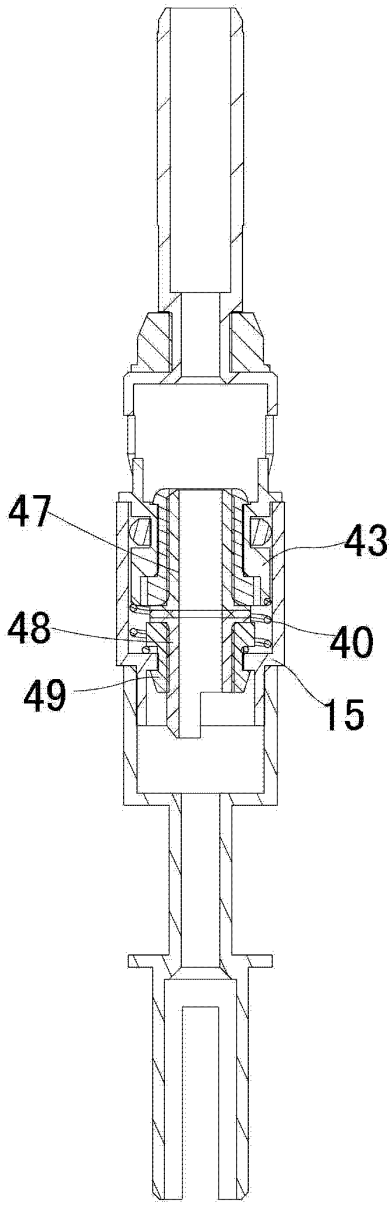


图 6

NJOY Exhibit 1002.705

Espacenet

Bibliographic data: CN202941411 (U) — 2013-05-22

Intelligent electronic smoke equipment

Inventor(s): CHEN SHENG; HUANG DE ± (CHEN SHENG, ; HUANG DE)

Applicant(s): JIANGMEN CITY YILONG IND CO LTD ± (JIANGMEN CITY YILONG INDUSTRIAL CO., LTD)

Classification: **- international:** ***A24F47/00***
- cooperative:

Application number: CN20122561530U 20121026

Priority number(s): CN20122561530U 20121026

Abstract of CN202941411 (U)

The utility model discloses intelligent electronic smoke equipment which comprises a main body, wherein an atomizer is connected on one side of the main body. A battery power supply device is connected on the other side of the main body, a printed circuit board (PCB) control panel is arranged in the main body, a support is arranged in the main body, and the PCB control panel is fixedly arranged on the support. A control key which controls smoke triggering is arranged on the PCB control panel, and a button which operates the control key is arranged on the main body. A heater strip in the atomizer can be triggered to produce high temperature by the button, so that nicotine in the atomizer is heated and produces smoke, and a mode that a sensor is triggered to produce the smoke by breathing airflow is replaced. The intelligent electronic smoke equipment is simple and convenient to use, simultaneously avoids that high-temperature smoke causes loss on parts of the interior of the main body when the breathing airflow triggers the sensor, reduces probability of failure, and prolongs service life of the parts.

NJOY Exhibit 1002.706

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(12)实用新型专利

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(51)Int.Cl.
A24F 47/00(2006.01)

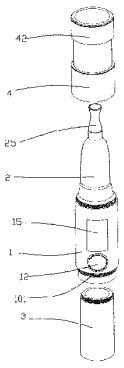
权利要求书1页 说明书3页 附图3页

(54)实用新型名称

一种智能电子烟设备

(57)摘要

本实用新型公开了一种智能电子烟设备，包括有主体，主体的一侧连接有雾化器，另一侧连接有电池供电装置，主体内部设置有PCB控制板，所述主体中设置有支架，PCB控制板固定安装在支架上，所述PCB控制板上设置有控制烟雾触发的控制键，主体上设置有操作该控制键的按钮，通过该按钮可触发雾化器内的电热丝产生高温，进而使雾化器内设的烟碱受热并产生烟雾，取代了以往通过呼吸气流触发传感器产生烟雾的方式，使用简单方便，同时也避免呼吸气流在触发传感器时所带的高温烟雾对主体内部的零部件造成损坏，降低了故障发生的概率，延长零部件的使用寿命。



CN 202941411 U

NJOY Exhibit 1002.707

1. 一种智能电子烟设备，包括有主体(1)，主体(1)的一侧连接有雾化器(2)，另一侧连接有电池供电装置(3)，主体(1)内部设置有 PCB 控制板(11)，其特征在于：所述主体(1)中设置有支架(13)，PCB 控制板(11)固定安装在支架(13)上，所述 PCB 控制板(11)上设置有控制烟雾触发的控制键(5)，主体(1)上设置有操作控制键(5)的按钮(12)。

2. 根据权利要求 1 所述的一种智能电子烟设备，其特征在于：所述的按钮(12)通过操作控制键(5)可调节点烟电压的大小。

3. 根据权利要求 1 所述的一种智能电子烟设备，其特征在于：所述的 PCB 控制板(11)上设置有一电子显示屏(15)，同时主体(1)还设置有镜片支架(17)，该镜片支架(17)上安装有显示屏镜片(16)，镜片支架(17)上设有用于安装按钮(12)的槽位(170)。

4. 根据权利要求 1 所述的一种智能电子烟设备，其特征在于：所述的主体(1)内部靠近雾化器(2)一侧设置有将主体(1)内腔与雾化器(2)内腔隔开的硅胶套(14)。

5. 根据权利要求 1 所述的一种智能电子烟设备，其特征在于：所述的电池供电装置(3)可更换电池。

6. 根据权利要求 1 所述的一种智能电子烟设备，其特征在于：所述的雾化器(2)外部设置有可拆卸外罩管(4)。

7. 根据权利要求 6 所述的一种智能电子烟设备，其特征在于：所述的外罩管(4)为一个可伸缩结构。

8. 根据权利要求 6 或 7 所述的一种智能电子烟设备，其特征在于：所述的外罩管(4)内壁上设置有内螺纹(41)，所述的主体(1)靠近电池供电装置(3)一侧设有与内螺纹(41)配合的外螺纹(101)。

NJOY Exhibit 1002.708

一种智能电子烟设备

技术领域

[0001] 本实用新型涉及电子烟设备，特备是一种智能电子烟设备。

背景技术

[0002] 众所周知，吸烟有害健康。尽管人们知道香烟的危害，但一些抽烟多年的烟民对香烟产生了依赖性，他们很难彻底戒掉已经形成的抽烟习惯。针对此，目前市面上出现了能替代传统香烟的替代用品电子香烟，电子香烟也称为雾化电子烟，其与传统香烟有着本质上的不同。它只含提纯的烟碱，不燃烧、不含焦油、不含普通香烟含有的导致呼吸系统与心血管系统产生疾病的化学物质，并去除了普通香烟中的其它的致癌物质。

[0003] 电子香烟的结构主要由雾化器部分和烟杆部分组成，其中烟杆部分包括壳体，壳体内置有锂电池、气流传感器、控制电路等。尽管目前市面上的电子香烟种类较多，但大都是为了追求外表豪华，而忽略了内部结构的合理性。在生产时，气流传感器、控制电路等元件及其线路往往是用一些胶布缠绕住再放进壳体内，从而导致了产品内部结构不稳定，经常出现故障。另一方面，电子烟在工作时，是利用使用者抽吸时的气流令传感器接通电路，进而使雾化器内的烟草提取物受到发热丝的加热而雾化，再被吸食者吸取。当使用者吸气时，发热丝加热产生高温，而在反复抽吸的空隙，雾化器内的高温烟气会逆向流向烟杆的壳体内腔，对传感器造成直接冲击，在快速的冷热交替中，传感器很容易出现故障，造成电子烟无法正常使用。其次，电子烟所用的电池是固定设置在烟杆内部的，不可以更换，不利于延长电子烟的使用寿命、使用起来不方便，未能满足未来多元化的需求。

实用新型内容

[0004] 为了克服现有技术的不足，本实用新型提供一种智能电子烟设备，可以有效解决以往的电子烟设备容易出现故障、倒吸烟雾冲击主体内置零部件、电池不能更换等缺陷。

[0005] 本实用新型解决其技术问题所采用的技术方案是：

[0006] 一种智能电子烟设备，包括有主体，主体的一侧连接有雾化器，另一侧连接有电池供电装置，主体内部设置有 PCB 控制板，所述主体 1 中设置有支架，PCB 控制板固定安装在支架上，所述 PCB 控制板上设置有控制烟雾触发的控制键，主体上设置有操作该控制键的按钮。

[0007] 作为上述技术方案的一种实施方式，所述的按钮通过操作控制键可调节点烟电压的大小。

[0008] 作为上述实施方式的进一步改进，所述的 PCB 控制板上设置有一电子显示屏，同时主体还设置有镜片支架，该镜片支架上安装有显示屏镜片，镜片支架上设有用于安装按钮的槽位。

[0009] 作为上述实施方式的进一步改进，所述的主体内部靠近雾化器一侧设置有一将主体内腔与雾化器腔体隔开的硅胶套。

[0010] 作为上述实施方式的进一步改进，所述的电池供电装置可更换电池。

NJOY Exhibit 1002.709

[0011] 作为上述实施方式的进一步改进，所述的雾化器外部设置有可拆卸的外罩管。

[0012] 作为上述实施方式的进一步改进，所述的外罩管为一个可伸缩结构。

[0013] 作为上述实施方式的进一步改进，所述的外罩管内壁上设置有内螺纹，所述的主体靠近电池供电装置一侧设有与内螺纹配合的外螺纹。

[0014] 本实用新型的有益效果是：本实用新型提供一种智能电子烟设备并在其主体上设置有可控制烟雾触发的按钮，取代了以往利用呼吸气流触动电子烟开、关的感应器，使用方便，同时，该按钮可以根据不同人的需求调节烟雾量的大小，使用起来更加人性化；另外，主体内部设置了硅胶套，该硅胶套阻挡了高温的烟雾对主体内部的智能控制装置及其他零部件的直接冲击，使这些零部件免受冷热交替的影响，保护了这些零部件，降低了故障发生的概率，寿命更加长；还有，所述的电池供电装置可更换电池，在电池用完的时候，可换上新电池继续使用，方便、实用、经济；再有，该设备设有一个可伸缩的外罩管，方便吸烟时使用，在拆卸下该外罩管时，该外罩管可以利用螺纹连接在电池供电装置上，实用，不易造成外罩管遗失等问题。

附图说明

[0015] 下面结合附图和实施例对本实用新型进一步说明。

[0016] 图 1 是本实用新型的爆炸示意图；

[0017] 图 2 是本实用新型中主体的爆炸示意图；

[0018] 图 3 是本实用新型中外罩管伸开时的结构示意图；

[0019] 图 4 是本实用新型中外罩管收缩时的结构示意图。

具体实施方式

[0020] 参照图 1-4，一种智能电子烟设备，包括有主体 1，主体 1 的一侧连接有包含有烟嘴 25 的雾化器 2，另一侧连接有电池供电装置 3，主体 1 内部设置有 PCB 控制板 11，所述主体 1 中设置有支架 13，PCB 控制板 11 固定安装在支架 13 上，所述 PCB 控制板 11 上设置有控制烟雾触发的控制键 5，主体 1 上设置有操作控制键 5 的按钮 12，通过该按钮 12 可触发雾化器 2 内的电热丝产生高温，进而使雾化器 2 内设置的烟碱受热并产生烟雾，这种产生烟雾的方式取代了以往通过呼吸气流触发传感器接通电路产生烟雾的方式，使用简单方便，同时也避免呼吸气流在触发传感器时所带的高温烟雾对主体 1 内部的零部件造成损坏，降低了故障发生的概率，延长零部件的使用寿命；PCB 控制板 11 内设有电子保护系统，该系统在设备出现电压不稳、电量不足等情况下可发出警报，提醒人们及时检查；主体 1 上还设置有按钮支架 18，按钮支架 18 穿过镜片支架 17 上的槽位 170 并固定好，按钮 12 通过按钮支架 18 固定在主体 1 上。

[0021] 进一步，所述的按钮 12 通过操作控制键 5 可调节点烟电压的大小，进而可以调节电热丝所通过的电流大小，改变电热丝的温度，最终可以实现调节烟雾大小的目的，按钮 12 调节电压的方式为每次递增或递减 0.1V，调节电压的区间为 3V-6V。

[0022] 再进一步，所述的 PCB 控制板 11 上设置有一电子显示屏 15，同时主体 1 还设置有镜片支架 17，该镜片支架 17 上安装有显示屏镜片 16，镜片支架 17 上设有用于安装按钮 12 的槽位 170，上述的电子显示屏 15 优先选择 LCD 显示屏，该电子显示屏 15 可以显示电压、电

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热丝阻值、发热丝温度、电池电量等相关的数值，方便我们了解设备的实际情况；所述显示屏镜片 16 可保护保护电子显示屏 15 免受损伤，显示屏镜片 16 与镜片支架 17 之间的连接方式可以为卡接方式，也可以为涂胶连接方式，镜片支架 17 与主体 1 之间可通过涂胶连接。

[0023] 进一步，所述的主体 1 内部靠近雾化器 2 一侧设置有一将主体 1 内腔与雾化器 2 腔体隔开的硅胶套 14，硅胶套 14 与主体 1 内壁紧密配合，进而可阻止高温的烟雾进入主体 1 的内部，防止烟雾对主体 1 内部的零部件造成破坏，硅胶套 14 内套有一可用于导电到雾化器 2 的极钉 21。

[0024] 再进一步，所述的主体 1 内部设置有支架 13，所述的 PCB 控制板 11 设置在支架 13 上，支架 13 侧壁设凸棱 131，主体 1 内壁设置有与凸棱 131 配合的凹槽，支架 13 可卡接在凹槽上，结构稳固，进而使安装在支架 13 上的 PCB 控制板 11 更加牢固，防止 PCB 控制板 11 出现松动，PCB 控制板 11 与主体 1 内壁有空腔，使得 PCB 控制板 11 散发的热量更加容易散发，另外，支架 13 在靠电池供电装置 3 一侧设有一块与支架 13 一体成型并与主体 1 内壁配合的隔板 130，该隔板 130 可将主体内部空间与电池空间隔开，同时，隔板 130 中间还安装有用于导电的电池极钉 20。

[0025] 再进一步，所述的电池供电装置 3 可更换电池，这样，在电池损坏或者电量用完的时候，我们可以换上新的电池继续使用，使用方便。

[0026] 进一步，所述的雾化器 2 外部设置有外罩管 4，该外罩管 4 可以更好地保护雾化器 2 免受意外的损坏。

[0027] 再进一步，所述的外罩管 4 为一个可伸缩结构，外罩管 4 上设有伸缩部 42，在需要吸烟时，可将伸缩部 42 收缩起来，这时雾化器 2 上设置的烟嘴 25 就可以被嘴吸到，极大地方便了人们吸烟。

[0028] 进一步，所述的外罩管 4 内壁上设置有内螺纹 41，所述的主体 1 靠近电池供电装置 3 一侧设有与内螺纹 41 配合的外螺纹 101，这样，在拆卸下外罩管 4 时，外罩管 4 可以利用上述的螺纹配合连接在主体 1 上，进而不易造成遗失外罩管 4 等问题，同时也方便使用。

[0029] 以上所述仅为本实用新型的优先实施方式，只要以基本相同手段实现本实用新型目的的技术方案都属于本实用新型的保护范围之内。

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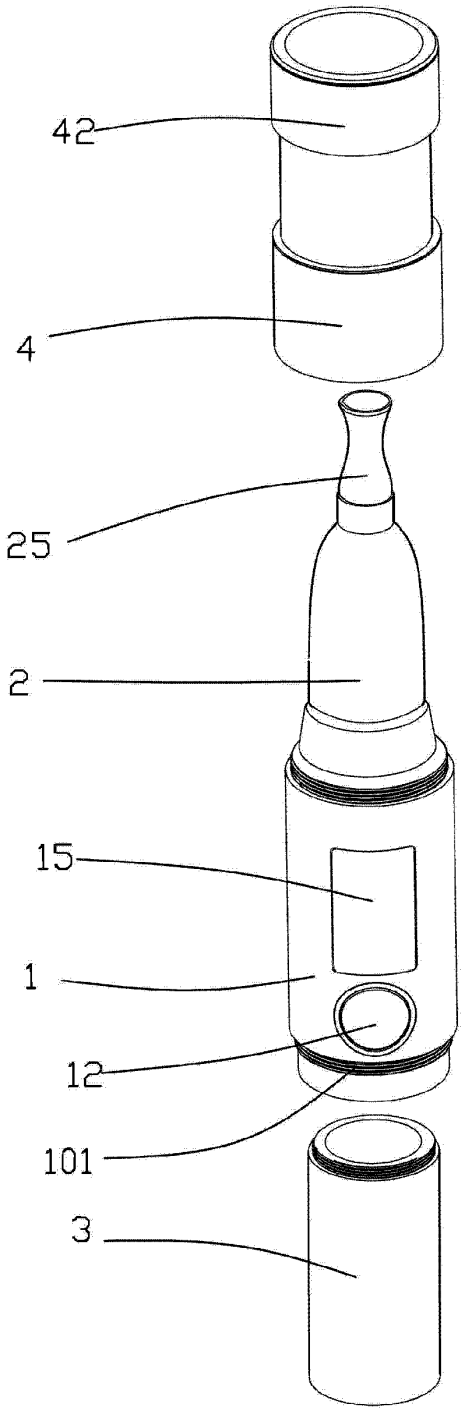


图 1

NJOY Exhibit 1002.712

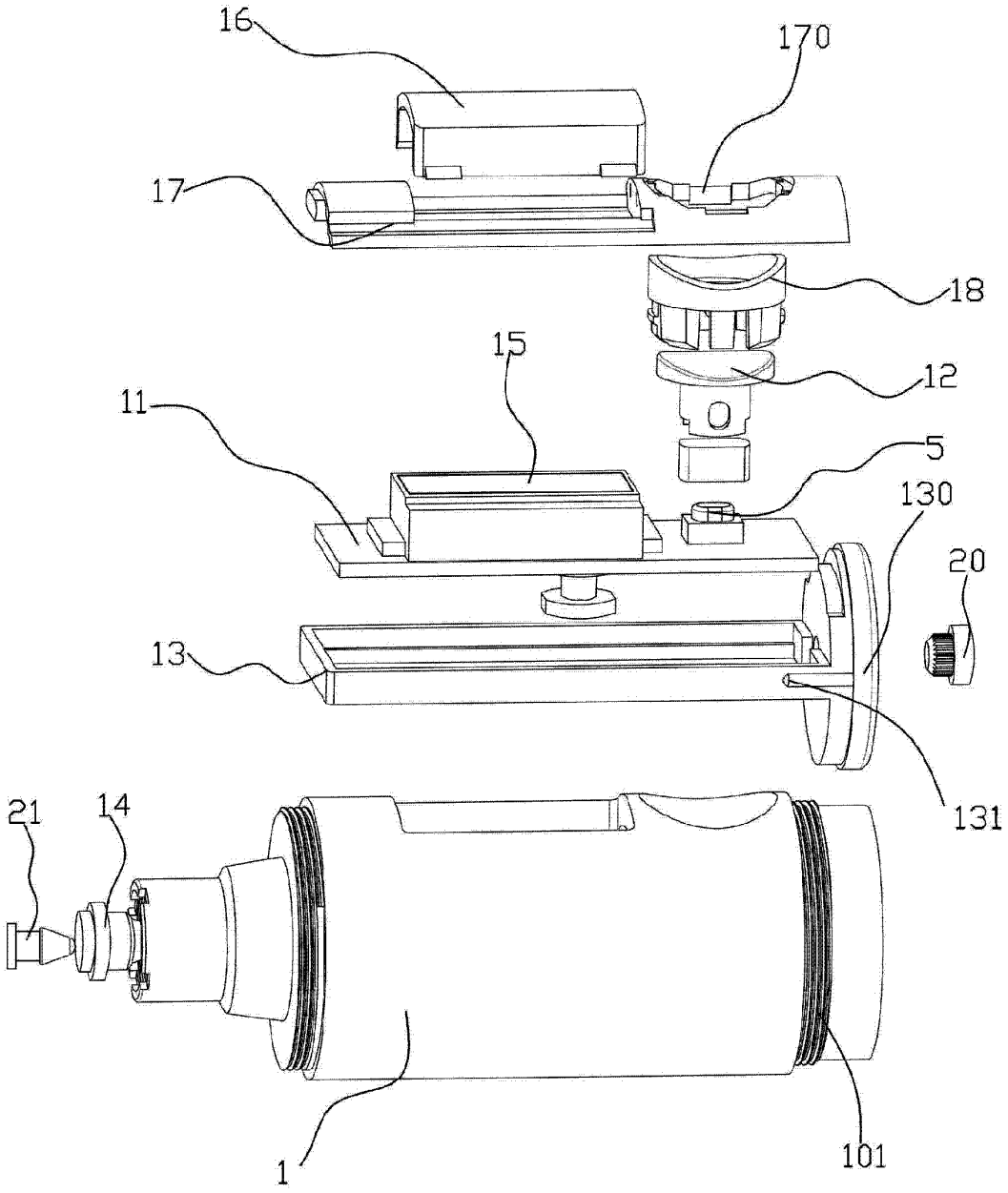


图 2

NJOY Exhibit 1002.713

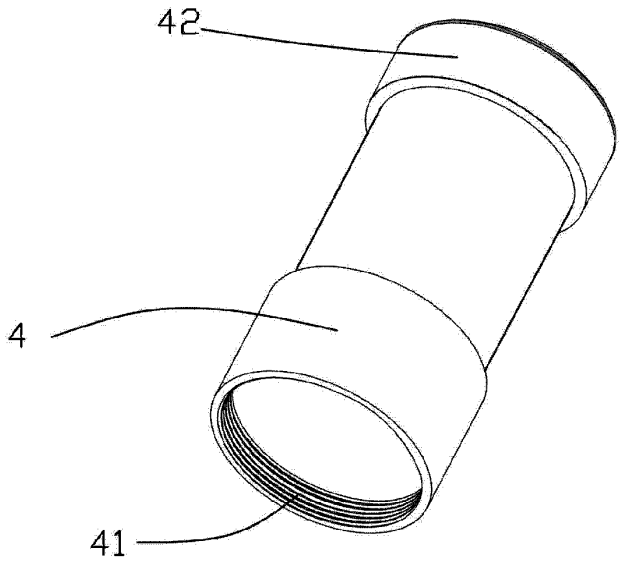


图 3

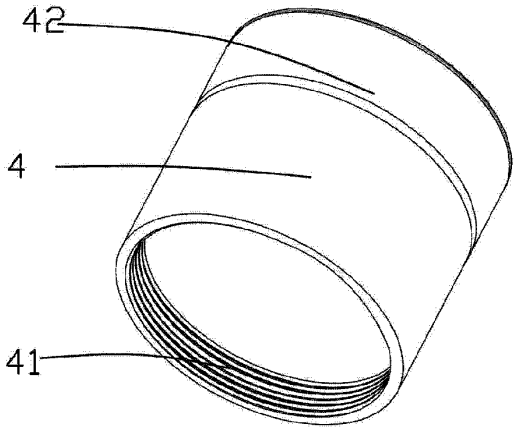


图 4

NJOY Exhibit 1002.714

Espacenet

Bibliographic data: CN203040683 (U) — 2013-07-10

Atomizer and electronic aerosolization device

Inventor(s): QIU WEIHUA ± (QIU WEIHUA)

Applicant(s): JOY CHANGZHOU ELECTRONIC TECHNOLOGY CO LTD ± (JOY (CHANGZHOU) ELECTRONIC TECHNOLOGY CO., LTD)

Classification: **- international:** ***A24F47/00***
- cooperative:

Application number: CN20132006442U 20130107

Priority number(s): CN20132006442U 20130107

Abstract of CN203040683 (U)

The utility model relates to the technical field of electronic cigarette components, in particular to an atomizer which is installed in an electronic cigarette and convenient to install and detach, the atomizer comprises a barrel-shaped supporting shell body and a heating filament, wherein a fluid guiding rope is arranged in the supporting shell body, the two ends of the fluid guiding rope penetrate through the supporting shell body and are located outside the supporting shell body, the heating filament is arranged on the fluid guiding rope in a winding mode and performs heating atomization on fluid in the fluid guiding rope, a connecting block sealing the lower end of the shell body is arranged at the lower end of the supporting shell body, the lower end of the supporting shell body is detachably connected on the connecting block, ventholes are formed in the connecting block, and the ventholes are communicated with the interior of the supporting shell body. The atomizer can be assembled as a whole in an atomization shell body of the electronic cigarette for being used; and due to the fact that the supporting shell body is detachably connected with the connecting block, the atomizer is convenient to assemble, disassemble and maintain.

NJOY Exhibit 1002.715

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A24F 47/00(2006.01)

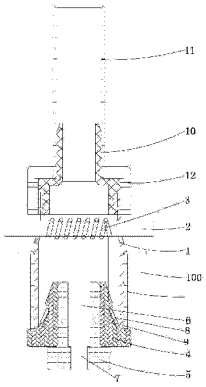
权利要求书1页 说明书4页 附图2页

(54)实用新型名称

一种雾化器和电子烟雾化装置

(57)摘要

本实用新型涉及电子烟部件技术领域，具体涉及一种装配于电子烟中，安装、拆卸方便的雾化器，包括筒状的支承壳体，在支承壳体内设置有导液绳，导液绳的两端穿过支承壳体处于支承壳体外部，以及绕设在导液绳上对导液绳中的液体进行加热雾化的发热丝，支承壳体的下端设置有对壳体下端形成密封的连接块，支承壳体的下端可拆卸的连接于连接块上，在连接块上开设有通气孔，该通气孔与支承壳体内部连通，本实用新型提供的雾化器可以作为一个整体装配于电子烟的雾化壳体内，以供使用；由于支承壳体与连接块可拆卸的连接，其装拆方便，便于维修。



CN 203040683 U

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1. 一种雾化器，包括筒状的支承壳体，在支承壳体内设置有导液绳，导液绳的两端穿过支承壳体处于支承壳体外部，以及绕设在导液绳上对导液绳中的液体进行加热雾化的发热丝，其特征在于：支承壳体的下端设置有对壳体下端形成密封的连接块，支承壳体的下端可拆卸的连接于连接块上，在连接块上开设有通气孔，该通气孔与支承壳体内部连通。

2. 根据权利要求 1 所述的一种雾化器，其特征在于：所述连接块的通气孔内安装有与发热丝一端电连接的电源接头，电源连接头上开设有与支承壳体内部相连通的通气孔，所述发热丝的另一端与支承壳体电连接。

3. 根据权利要求 1 所述的一种雾化器，其特征在于：所述支承壳体的下端设置有向内弯着的内折边，在连接块上设置有与内折边相对应的卡槽；上述内折边插入卡槽中，使支承壳体与连接块形成连接。

4. 根据权利要求 1 所述的一种雾化器，其特征在于：所述支承壳体上端连接有雾化连接管，所述雾化连接管的外壁与支承壳体内壁之间形成密封。

5. 根据权利要求 4 所述的一种雾化器，其特征在于：所述支承壳体上端设置有内通气管，内通气管与雾化连接管之间设置有对两者之间形成密封的密封件。

6. 一种电子烟雾化装置，包括中空型的雾化壳体，其特征在于，还包括如权利要求 1-5 中任一项的雾化器，雾化壳体上端设有连接于雾化壳体上的上盖，雾化壳体下端设有具有安装孔的下盖，以及位于雾化壳体内的外通气管，外通气管与上盖上的通气孔连通；上述雾化器下端设置于下盖的安装孔中，上端为气雾出口端且处于雾化壳体内，所述雾化器的气雾出口端与外通气管连通，在雾化壳体内壁、上盖、下盖、雾化器以及外通气管之间形成封闭的用于存储烟液的存储腔。

7. 根据权利要求 6 所述的一种电子烟雾化装置，其特征在于：所述雾化壳体下部可拆卸的连接有下壳体，所述下盖设置在下壳体内，上述支承壳体上固定连接有一端向外弯折的限位环，限位环的外折端压在下盖上形成限位。

8. 根据权利要求 7 所述的一种电子烟雾化装置，其特征在于：所述下盖上端面设置有密封圈，密封圈内壁与限位环外壁紧密接触形成密封，密封圈外壁与下壳体内壁紧密接触形成密封，上述限位环的外折端压在密封圈的上端面。

9. 根据权利要求 7 所述的一种电子烟雾化装置，其特征在于：所述下壳体与雾化壳体之间采用螺纹连接的方式进行连接，在下壳体与雾化壳体的连接处设置有对连接处进行密封的密封圈。

10. 根据权利要求 8 所述的一种电子烟雾化装置，其特征在于：所述密封圈为 T 型密封圈，下盖的上端面开设有容纳 T 型密封圈凸起部分的环形容置槽。

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一种雾化器和电子烟雾化装置

技术领域

[0001] 本实用新型涉及电子烟部件技术领域，具体涉及一种装配于电子烟中，安装、拆卸方便的雾化器。

背景技术

[0002] 电子烟又名虚拟香烟，主要用于戒烟和替代香烟；其是通过使烟液产生雾化，产生与香烟类似的烟气和味道；现有的电子烟包括供电部分以及雾化部分，雾化部分包括雾化壳体以及与置于雾化壳体内与雾化壳体结合形成的雾化器，此中结构的雾化器，不能够从雾化壳体内单独取出以供使用，且在出现问题时，需要将雾化壳体及其中的雾化器一起更换，使用成本高；同时此种结构的雾化器不便装配，容易出现漏液，干烧，烟雾量小的问题。

发明内容

[0003] 针对上述技术问题，本实用新型提供一种可以作为一个整体装配于电子烟雾化壳体内，以供使用的雾化器，装拆方便，便于维修，使用成本低。

[0004] 实现本实用新型的技术方案如下：

[0005] 一种雾化器，包括筒状的支承壳体，在支承壳体内设置有导液绳，导液绳的两端穿过支承壳体处于支承壳体外部，以及绕设在导液绳上对导液绳中的液体进行加热雾化的发热丝，支承壳体的下端设置有对壳体下端形成密封的连接块，支承壳体的下端可拆卸的连接于连接块上，在连接块上开设有通气孔，该通气孔与支承壳体内部连通。

[0006] 本雾化器中的连接块与支承壳体之间形成雾化腔室，支承壳体的下端与连接块之间形成密封，不会出现漏液的现象，而支承壳体的上端与电子烟的吸嘴进行连通，处于支承壳体外的导液绳将液体导流到处于支承壳体内的导液绳中， 通过给发热丝通电，使液体产生雾化形成烟雾，在气体流动的作用下，产生的烟雾从支承壳体排出进入吸嘴中，最终进入使用者口中；本实用新型提供的雾化器可以作为一个整体装配于电子烟的雾化壳体内，以供使用；由于支承壳体与连接块可拆卸的连接，其装拆方便，便于维修。

[0007] 所述连接块的通气孔内安装有与发热丝一端电连接的电源接头，电源连接头上开设有与支承壳体内部相连通的通气孔，所述发热丝的另一端与支承壳体电连接。上述支承壳体为金属材料制成，具有导电性能；电源接头与供电部分的正极连接，支承壳体与供电部分的负极连接，从而为发热丝提供供电的回路；发热丝通电发热时，能够对导液绳中的烟液加热进行雾化。

[0008] 所述支承壳体的下端设置有向内弯着的内折边，在连接块上设置有与内折边相对应的卡槽；上述内折边插入卡槽中，使支承壳体与连接块形成连接。连接块为锥形，上述卡槽设在连接块的锥形面上；在装配时，需要将支承壳体的内折边卡入卡槽中，便可以将连接块与支承壳体连接到一起。

[0009] 所述支承壳体上端连接有雾化连接管，所述雾化连接管的外壁与支承壳体内壁之间形成密封。

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[0010] 所述支承壳体上端设置有内通气管，内通气管与雾化连接管之间设置有对两者之间形成密封的密封件。

[0011] 一种电子烟雾化装置，包括中空型的雾化壳体，还包括上述结构的雾化器，雾化壳体上端设有连接于雾化壳体上的上盖，雾化壳体下端设有具有安装孔的下盖，以及位于雾化壳体内的外通气管，外通气管与上盖上的通气孔连通；上述雾化器下端设置于下盖的安装孔中，上端为气雾出口端且处于雾化壳体内，所述雾化器的气雾出口端与外通气管连通，在雾化壳体内壁、上盖、下盖、雾化器以及外通气管之间形成封闭的用于存储烟液的存储腔。

[0012] 本实用新型的电子烟雾化装置，雾化器处于雾化壳体的底部，只要存储腔内具有烟液，导液绳能够时刻与烟液接触进行导液，不会出现干烧的现象；在装配时，雾化器下端安装于下盖的安装孔中，再将下盖与雾化壳体连接，此时雾化器的上端顶在外通气管上进行限位，从而整个雾化器限位于雾化壳体内，安装十分方便，同时在雾化器出现问题损坏后，也便于进行更换，而雾化壳体可以继续使用，相对于现有结构的雾化装置，降低了使用成本；且具有口感好、出烟量大的优点。

[0013] 为了更好的装配连接，在所述雾化壳体下部可拆卸的连接有下壳体，所述下盖设置在下壳体内，上述支承壳体上固定连接有一端向外弯折的限位环，限位环的外折端压在下盖上形成限位。这样在限位环的外折端压在下盖上时，雾化器便被限位于下盖的安装孔中；为了便于观察存储腔内的烟液，雾化壳体采用透明的材料制成。

[0014] 为了保证密封性，在所述下盖上端面设置有密封圈，密封圈内壁与限位环外壁紧密接触形成密封，密封圈外壁与下壳体内壁紧密接触形成密封，上述限位环的外折端压在密封圈的上端面。

[0015] 所述下壳体与雾化壳体之间采用螺纹连接的方式进行连接，在下壳体与雾化壳体的连接处设置有对连接处进行密封的密封圈，从而保证了下壳体与雾化壳体之间的连接密封性。

[0016] 所述密封圈为 T 型密封圈，下盖的上端面开设有容纳 T 型密封圈凸起部分的环形容置槽。

附图说明

[0017] 图 1 为本实用新型中雾化器的结构示意图；

[0018] 图 2 为具有上述雾化器的电子烟雾化装置的剖面示意图；

[0019] 图 3 为具有上述雾化器的电子烟雾化装置的装配示意图；

[0020] 图中，1 为支承壳体，2 为导液绳，3 为发热丝，4 为连接块，5 为电源接头，6 为通气孔，7 为通气槽口，8 为内折边，9 为卡槽，10 为雾化连接管，11 为内通气管，12 为密封件，13 为雾化壳体，14 为上盖，15 为吸嘴，16 为连接管，17 为下盖，18 为外通气管，19 为通气孔，20 为吸嘴的吸孔，21 为下盖的安装孔，22 为存储腔，23 为下壳体，24 为密封圈，25 为限位环，26 为限位环的外折端，27 为 T 型密封圈，28 为 T 型密封圈凸起部分，29 为环形容置槽，30 为连接头，31 为绝缘圈，32 为接触头；

[0021] 100 为雾化器。

NJOY Exhibit 1002.719

具体实施方式

[0022] 结合附图对本实用新型进行进一步说明；

[0023] 参照图 1，一种雾化器 100，包括筒状的由金属材料制成的支承壳体 1，在支承壳体内设置有纤维材料制成的导液绳 2，导液绳的两端穿过支承壳体处于支承壳体外部，在支承壳体上开设有供导液绳穿过的让位孔，让位孔仅能够供导液绳穿过，从让位孔经过的烟液完全被导液绳吸收，不会渗漏到支承壳体内；以及绕设在导液绳上对导液绳中的液体进行加热雾化的发热丝 3，支承壳体的下端设置有对支承壳体下端形成密封的连接块 4，支承壳体的下端可拆卸的连接于连接块上，在连接块上开设有通气孔，该通气孔与支承壳体内部连通。

[0024] 其中，连接块的通气孔内安装有与发热丝 3 一端电连接的电源接头 5，电源连接头 5 上开设有与支承壳体内部相连通的通气孔 6，电源连接头 5 的最下端的通气孔为通气槽口 7，发热丝的另一端与支承壳体 1 电连接。

[0025] 其中，支承壳体的下端设置有向内弯着的内折边 8，在连接块上设置有与内折边相对应的卡槽 9；上述内折边插入卡槽中，使支承壳体与连接块形成连接。 在本实施例的附图中，连接块 4 为锥形，上述卡槽 9 设在连接块的锥形面上；在装配时，需要将支承壳体的内折边卡入卡槽中，便可以将连接块与支承壳体连接到一起。

[0026] 上述支承壳体与连接块也可以采用螺纹连接方式进行连接。具体实施中连接块采用绝缘材料制成。

[0027] 为了使雾化器更好装配于电子烟雾化装置中，支承壳体上端连接有雾化连接管 10，雾化连接管 10 的外壁与支承壳体内壁之间形成密封；当然还可以在支承壳体上端设置有内通气管 11，内通气管 11 与雾化连接管 10 之间设置有对两者之间形成密封的密封件 12，密封件 12 为硅胶密封套。

[0028] 参见图 1、图 2、图 3，一种采用上述雾化器的电子烟雾化装置，包括中空型的雾化壳体 13，雾化器 100，雾化壳体上端设有连接于雾化壳体上的上盖 14，上盖套在雾化壳体上且连接处具有密封圈，在上盖上连接有吸嘴 15，上盖 14 的下端面中部向下延伸出连接管 16，雾化壳体下端设有具有安装孔的下盖 17，以及位于雾化壳体内的外通气管 18，外通气管与上盖上的通气孔 19 连通，吸嘴的吸孔 20 与上盖通气孔 19 连通；上述雾化器 100 下端设置于下盖的安装孔 21 中，上端为气雾出口端且处于雾化壳体内的外通气管 18 内，与外通气管连通，即内通气管 11 与外通气管 18 之间通过连接头 30 连接；在雾化壳体 13 内壁、上盖 14、下盖 17、雾化器 100 以及外通气管 18 之间形成封闭的用于存储烟液的环形存储腔 22。本实用新型中的雾化器处于雾化壳体底部，导液绳能够时刻充足的吸收存储腔内烟液，从而发热丝不会出现干烧的现象，同时烟雾量也比较大。

[0029] 图 2 中的箭头方向为雾化装置的气流方向；雾化壳体 13 下部可拆卸的连接有下壳体 23，本实施中，下壳体与雾化壳体之间采用螺纹连接的方式进行连接，在下壳体与雾化壳体的连接处设置有对连接处进行密封的密封圈 24。以及与电 源接头电连接的接触头 32，设置在接触头 32 与下壳体之间的绝缘圈。

[0030] 当然，下盖 17 可以设置在下壳体 23 内，支承壳体 1 上固定连接有一端向外弯折的限位环 25，这里的限位环还可以由多个压片构成，压片的一端弯折压在下盖上，另一端与支承壳体固定连接。在下盖上端面设置有 T 型密封圈 27，下盖的上端面开设有容纳 T 型密封

NJOY Exhibit 1002.720

圈凸起部分 28 的环形容置槽 29，T 型密封圈凸起部分置于环形容置槽中构成密封结构。T 型密封圈内壁与限位环外壁紧密接触形成密封，T 型密封圈外壁与下壳体内壁紧密接触形成密封，上述限位环的外折端 26 压在密封圈的上端面形成限位。

NJOY Exhibit 1002.721

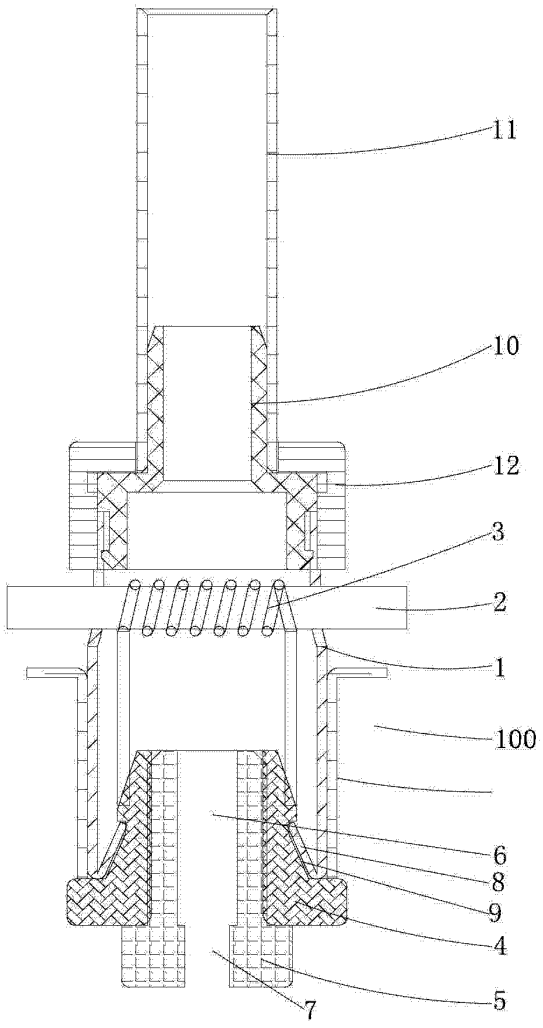


图 1

NJOY Exhibit 1002.722

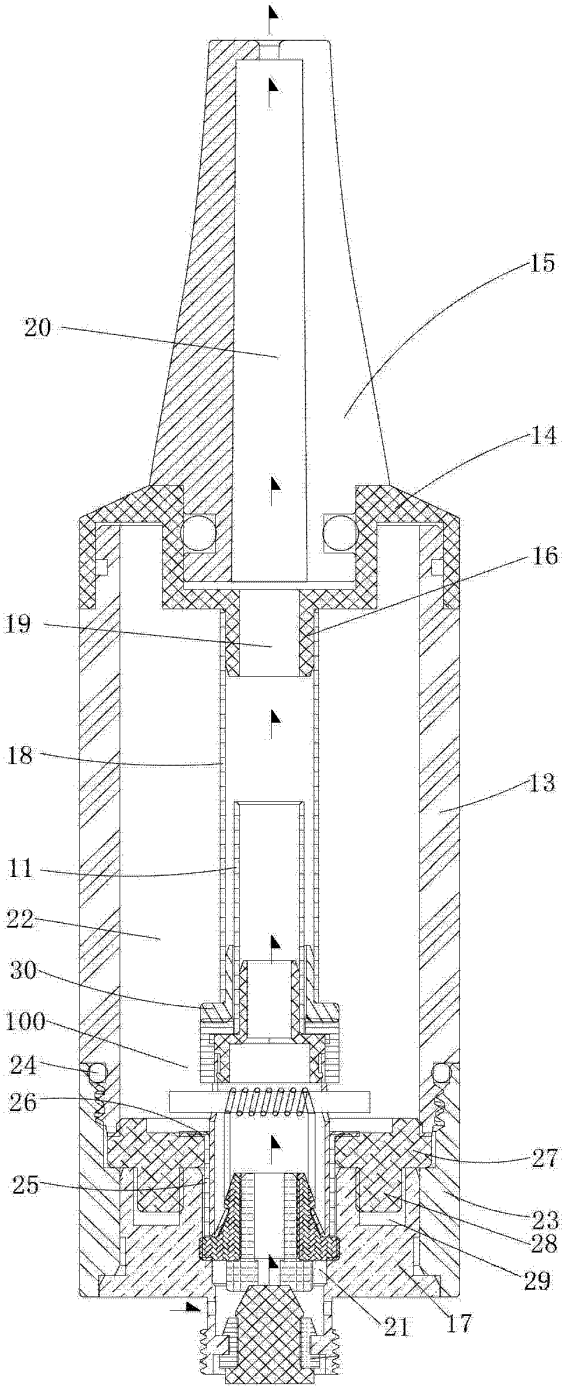


图 2

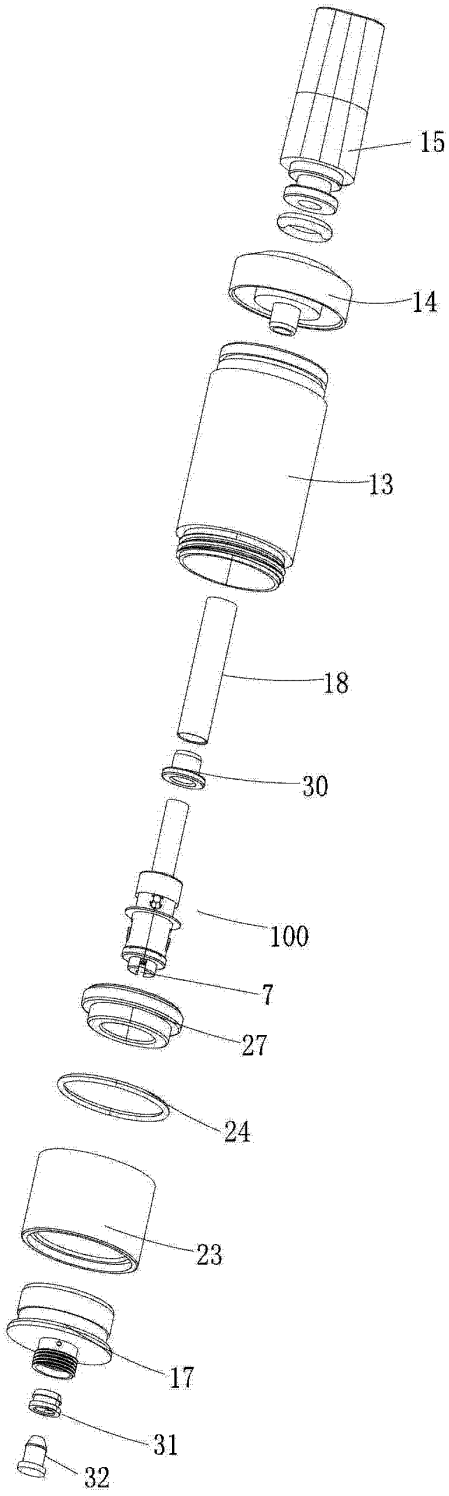


图 3

NJOY Exhibit 1002.723

Espacenet

Bibliographic data: CN203087525 (U) — 2013-07-31

Environment-friendly type non-ignitable atomizing electronic cigarette

Inventor(s): XIAO ZHENZHONG ± (XIAO ZHENZHONG)

Applicant(s): INNOKIN TECHNOLOGY CO LTD ± (INNOKIN TECHNOLOGY CO., LTD)

Classification: **- international:** ***A24F47/00***
- cooperative:

Application number: CN20122280852U 20120614

Priority number(s): CN20122280852U 20120614

Abstract of CN203087525 (U)

The utility model relates to an environment-friendly type non-ignitable atomizing electronic cigarette. The electronic cigarette comprises a cigarette cartridge assembly, the rear end of the cigarette cartridge assembly is connected with an atomizer assembly internally provided with an atomizing head, a pen cap-shaped cigarette cartridge assembly protective cap is sleeved on the front end of the atomizer assembly from front to back, the front end of a battery assembly is internally provided with a strong magnet used for connecting with the atomizer assembly and is provided with four adapter assemblies matched with all the disposable atomizers on the market, and the adapter assemblies are adhered to the battery assembly through the strong magnet. The electronic cigarette provided by the utility model is reasonable in structure, sanitary, convenient to carry, and simple and convenient to assemble and disassemble; a user can independently choose changes of the smoke volume and the flavor and can be warned of the battery power and smoking times; and the electronic cigarette is internally provided with a charging apparatus, can be matched with all the disposable atomizers on the market, and can provides a reasonable working voltage range for the user according to the resistance of different atomizers, thereby allowing the user to enjoy the smoke and the aroma to the greatest extent, and safely protecting the electronic cigarette.

NJOY Exhibit 1002.724

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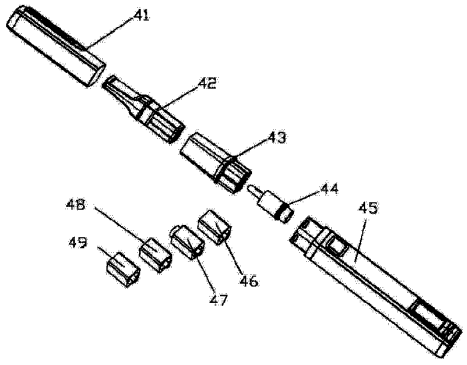
权利要求书4页 说明书10页 附图5页

(54)实用新型名称

一种环保型非可燃性雾化电子香烟

(57)摘要

本实用新型涉及一种环保型非可燃性雾化电子香烟，包括：烟弹组件，其后端与内置雾化头的雾化器组件连接，笔帽状的烟弹组件保护盖从前向后套装在雾化器组件前端，电池组件前端内置有用于与雾化器组件连接的强力磁铁，并设有四个与市场上的所有一次性雾化器适配的转接头组件，且转接头组件与电池组件通过磁吸力吸合。本实用新型，结构合理，更卫生更便于携带，产品拆装简便，用户能自主选择烟雾量的变化和口味，能及时提醒电池电量、吸烟口数，内置充电装置，可以通配市面上所有的一次性雾化器，且能自动根据不同雾化器的电阻来给使用者一个合理的工作电压区间，能让使用者享受最大限度的烟雾和香气，并能安全保护产品。



CN 203087525 U

NJOY Exhibit 1002.725

1. 一种环保型非可燃性雾化电子香烟，其特征在于，包括：

烟弹组件（42），其后端与雾化器组件（43）连接，雾化器组件（43）后端内置有与其螺纹连接的雾化头（44），

烟弹组件保护盖（41）从前向后套装在雾化器组件（43）前端，

电池组件（45）前端内置有用于与雾化器组件（43）连接的强力磁铁，电池组件（45）和雾化器组件（43）通过该强力磁铁吸合，

电池组件（45）前段内置的强力磁铁同样用于和一次性雾化器转接头组件通过磁力吸合，

所述转接头组件包括：X1 型转接头（46）、X2 型转接头（47）、X3 型转接头（48）和 X4 型转接头（49）。

2. 如权利要求 1 所述的环保型非可燃性雾化电子香烟，其特征在于：所述雾化器组件（43）的后端设有四个小磁铁（11）。

3. 如权利要求 1 所述的环保型非可燃性雾化电子香烟，其特征在于，所述电池组件（45）包括：

烟杆（26），其内腔中从前向后依次设置有控制板（23）、锂电池（27）、主控电路板（34）和充电母座（32），

所述锂电池（27）、控制板（23）、充电母座（32）分别和主控电路板（34）连接，且充电母座（32）通过连接线（33）接通主控电路板（34）上的充电电路，所述充电电路用于为锂电池（27）充电，

烟杆（26）的前端设有中间装饰件（22），后端设有底部装饰件（30），

中间装饰件（22）沿轴向设有通孔，在该通孔中设有弹性连接头（21），

中间装饰件（22）和弹性连接头（21）之间装有绝缘圈（18），

磁铁（20）通过紧配的方式设置在中间装饰件（22）前端，

充电母座（32）通过充电母座挡轴（31）固定在底部装饰件（30）内，

烟杆（26）上与控制板（23）相对的侧面设有一按键安装孔，工作按键（24）设置在按键安装孔内，所述工作按键（24）和按键安装孔间设有按键装饰圈（25），

主控电路板（34）上设有显示屏，烟杆（26）上与主控电路板（34）相对的侧面设有与显示屏适配的缺口，在缺口上设有显示屏盖（28），

底部装饰件（30）上设有电压调节键（29），电压调节键（29）和主控电路板（34）连接。

4. 如权利要求 3 所述的环保型非可燃性雾化电子香烟，其特征在于：所述显示屏为数码管。

5. 如权利要求 3 所述的环保型非可燃性雾化电子香烟，其特征在于：所述控制板（23）包括：用于接收工作按键（24）的信号的工作按键接收电路和电子烟工作状态指示电路；

所述充电母座（32）包括：与锂电池（27）适配的 DC5V 充电接口，DC5V 充电接口与锂电池（27）充电管理电路连接；

所述主控电路板（34）包括：主控 MCU 电路、充电管理电路、数码管显示输出电路和电压调节输出电路，

主控 MCU 电路分别和充电管理电路、数码管显示输出电路和电压调节输出电路连接，

主控 MCU 电路直接接收电压调节键（29）的信号，

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电压调节输出电路设有与发热丝连接的接口，

主控 MCU 电路设有与控制板（23）连接的接口，

充电管理电路用于控制 DC5V 充电接口向锂电池（27）充电。

6. 如权利要求 5 所述的环保型非可燃性雾化电子香烟，其特征在于：所述主控 MCU 电路包括：按键 SW1、按键 SW2、主控芯片 U1，主控芯片 U1 的型号为 PIC16F723，

主控芯片 U1 的第 13 脚与电阻 R4 的一端连接，电阻 R4 的另一端接锂电池（27）的正极 B+，

主控芯片 U1 的第 20 脚分别与电容 C6 的一端、锂电池（27）的正极连接，电容 C6 的另一端接地，

锂电池（27）的正极和 MOS 管 Q8 的源极 S 相连，MOS 管 Q8 的栅极 G 与主控芯片 U1 的第 13 脚连接，MOS 管 Q8 的漏极 D 与电压调节输出电路中的升压恒压芯片 U2 的第 12 脚连接，通过 MOS 管 Q8 的漏极 D 与升压恒压芯片 U2 的第 12 脚相连来控制其输出，

按键 SW1 为一轻触开关，其一端接地，另一端与主控芯片 U1 的第 26 脚连接，

按键 SW2 为一轻触开关，其一端接地，另一端与主控芯片 U1 的第 28 脚连接，

晶闸管 Q2 的第 1、3 脚分别与主控芯片 U1 的第 22 脚和电阻 R9 的一端连接，电阻 R9 的另一端接主控芯片 U1 的第 15 脚连接，

晶闸管 Q2 的第 2 脚与电阻 R7 的一端均直接接地，

电阻 R7 的另一端分别与主控芯片 U1 的第 21 脚、RL 发热丝直接相连，通过其电流的微变来侦测发热丝的阻值。

7. 如权利要求 5 所述的环保型非可燃性雾化电子香烟，其特征在于：所述电压调节输出电路包括：电感 L1，升压恒压芯片 U2，升压恒压芯片 U2 的型号为 TPS63020，

升压恒压芯片 U2 的第 8 脚和第 9 脚分别连接到电感 L1 的一端，

升压恒压芯片 U2 的第 6 脚和第 7 脚分别连接到电感 L1 的另一端，

升压恒压芯片 U2 的第 10 脚和第 11 脚分别连接到电容 C12 的正极、电容 C10 的正极、电容 C1 的正极，

电容 C1 的正极接锂电池（27）的正极，

电容 C1 的负极、电容 C10 的负极、电容 C12 的负极均接地，

升压恒压芯片 U2 的第 13 脚与电阻 R2 的一端连接，电阻 R2 的另一端接地，

升压恒压芯片 U2 的第 1 脚与电容 C11 的一端连接，电容 C11 的另一端接地，

升压恒压芯片 U2 的第 2 脚和第 15 脚分别接地，

升压恒压芯片 U2 的第 3 脚分别与电阻 R3 的一端、电阻 R1 的一端连接，

电阻 R3 的另一端接地，

电阻 R1 的另一端分别与电容 C5 的正极、电容 C3 的正极、电容 C13 的正极连接，

电容 C5 的负极、电容 C3 的负极、电容 C13 的负极均接地，

电容 C5 的正极与 RL 发热丝连接，

升压恒压芯片 U2 的第 4 脚和第 5 脚分别与 RL 发热丝连接。

8. 如权利要求 5 所述的环保型非可燃性雾化电子香烟，其特征在于：所述工作按键接收电路和电子烟工作状态指示电路包括：发光二极管 LED1、LED2、LED3，作为工作按键 24 的按键 SW3，

NJOY Exhibit 1002.727

发光二极管 LED1、LED2、LED3 为工作和锂电池(27)电压指示，

发光二极管 LED1、LED2、LED3 的一端分别和电阻 R31、R32、R33 串联后接地，

发光二极管 LED1 另一端接主控芯片 U1 的第 11 脚，

发光二极管 LED2 另一端接主控芯片 U1 的第 16 脚，

发光二极管 LED3 另一端接主控芯片 U1 的第 18 脚，

按键 SW3 一端接地，另一端接主控芯片 U1 的第 27 脚。

9. 如权利要求 5 所述的环保型非可燃性雾化电子香烟，其特征在于：所述充电管理电路包括：充电芯片 U4，充电芯片 U4 的型号为 SE9016，

充电芯片 U4 的第 3 脚与锂电池(27)的正极连接，

充电芯片 U4 的第 1 脚与主控芯片 U1 的第 24 脚连接，

充电芯片 U4 的第 2 脚接地，

充电芯片 U4 的第 5 脚与电阻 R18 的一端连接，电阻 R18 的另一端接地，

充电芯片 U4 的第 4 脚分别与充电母座(32)输入端 Input DC5V、电容 C7 的一端连接，电容 C7 的另一端接地。

10. 如权利要求 5 所述的环保型非可燃性雾化电子香烟，其特征在于：所述数码管显示输出电路包括：数码管 U3，数码管 U3 为一个 4 位 8 段数码管，

电阻 R15 的一端与数码管 U3 的第 1 脚连接，电阻 R15 的另一端与主控芯片 U1 的第 3 脚连接，

电阻 R14 的一端与数码管 U3 的第 2 脚连接，电阻 R14 的另一端与主控芯片 U1 的第 4 脚连接，

电阻 R19 的一端与数码管 U3 的第 3 脚连接，电阻 R19 的另一端与主控芯片 U1 的第 7 脚连接，

电阻 R13 的一端与数码管 U3 的第 4 脚连接，电阻 R13 的另一端与主控芯片 U1 的第 5 脚连接，

电阻 R17 的一端与数码管 U3 的第 5 脚连接，电阻 R17 的另一端与主控芯片 U1 的第 2 脚连接，

电阻 R12 的一端与数码管 U3 的第 7 脚连接，电阻 R12 的另一端与主控芯片 U1 的第 9 脚连接，

电阻 R11 的一端与数码管 U3 的第 11 脚连接，电阻 R11 的另一端与主控芯片 U1 的第 10 脚连接，

电阻 R16 的一端与数码管 U3 的第 10 脚连接，电阻 R16 的另一端与主控芯片 U1 的第 6 脚连接，

主控芯片 U1 的第 12 脚与电阻 R24 的一端连接，电阻 R24 的另一端与三极管 Q7 的基极 B 连接，三极管 Q7 的发射极 E 与锂电池(27)的正极连接，三极管 Q7 的集电极 C 与数码管 U3 的第 6 脚连接，

主控芯片 U1 的第 14 脚与电阻 R23 的一端连接，电阻 R23 的另一端与三极管 Q6 的基极 B 连接，三极管 Q6 的发射极 E 与锂电池(27)的正极连接，三极管 Q6 的集电极 C 与数码管 U3 的第 8 脚连接，

主控芯片 U1 的第 17 脚与电阻 R22 的一端连接，电阻 R22 的另一端与三极管 Q5 的基极

NJOY Exhibit 1002.728

B 连接，三极管 Q5 的发射极 E 与锂电池（27）的正极连接，三极管 Q5 的集电极 C 与数码管 U3 的第 9 脚连接，

主控芯片 U1 的第 25 脚与电阻 R20 的一端连接，电阻 R20 的另一端与三极管 Q4 的基极 B 连接，三极管 Q4 的发射极 E 与锂电池（27）的正极连接，三极管 Q4 的集电极 C 与数码管 U3 的第 12 脚连接。

NJOY Exhibit 1002.729

一种环保型非可燃性雾化电子香烟

技术领域

[0001] 本实用新型涉及电子香烟，具体说是一种环保型非可燃性雾化电子香烟。

背景技术

[0002] 现有的电子香烟，其中的雾化器都是一体化的，一旦雾化器内部的零件出现损坏，则整个雾化器就报废了，一损俱损，导致很大的浪费及使用不便。

[0003] 现有的电子香烟，雾化器和电子香烟电池螺纹连接，使用时要浪费很多时间去旋接电子香烟电池和雾化器，并且螺纹在拆卸与连接次数多的条件下容易产生滑牙等现象。

[0004] 现有的电子香烟，雾化器电阻均为恒定电阻，电池输出电压均为恒压输出，这些因素使得目前烟雾量也是恒定的，使用者无法对烟雾量和抽烟口感进行调节。

[0005] 目前市场上很多手动按钮电子香烟在不使用的情况下或者携带过程中碰触到按钮的时候很容易触发，导致雾化器工作从而将电池电量及烟油消耗掉造成浪费，并且因为雾化器长时间的工作发热可能烫到人体或是长时间发热引起火灾等恶劣状况，极度不方便使用者的使用并严重威胁到使用者的人身安全。

[0006] 目前市场上很多电子香烟在使用过程中无法知晓电池电量，使用者在使用过程中没有得到任何的提示，导致当电量突然不足从而无法继续进行抽烟，这种状况的发生极大地影响使用者的心情。

[0007] 目前电子香烟市场产品无抽烟口数统计及显示，使用者无法知悉自己各时段抽烟量，对一些有抽烟量需求的使用者来说无法满足其了解抽烟量的愿望。

[0008] 现有雾化器加热一般采用两种方式：

[0009] A、供电电压等于供电锂电池电压。这种方式下供电电压会随着电池电压下降而下降。这样会使雾化器的效果一致性不好，当电池电压最高达到 4.2V 的时候，雾化器发热量最大，雾化效果最好，但电池放电至低电压后，雾化器的发热量与电池电压最高时相比会差很多，也就是这个情况下雾化效果前后差别很大，使用起来顾此失彼，最理想的雾化效果总只会占用一小部分电池电压段。

[0010] B、供电电压设为某个固定电压输出。这种方式只要电池电压不低于这个设定值，就会保持恒压输出，但电池电压低于设定电压后，输出电压会低于设定值。这种方式比第一种有所改进，在电池电压高于设定电压的阶段，可以保持某个固定的电压输出，能保持一致的雾化效果，使用者仅仅在电池电压低于设定值之后才会感觉到雾化效果的变化。这样如果将输出电压设定在比较低的值，而且能找到一个合适的雾化发热丝来匹配，基本上是比较理想的。也就是和第一种情况相比，最理想的雾化效果会占用大部分电池电压段，不理想的只会占用一小部分电压段。

[0011] 目前市场上很多电子香烟的雾化器电阻均为恒定电阻，使用者无法知晓发热丝的阻值输出，使用过程中没有任何的提示，导致无法知晓输出结果；其次现有的电子香烟，电池输出电压均为恒压输出，无法调节输出电压，这些因素使得目前烟雾量也是恒定的，使用者无法对烟雾量和抽烟口感进行调节。

NJOY Exhibit 1002.730

实用新型内容

[0012] 针对现有技术中存在的缺陷，本实用新型的目的在于提供一种环保型非可燃性雾化电子香烟，结构合理，更卫生更便于携带，产品拆装简便，用户能自主选择烟雾量的变化和口味，能及时提醒电池电量、吸烟口数，内置充电装置，可以通配市面上所有的一次性雾化器，且能自动根据不同雾化器的电阻来给使用者一个合理的工作电压区间，能让使用者享受最大限度的烟雾和香气，并能安全保护产品。

[0013] 为达到以上目的，本实用新型采取的技术方案是：

[0014] 一种环保型非可燃性雾化电子香烟，其特征在于，包括：

[0015] 烟弹组件 42，其后端与雾化器组件 43 连接，雾化器组件 43 后端内置有与其螺纹连接的雾化头 44，

[0016] 笔帽状的烟弹组件保护盖 41 从前向后套装在雾化器组件 43 前端，

[0017] 电池组件 45 前端内置有用于与雾化器组件 43 连接的强力磁铁，电池组件 45 和雾化器组件 43 通过该强力磁铁吸合，

[0018] 电池组件 45 前段内置的强力磁铁同样用于和一次性雾化器转接头组件通过磁力吸合，

[0019] 所述转接头组件包括：X1 型转接头 46、X2 型转接头 47、X3 型转接头 48 和 X4 型转接头 49。

[0020] 在上述技术方案的基础上，所述雾化器组件 43 的后端设有四个小磁铁 11。

[0021] 在上述技术方案的基础上，所述电池组件 45 包括：

[0022] 烟杆 26，其内腔中从前向后依次设置有控制板 23、锂电池 27、主控电路板 34 和充电母座 32，

[0023] 所述锂电池 27、控制板 23、充电母座 32 分别和主控电路板 34 连接，且充电母座 32 通过连接线 33 接通主控电路板 34 上的充电电路，所述充电电路用于为锂电池 27 充电，

[0024] 烟杆 26 的前端设有中间装饰件 22，后端设有底部装饰件 30，

[0025] 中间装饰件 22 沿轴向设有通孔，在该通孔中设有弹性连接头 21，

[0026] 中间装饰件 22 和弹性连接头 21 之间装有绝缘圈 18，

[0027] 磁铁 20 通过紧配的方式设置在中间装饰件 22 前端，

[0028] 充电母座 32 通过充电母座挡轴 31 固定在底部装饰件 30 内，

[0029] 烟杆 26 上与控制板 23 相对的侧面设有一按键安装孔，工作按键 24 设置在按键安装孔内，所述工作按键 24 和按键安装孔间设有按键装饰圈 25，

[0030] 主控电路板 34 上设有显示屏，烟杆 26 上与主控电路板 34 相对的侧面设有与显示屏适配的缺口，在缺口上设有显示屏盖 28，

[0031] 底部装饰件 30 上设有电压调节键 29，电压调节键 29 和主控电路板 34 连接。

[0032] 在上述技术方案的基础上，所述显示屏为数码管。

[0033] 在上述技术方案的基础上，所述控制板 23 包括：用于接收工作按键 24 的信号的工作按键接收电路和电子烟工作状态指示电路；

[0034] 所述充电母座 32 包括：与锂电池 27 适配的 DC5V 充电接口，DC5V 充电接口与锂电池 27 充电管理电路连接；

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[0035] 所述主控电路板 34 包括：主控 MCU 电路、充电管理电路、数码管显示输出电路和电压调节输出电路，

[0036] 主控 MCU 电路分别和充电管理电路、数码管显示输出电路和电压调节输出电路连接，

[0037] 主控 MCU 电路直接接收电压调节键 29 的信号，

[0038] 电压调节输出电路设有与发热丝连接的接口，

[0039] 主控 MCU 电路设有与控制板 23 连接的接口，

[0040] 充电管理电路用于控制 DC5V 充电接口向锂电池 27 充电。

[0041] 在上述技术方案的基础上，所述主控 MCU 电路包括：按键 SW1、按键 SW2、主控芯片 U1，主控芯片 U1 的型号为 PIC16F723，

[0042] 主控芯片 U1 的第 13 脚与电阻 R4 的一端连接，电阻 R4 的另一端接锂电池 27 的正极 B+，

[0043] 主控芯片 U1 的第 20 脚分别与电容 C6 的一端、锂电池 27 的正极连接，电容 C6 的另一端接地，

[0044] 锂电池 27 的正极和 MOS 管 Q8 的源极 S 相连，MOS 管 Q8 的栅极 G 与主控芯片 U1 的第 13 脚连接，MOS 管 Q8 的漏极 D 与电压调节输出电路中的升压恒压芯片 U2 的第 12 脚连接，通过 MOS 管 Q8 的漏极 D 与升压恒压芯片 U2 的第 12 脚相连来控制其输出，

[0045] 按键 SW1 为一轻触开关，其一端接地，另一端与主控芯片 U1 的第 26 脚连接，

[0046] 按键 SW2 为一轻触开关，其一端接地，另一端与主控芯片 U1 的第 28 脚连接，

[0047] 晶闸管 Q2 的第 1、3 脚分别与主控芯片 U1 的第 22 脚和电阻 R9 的一端连接，电阻 R9 的另一端接主控芯片 U1 的第 15 脚连接，

[0048] 晶闸管 Q2 的第 2 脚与电阻 R7 的一端均直接接地，

[0049] 电阻 R7 的另一端分别与主控芯片 U1 的第 21 脚、RL 发热丝直接相连，通过其电流的微变来侦测发热丝的阻值。

[0050] 在上述技术方案的基础上，所述电压调节输出电路包括：电感 L1，升压恒压芯片 U2，升压恒压芯片 U2 的型号为 TPS63020，

[0051] 升压恒压芯片 U2 的第 8 脚和第 9 脚分别连接到电感 L1 的一端，

[0052] 升压恒压芯片 U2 的第 6 脚和第 7 脚分别连接到电感 L1 的另一端，

[0053] 升压恒压芯片 U2 的第 10 脚和第 11 脚分别连接到电容 C12 的正极、电容 C10 的正极、电容 C1 的正极，

[0054] 电容 C1 的正极接锂电池 27 的正极，

[0055] 电容 C1 的负极、电容 C10 的负极、电容 C12 的负极均接地，

[0056] 升压恒压芯片 U2 的第 13 脚与电阻 R2 的一端连接，电阻 R2 的另一端接地，

[0057] 升压恒压芯片 U2 的第 1 脚与电容 C11 的一端连接，电容 C11 的另一端接地，

[0058] 升压恒压芯片 U2 的第 2 脚和第 15 脚分别接地，

[0059] 升压恒压芯片 U2 的第 3 脚分别与电阻 R3 的一端、电阻 R1 的一端连接，

[0060] 电阻 R3 的另一端接地，

[0061] 电阻 R1 的另一端分别与电容 C5 的正极、电容 C3 的正极、电容 C13 的正极连接，

[0062] 电容 C5 的负极、电容 C3 的负极、电容 C13 的负极均接地，

NJOY Exhibit 1002.732

[0063] 电容 C5 的正极与 RL 发热丝连接，

[0064] 升压恒压芯片 U2 的第 4 脚和第 5 脚分别与 RL 发热丝连接。

[0065] 在上述技术方案的基础上，所述工作按键接收电路和电子烟工作状态指示电路包括：发光二极管 LED1、LED2、LED3，作为工作按键 24 的按键 SW3，

[0066] 发光二极管 LED1、LED2、LED3 为工作和锂电池电压指示，

[0067] 发光二极管 LED1、LED2、LED3 的一端分别和电阻 R31、R32、R33 串联后接地，

[0068] 发光二极管 LED1 另一端接主控芯片 U1 的第 11 脚，

[0069] 发光二极管 LED2 另一端接主控芯片 U1 的第 16 脚，

[0070] 发光二极管 LED3 另一端接主控芯片 U1 的第 18 脚，

[0071] 按键 SW3 一端接地，另一端接主控芯片 U1 的第 27 脚。

[0072] 在上述技术方案的基础上，所述充电管理电路包括：充电芯片 U4，充电芯片 U4 的型号为 SE9016，原理图中的 B+ 为锂电池 27，

[0073] 充电芯片 U4 的第 3 脚与锂电池 27 的正极连接，

[0074] 充电芯片 U4 的第 1 脚与主控芯片 U1 的第 24 脚连接，

[0075] 充电芯片 U4 的第 2 脚接地，

[0076] 充电芯片 U4 的第 5 脚与电阻 R18 的一端连接，电阻 R18 的另一端接地，

[0077] 充电芯片 U4 的第 4 脚分别与充电母座 32 输入端 Input DC5V、电容 C7 的一端连接，电容 C7 的另一端接地。

[0078] 在上述技术方案的基础上，所述数码管显示输出电路包括：数码管 U3，数码管 U3 为一个 4 位 8 段数码管，

[0079] 电阻 R15 的一端与数码管 U3 的第 1 脚连接，电阻 R15 的另一端与主控芯片 U1 的第 3 脚连接，

[0080] 电阻 R14 的一端与数码管 U3 的第 2 脚连接，电阻 R14 的另一端与主控芯片 U1 的第 4 脚连接，

[0081] 电阻 R19 的一端与数码管 U3 的第 3 脚连接，电阻 R19 的另一端与主控芯片 U1 的第 7 脚连接，

[0082] 电阻 R13 的一端与数码管 U3 的第 4 脚连接，电阻 R13 的另一端与主控芯片 U1 的第 5 脚连接，

[0083] 电阻 R17 的一端与数码管 U3 的第 5 脚连接，电阻 R17 的另一端与主控芯片 U1 的第 2 脚连接，

[0084] 电阻 R12 的一端与数码管 U3 的第 7 脚连接，电阻 R12 的另一端与主控芯片 U1 的第 9 脚连接，

[0085] 电阻 R11 的一端与数码管 U3 的第 11 脚连接，电阻 R11 的另一端与主控芯片 U1 的第 10 脚连接，

[0086] 电阻 R16 的一端与数码管 U3 的第 10 脚连接，电阻 R16 的另一端与主控芯片 U1 的第 6 脚连接，

[0087] 主控芯片 U1 的第 12 脚与电阻 R24 的一端连接，电阻 R24 的另一端与三极管 Q7 的基极 B 连接，三极管 Q7 的发射极 E 与锂电池 27 的正极连接，三极管 Q7 的集电极 C 与数码管 U3 的第 6 脚连接，

NJOY Exhibit 1002.733

[0088] 主控芯片 U1 的第 14 脚与电阻 R23 的一端连接，电阻 R23 的另一端与三极管 Q6 的基极 B 连接，三极管 Q6 的发射极 E 与锂电池 27 的正极连接，三极管 Q6 的集电极 C 与数码管 U3 的第 8 脚连接，

[0089] 主控芯片 U1 的第 17 脚与电阻 R22 的一端连接，电阻 R22 的另一端与三极管 Q5 的基极 B 连接，三极管 Q5 的发射极 E 与锂电池 27 的正极连接，三极管 Q5 的集电极 C 与数码管 U3 的第 9 脚连接，

[0090] 主控芯片 U1 的第 25 脚与电阻 R20 的一端连接，电阻 R20 的另一端与三极管 Q4 的基极 B 连接，三极管 Q4 的发射极 E 与锂电池 27 的正极连接，三极管 Q4 的集电极 C 与数码管 U3 的第 12 脚连接。

[0091] 本实用新型所述的环保型非可燃性雾化电子香烟，做出了多项改进，其优点在于：

[0092] 1、雾化器组件可更换，延长了产品的使用寿命；雾化器组件可配备不同阻值的雾化头（例如：在雾化器底部有一个有螺纹的通孔，通孔的螺纹用来跟雾化头的螺纹配合，这样就可以更换不同阻值的雾化头），对应不同输出电压，使用者可以有不同的抽烟体验；

[0093] 2、电池组件和雾化器组件采用磁铁吸附技术连接，更方便拆装电池组件；X1 ～ X4 四款转接头也是通过磁铁吸附技术连接，方便拆卸；

[0094] 3、主控电路板可通过电压调节键调节输出电压，藉此控制烟雾量的变化和口味的变化，带来不同的体验；

[0095] 4、用于控制产品开机与关机的工作按键 24 需要按动三次才能执行开机与关机的功能，有效开启和关闭输出，对电路进行保护，防止无意间触发开关导致工作的状况；

[0096] 5、主控电路板 34 上设有显示屏（数码管），可以提示使用者所使用的雾化器所适配的电压范围，及用户调节电压的电压值显示；显示屏还可以显示抽烟的口数，极大地方便了使用者；

[0097] 6、本产品针对市面上已有的各电子香烟的不同的电池组件，配套有多个转接头（X1 ～ X4 四款），可以通配市面上所有的一次性雾化器，扩展了产品的使用范围；

[0098] 7、电路部分，可自动设定工作电压范围，针对不同阻值的雾化头给出一个合适的电压范围，并可显示推荐最佳工作电压，实现了高度的智能化；并能使使用者最大限度的享受烟雾和香气，并保护产品本身。

[0099] 本实用新型为客户提供一种可调节电压输出非可燃性雾化电子烟，不受恒压影响雾化器的烟雾量，从而达到最佳理想吸烟效果，该产品体积小携带方便，发热丝阻值可侦测，输出电压稳定可调节，可靠性高，烟雾量大，操作简单，可以作为吸烟人士居家旅行的首选。

附图说明

[0100] 本实用新型有如下附图：

[0101] 图 1 本实用新型结构示意图，

[0102] 图 2 雾化器组件结构示意图，

[0103] 图 3 电池组件结构示意图，

[0104] 图 4 本实用新型的电路原理框图，

NJOY Exhibit 1002.734

[0105] 图 5 电压调节输出电路的电路原理图，

[0106] 图 6 工作按键接收电路和指示电路的电路原理图，

[0107] 图 7 主控 MCU 电路的电路原理图，

[0108] 图 8 数码管显示输出电路的电路原理图，

[0109] 图 9 充电管理电路的的电路原理图。

具体实施方式

[0110] 以下结合附图对本实用新型作进一步详细说明。

[0111] 如图 1 所示，本实用新型所述的环保型非可燃性雾化电子香烟，包括：

[0112] 烟弹组件 42，其后端与雾化器组件 43 连接，雾化器组件 43 后端内置有与其螺纹连接的雾化头 44，

[0113] 笔帽状的烟弹组件保护盖 41 从前向后套装在雾化器组件 43 前端，所述笔帽状的烟弹组件保护盖 41 将烟弹组件 42 罩于其内，当不使用电子香烟时，其对烟弹组件 42 起到保护作用，当使用电子香烟，将笔帽状的烟弹组件保护盖 41 拔出即可露出烟弹组件 42，

[0114] 电池组件 45 前端内置有用于与雾化器组件 43 连接的强力磁铁，电池组件 45 和雾化器组件 43 通过该强力磁铁吸合，

[0115] 电池组件 45 前段内置的强力磁铁同样用于和一次性雾化器转接头组件通过磁力吸合，

[0116] 所述转接头组件包括：X1 型转接头 46、X2 型转接头 47、X3 型转接头 48 和 X4 型转接头 49。

[0117] 本产品配备了四种不同型号的转接头，涵盖了市面上所有的一次性雾化器即雾化器组件，转接头组件的材料为环保易车铁，有很好的磁吸力，可方便更换组装于不同的电池组件 45 和雾化器组件 43 上。

[0118] 在上述技术方案的基础上，如图 2 所示，所述雾化器组件 43 的后端设有四个小磁铁 11。雾化器组件 43 通过小磁铁 11 与电池组件 45 中的异形磁铁 20 吸合，电池组件 45 的具体结构详见下述。

[0119] 在上述技术方案的基础上，如图 3 所示，所述电池组件 45 包括：

[0120] 烟杆 26，其内腔中从前向后依次设置有控制板 23、锂电池 27、主控电路板 34 和充电母座 32，

[0121] 所述锂电池 27、控制板 23、充电母座 32 分别和主控电路板 34 连接，且充电母座 32 通过连接线 33 接通主控电路板 34 上的充电电路，所述充电电路用于为锂电池 27 充电，

[0122] 烟杆 26 的前端设有中间装饰件 22，后端设有底部装饰件 30，

[0123] 中间装饰件 22 沿轴向设有通孔，在该通孔中设有弹性连接头 21，

[0124] 中间装饰件 22 和弹性连接头 21 之间装有绝缘圈 18，

[0125] 磁铁 20 通过紧配的方式设置在中间装饰件 22 前端，

[0126] 充电母座 32 通过充电母座挡轴 31 固定在底部装饰件 30 内，

[0127] 烟杆 26 上与控制板 23 相对的侧面设有一按键安装孔，工作按键 24 设置在按键安装孔内，所述工作按键 24 和按键安装孔间设有按键装饰圈 25，

[0128] 主控电路板 34 上设有显示屏，烟杆 26 上与主控电路板 34 相对的侧面设有与显示

NJOY Exhibit 1002.735

屏适配的缺口，在缺口上设有显示屏盖 28，

[0129] 底部装饰件 30 上设有电压调节键 29，电压调节键 29 和主控电路板 34 连接。在上述技术方案的基础上，所述显示屏为数码管。

[0130] 在上述技术方案的基础上，如图 4 所示，所述控制板 23 包括：用于接收工作按键 24 的信号的工作按键接收电路和电子烟工作状态指示电路；

[0131] 所述充电母座 32 包括：与锂电池 27 适配的 DC5V 充电接口，DC5V 充电接口与锂电池 27 充电管理电路连接；即：充电母座 32 只是一个 DC5V 充电接口，

[0132] 所述主控电路板 34 包括：主控 MCU 电路、充电管理电路、数码管显示输出电路和电压调节输出电路，

[0133] 主控 MCU 电路分别和充电管理电路、数码管显示输出电路和电压调节输出电路连接，

[0134] 主控 MCU 电路直接接收电压调节键 29 的信号，

[0135] 电压调节输出电路设有与发热丝连接的接口，

[0136] 主控 MCU 电路设有与控制板 23 连接的接口，

[0137] 充电管理电路用于控制 DC5V 充电接口向锂电池 27 充电。

[0138] 在上述技术方案的基础上，如图 7 所示，所述主控 MCU 电路包括：按键 SW1、按键 SW2、主控芯片 U1，主控芯片 U1 的型号为 PIC16F723，原理图中的 B+ 为锂电池 27 正极，

[0139] 主控芯片 U1 的第 13 脚与电阻 R4 的一端连接，电阻 R4 的另一端接锂电池 27 的正极 B+，

[0140] 主控芯片 U1 的第 20 脚分别与电容 C6 的一端、锂电池 27 的正极连接，电容 C6 的另一端接地，

[0141] 锂电池 27 的正极和 MOS 管 Q8 的源极 S 相连，MOS 管 Q8 的栅极 G 与主控芯片 U1 的第 13 脚连接，MOS 管 Q8 的漏极 D 与电压调节输出电路中的升压恒压芯片 U2 的第 12 脚连接，通过 MOS 管 Q8 的漏极 D 与升压恒压芯片 U2 的第 12 脚相连来控制其输出，

[0142] 按键 SW1 为一轻触开关，其一端接地，另一端与主控芯片 U1 的第 26 脚连接，

[0143] 按键 SW2 为一轻触开关，其一端接地，另一端与主控芯片 U1 的第 28 脚连接，

[0144] 晶闸管 Q2 的第 1 脚与主控芯片 U1 的第 22 脚和电阻 R9 的一端连接，晶闸管 Q2 的第 3 脚也与主控芯片 U1 的第 22 脚和电阻 R9 的一端连接，电阻 R9 的另一端接主控芯片 U1 的第 15 脚连接，

[0145] 晶闸管 Q2 的第 2 脚与电阻 R7 的一端均直接接地，

[0146] 电阻 R7 的另一端分别与主控芯片 U1 的第 21 脚、RL 发热丝直接相连，通过主控芯片 U1 的第 21 脚电流的微变来侦测雾化器组件 43 内的 RL 发热丝的阻值。

[0147] 在上述技术方案的基础上，如图 5 所示，所述电压调节输出电路包括：电感 L1，升压恒压芯片 U2，升压恒压芯片 U2 的型号为 TPS63020，原理图中的 B+ 为锂电池 27 正极，

[0148] 升压恒压芯片 U2 的第 12 脚与 MOS 管 Q8 的漏极 D 相连，参见前述，

[0149] 升压恒压芯片 U2 的第 8 脚和第 9 脚分别连接到电感 L1 的一端，

[0150] 升压恒压芯片 U2 的第 6 脚和第 7 脚分别连接到电感 L1 的另一端，

[0151] 升压恒压芯片 U2 的第 10 脚和第 11 脚分别连接到电容 C12 的正极、电容 C10 的正极、电容 C1 的正极，

NJOY Exhibit 1002.736

[0152] 电容 C1 的正极接锂电池 27 的正极，

[0153] 电容 C1 的负极、电容 C10 的负极、电容 C12 的负极均接地，

[0154] 升压恒压芯片 U2 的第 13 脚与电阻 R2 的一端连接，电阻 R2 的另一端接地，

[0155] 升压恒压芯片 U2 的第 1 脚与电容 C11 的一端连接，电容 C11 的另一端接地，

[0156] 升压恒压芯片 U2 的第 2 脚和第 15 脚分别接地，

[0157] 升压恒压芯片 U2 的第 3 脚分别与电阻 R3 的一端、电阻 R1 的一端连接，

[0158] 电阻 R3 的另一端接地，

[0159] 电阻 R1 的另一端分别与电容 C5 的正极、电容 C3 的正极、电容 C13 的正极连接，

[0160] 电容 C5 的负极、电容 C3 的负极、电容 C13 的负极均接地，

[0161] 电容 C5 的正极与 RL 发热丝连接，

[0162] 升压恒压芯片 U2 的第 4 脚和第 5 脚分别与 RL 发热丝连接。

[0163] 在上述技术方案的基础上，如图 6 所示，所述工作按键接收电路和电子烟工作状态指示电路包括：发光二极管 LED1、LED2、LED3，作为工作按键 24 的按键 SW3，

[0164] 发光二极管 LED1、LED2、LED3 为工作和锂电池电压指示，发光二极管 LED1 发黄光，发光二极管 LED2 发绿光，发光二极管 LED3 发红光，

[0165] 发光二极管 LED1、LED2、LED3 的一端分别和电阻 R31、R32、R33 串联后接地，

[0166] 发光二极管 LED1 另一端接主控芯片 U1 的第 11 脚，

[0167] 发光二极管 LED2 另一端接主控芯片 U1 的第 16 脚，

[0168] 发光二极管 LED3 另一端接主控芯片 U1 的第 18 脚，

[0169] 按键 SW3 一端接地，另一端接主控芯片 U1 的第 27 脚。

[0170] 按键 SW3 通过主控芯片 U1 的 I/O 口来控制整个电路的开关机和工作。

[0171] 在上述技术方案的基础上，如图 9 所示，所述充电管理电路包括：充电芯片 U4，充电芯片 U4 的型号为 SE9016，原理图中的 B+ 为锂电池 27 正极，

[0172] 充电芯片 U4 的第 3 脚与锂电池 27 的正极连接，

[0173] 充电芯片 U4 的第 1 脚与主控芯片 U1 的第 24 脚连接，

[0174] 充电芯片 U4 的第 2 脚接地，

[0175] 充电芯片 U4 的第 5 脚与电阻 R18 的一端连接，电阻 R18 的另一端接地，

[0176] 充电芯片 U4 的第 4 脚分别与充电母座 32 输入端 Input DC5V、电容 C7 的一端连接，电容 C7 的另一端接地。

[0177] 充电母座 32 输入端 Input DC5V 通过锂电池充电管理电路实现对锂电池 27 充电，锂电池 27 对整个电路供电。

[0178] 在上述技术方案的基础上，如图 8 所示，所述数码管显示输出电路包括：数码管 U3，数码管 U3 为一个 4 位 8 段数码管，原理图中的 B+ 为锂电池 27 正极，

[0179] 电阻 R15 的一端与数码管 U3 的第 1 脚连接，电阻 R15 的另一端与主控芯片 U1 的第 3 脚连接，

[0180] 电阻 R14 的一端与数码管 U3 的第 2 脚连接，电阻 R14 的另一端与主控芯片 U1 的第 4 脚连接，

[0181] 电阻 R19 的一端与数码管 U3 的第 3 脚连接，电阻 R19 的另一端与主控芯片 U1 的第 7 脚连接，

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[0182] 电阻 R13 的一端与数码管 U3 的第 4 脚连接，电阻 R13 的另一端与主控芯片 U1 的第 5 脚连接，

[0183] 电阻 R17 的一端与数码管 U3 的第 5 脚连接，电阻 R17 的另一端与主控芯片 U1 的第 2 脚连接，

[0184] 电阻 R12 的一端与数码管 U3 的第 7 脚连接，电阻 R12 的另一端与主控芯片 U1 的第 9 脚连接，

[0185] 电阻 R11 的一端与数码管 U3 的第 11 脚连接，电阻 R11 的另一端与主控芯片 U1 的第 10 脚连接，

[0186] 电阻 R16 的一端与数码管 U3 的第 10 脚连接，电阻 R16 的另一端与主控芯片 U1 的第 6 脚连接，

[0187] 主控芯片 U1 的第 12 脚与电阻 R24 的一端连接，电阻 R24 的另一端与三极管 Q7 的基极 B 连接，三极管 Q7 的发射极 E 与锂电池 27 的正极连接，三极管 Q7 的集电极 C 与数码管 U3 的第 6 脚连接，

[0188] 主控芯片 U1 的第 14 脚与电阻 R23 的一端连接，电阻 R23 的另一端与三极管 Q6 的基极 B 连接，三极管 Q6 的发射极 E 与锂电池 27 的正极连接，三极管 Q6 的集电极 C 与数码管 U3 的第 8 脚连接，

[0189] 主控芯片 U1 的第 17 脚与电阻 R22 的一端连接，电阻 R22 的另一端与三极管 Q5 的基极 B 连接，三极管 Q5 的发射极 E 与锂电池 27 的正极连接，三极管 Q5 的集电极 C 与数码管 U3 的第 9 脚连接，

[0190] 主控芯片 U1 的第 25 脚与电阻 R20 的一端连接，电阻 R20 的另一端与三极管 Q4 的基极 B 连接，二极管 Q4 的发射极 E 与锂电池 27 的正极连接，三极管 Q4 的集电极 C 与数码管 U3 的第 12 脚连接。

[0191] 如上所述，电压调节按键与主控 MCU 电路的 I/O 口连接，再通过主控 MCU 电路的 I/O 口与电压调节输出电路中升压恒压芯片 U2 的 12 脚连接，实现对发热丝电压值调节，也可通过主控 MCU 电路的 I/O 口与发热丝连接达到对其阻值侦测，主控 MCU 电路的 I/O 口与数码管显示输出电路的 I/O 口连接实现调节电压值、吸烟口数、参考值的输出显示；而工作按键、指示电路通过主控 MCU 电路的 I/O 口对电子烟的工作状态进行控制和对电池电压进行提示。

[0192] 本实用新型所说的电压可调节主要包括主控 MCU 电路和电压调节输出电路图，通过按键 SW1 和 SW2 闭合触发信号，主控芯片 U1 的 26 脚和 28 脚检测到按键 SW1 的触发信号，主控芯片 U1 通过内部程序来发出指令，经主控芯片 U1 的 I/O 口 13 脚和升压恒压芯片 U2 的 12 脚，对升压恒压芯片 U2 发出电压调节指令，升压恒压芯片 U2 接到调节指令后，直接按照指令进行相应的电压调节输出，通过升压恒压芯片 U2 的 4 脚、5 脚对发热丝两端输出相应的电压。其中：

[0193] 主控芯片 U1 的 26 脚、28 脚，其中 28 脚为电压‘-’调节脚与输入按键 SW2 连接，26 脚为‘+’调节脚与输入按键 SW1 连接；

[0194] 本实用新型所说的发热丝阻值侦测包括阻值主控 MCU 电路和数码管显示输出电路 4 位 8 段数码管，通过输入同时按下 SW1、SW2 键的脉冲信号，对 MCU 发出检测指令，主控芯片 U1 通过 I/O 口 13 脚对升压恒压芯片 U2 内部电流的微量变化值识别，参照主控芯片 U1

NJOY Exhibit 1002.738

内部的设定数据库进行对比，通过主控芯片U1的I/O口直接将数据传递给数码管显示发热丝所对应的电压参考值。

[0195] 本说明书中未作详细描述的内容属于本领域专业技术人员公知的现有技术。

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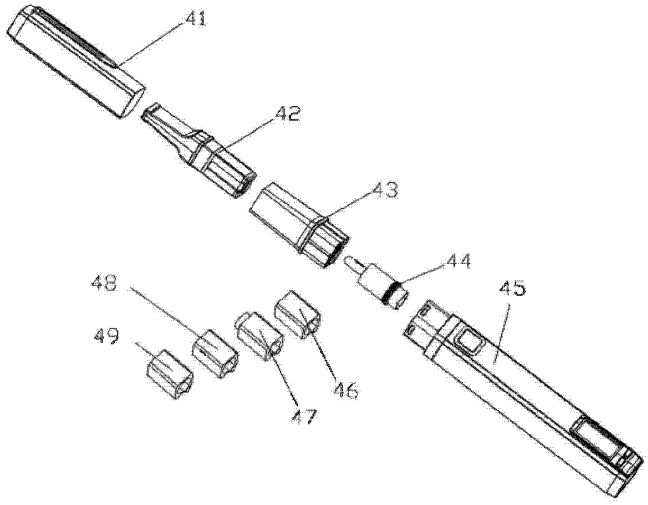


图 1

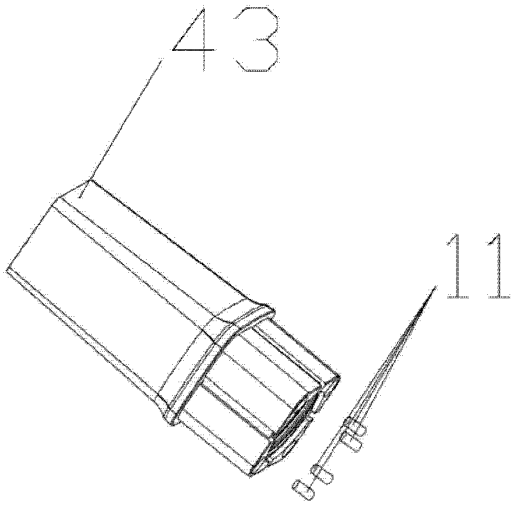


图 2

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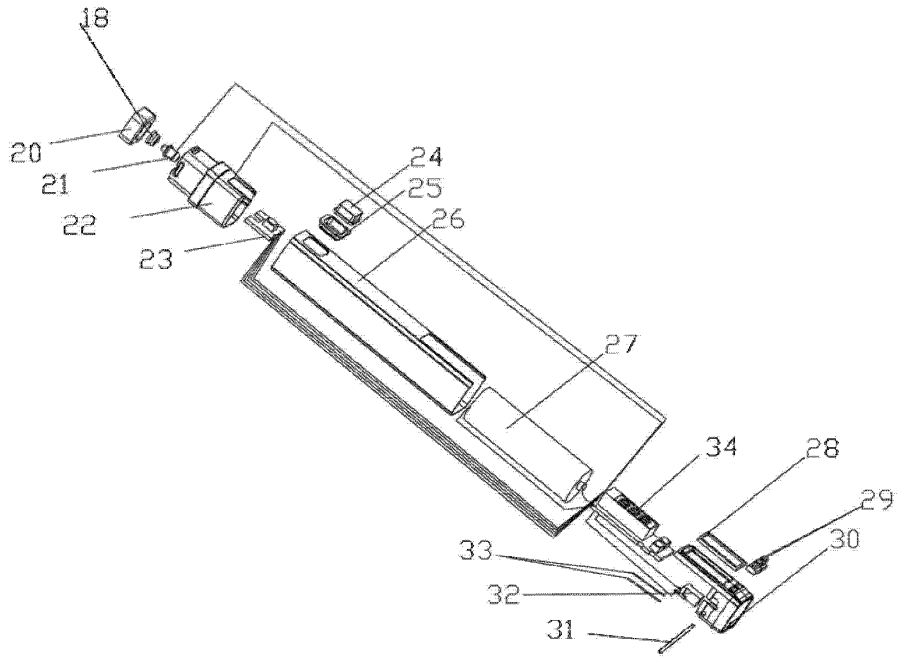


图 3

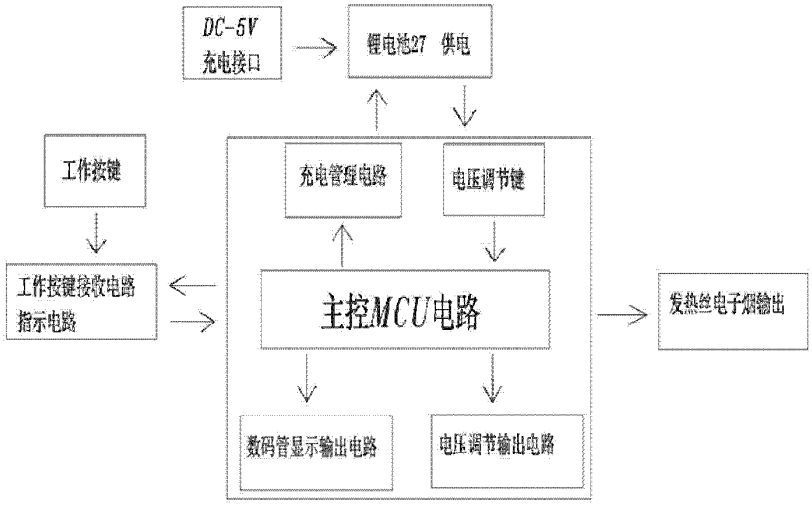


图 4

NJOY Exhibit 1002.741

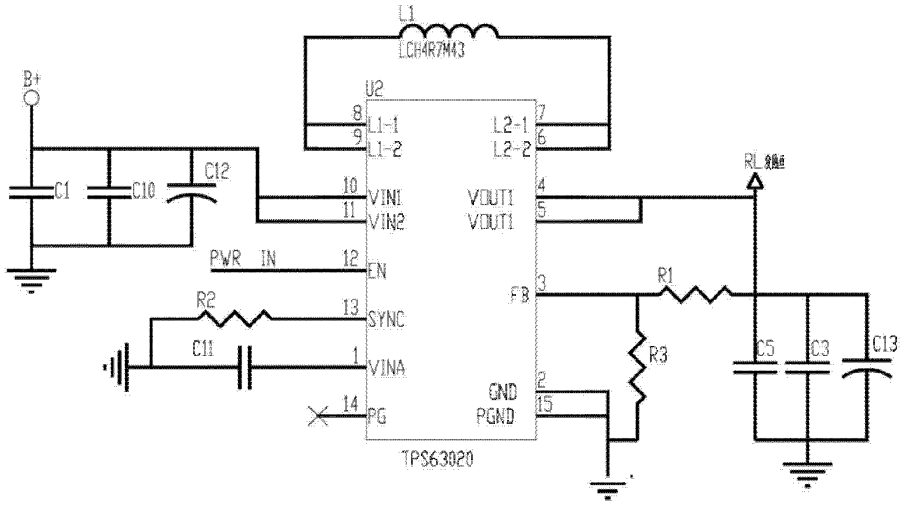


图 5

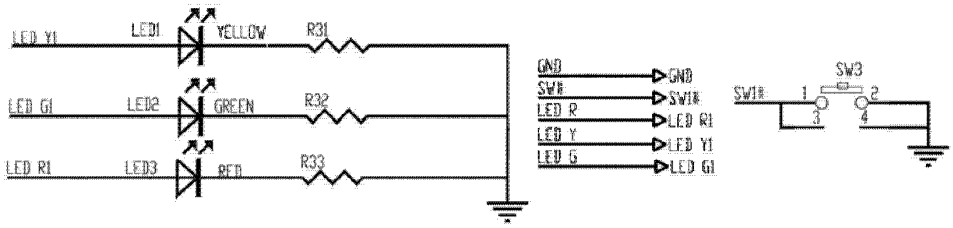


图 6

NJOY Exhibit 1002.742

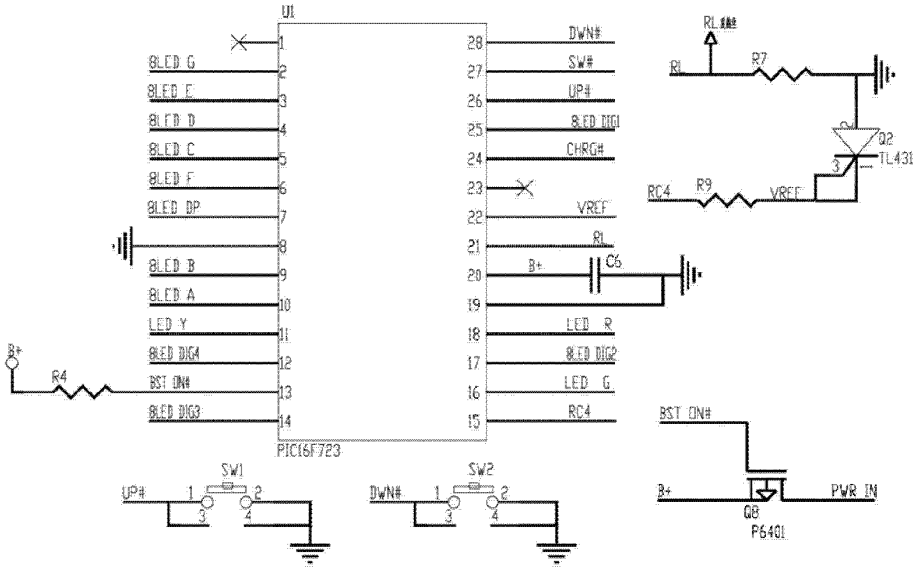


图 7

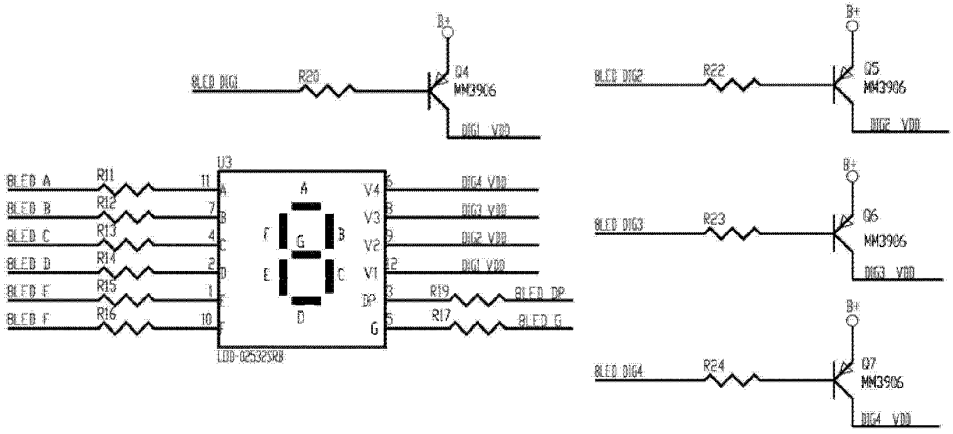


图 8

NJOY Exhibit 1002.743

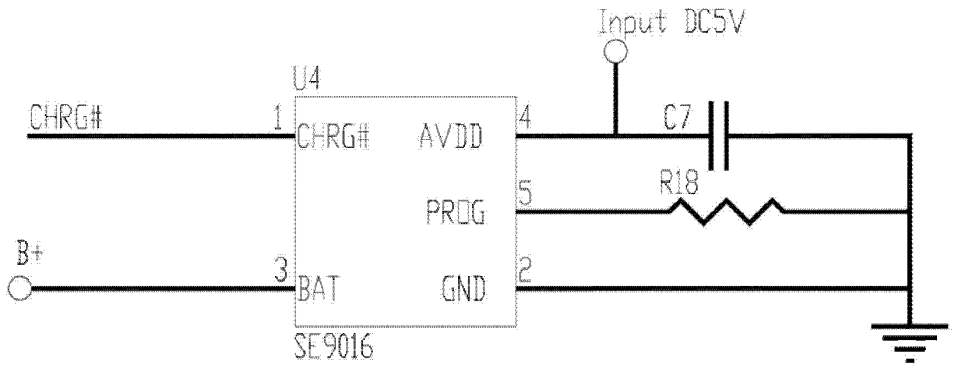


图 9

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Espacenet

Bibliographic data: CN203152489 (U) — 2013-08-28

Electronic cigarette

Inventor(s): XIANG ZHIYONG ± (XIANG ZHIYONG)

Applicant(s): XIANG ZHIYONG ± (XIANG ZHIYONG)

Classification: **- international:** ***A24F47/00; H02H7/18; H02J7/00***
- cooperative:

Application number: CN20132112097U 20130312

Priority number(s): CN20132112097U 20130312

Abstract of CN203152489 (U)

The utility model discloses an electronic cigarette which comprises an atomizer and a battery used for supplying power, and further comprises a control circuit, wherein the control circuit comprises an interface; the interface is connected with the atomizer or connected with a charger used for charging for the battery; the control circuit further comprises a microcontroller and a smoking sensor, a switching circuit and a periphery circuit electrically connected with the microcontroller respectively; the periphery circuit, the switching circuit and the smoking sensor are electrically connected with the battery respectively; and the periphery circuit and the switching circuit are electrically connected with the interface respectively. The electronic cigarette has the benefits that flexible controls of the atomizer driving of the electronic cigarette and the charging of the electronic cigarette and the like can be realized; the control method is simple and easy to change; and the functions of the charging short-circuit protection of the electronic cigarette battery, drive output short-circuit protection of the atomizer, the prevention of long-time smoking, scald protection, charging insert and extract detection of the electronic cigarette and the like can be realized.

NJOY Exhibit 1002.745

(19)中华人民共和国国家知识产权局

(12)实用新型专利

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(21)申请号 201320112097.6

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代理人 蔡晓红

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A24F 47/00(2006.01)
H02J 7/00(2006.01)
H02H 7/18(2006.01)

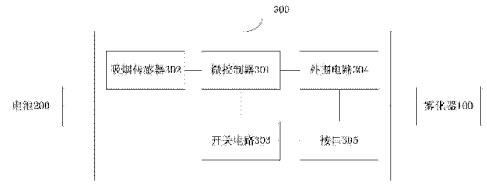
权利要求书1页 说明书5页 附图2页

(54)实用新型名称

一种电子烟

(57)摘要

本实用新型公开了一种电子烟，所述电子烟包括一雾化器和一用于供电的电池，所述电子烟还包括控制电路，所述控制电路包括接口，该接口与雾化器相接或与用于给电池充电的充电器相接，所述控制电路还包括：微控制器、分别与微控制器电性连接的吸烟传感器、开关电路、外围电路，且所述外围电路、开关电路、吸烟传感器还分别与所述电池电性连接，所述外围电路、开关电路还分别与所述接口电性连接。实施本实用新型的有益效果是，可实现灵活控制电子烟的雾化器的驱动、电子烟的充电等，且控制方式简单且易更改，还能实现电子烟电池的充电短路保护、雾化器驱动输出短路保护、防止长时间吸烟防烫嘴保护、电子烟的充电插入和拔出检测等功能。



CN 203152489 U

NJOY Exhibit 1002.746

1. 一种电子烟，所述电子烟包括一雾化器和一用于供电的电池，还包括控制电路，所述控制电路包括接口，该接口与所述雾化器相接或与用于给所述电池充电的充电器相接，其特征在于，所述控制电路还包括：

微控制器、分别与所述微控制器电性连接的吸烟传感器、开关电路、外围电路，且所述外围电路、开关电路、吸烟传感器还分别与所述电池电性连接，所述外围电路、开关电路还分别与所述接口电性连接；

所述外围电路包括分别与所述微控制器电性连接的短路检测电路、充电检测电路，其中，所述充电检测电路用于检测所述接口电路是否与所述充电器电性连接；所述短路检测电路用于检测所述电池的充电或者对所述雾化器的供电是否发生短路；

所述微控制器用于当所述接口与所述雾化器相接时，根据所述短路检测电路的检测结果控制所述开关电路的导通或截止实现给所述雾化器供电，或当所述接口与所述充电器相接时，根据所述充电检测电路和短路检测电路的检测结果控制所述开关电路的导通或截止实现给所述电池充电。

2. 根据权利要求 1 所述的电子烟，其特征在于，所述外围电路还包括分别与所述微控制器电性连接的状态指示电路和电池电压检测电路；其中，所述状态指示电路还分别与所述接口和电池电性连接，所述电池电压检测电路还与所述电池电性连接；

所述状态指示电路用于对所述控制电路的工作状态进行显示；

所述电池电压检测电路用于检测所述电池的电压，当电池电压低于预设值时，所述微控制器控制所述开关电路截止。

3. 根据权利要求 2 所述的电子烟，其特征在于，所述状态指示电路包括第一电阻（R1）、发光二极管（D1），第一电阻（R1）的一端连接所述电池的正极、另一端连接所述发光二极管（D1）的阳极，所述发光二极管（D1）的阴极连接所述微控制器的第二输出脚。

4. 根据权利要求 2 所述的电子烟，其特征在于，所述电池电压检测电路包括二极管（D2），二极管（D2）的阳极连接电池的正极，阴极连接微控制器的 VDD 引脚。

5. 根据权利要求 1 所述的电子烟，其特征在于，所述充电检测电路包括第二电阻（R2）、第三电阻（R3），所述第二电阻（R2）的一端连接所述接口、另一端连接所述第三电阻（R3）的一端，所述第三电阻（R3）的另一端连接所述接口，所述第二电阻（R2）和第三电阻（R3）之间连接所述微控制器的第一输入脚。

6. 根据权利要求 1 所述的电子烟，其特征在于，所述短路检测电路包括第四电阻（R4），所述第四电阻（R4）的一端连接所述微控制器的第二输入脚、另一端连接所述接口。

7. 根据权利要求 1 所述的电子烟，其特征在于，所述开关电路包括一场效应管，其中，所述场效应管的栅极连接所述微控制器的第一输出脚、源极连接地、漏极连接所述接口。

8. 根据权利要求 1 所述的电子烟，其特征在于，所述吸烟传感器的一端连接所述微控制器的第三输入脚、一端连接电池的正极、一端连接电池的负极。

9. 根据权利要求 1 所述的电子烟，其特征在于，所述微控制器为单片机，其型号为 Sn8P2711B。

10. 根据权利要求 9 所述的电子烟，其特征在于，所述微控制器的 VDD 引脚还通过第一电容（C1）接地，所述微控制器的 VSS 引脚接地。

NJOY Exhibit 1002.747

一种电子烟

技术领域

[0001] 本实用新型涉及电子产品领域，更具体地说，涉及一种电子烟。

背景技术

[0002] 目前大部分的可充电式的电子烟的控制电路都是先集成在一个ASIC(Application Specific Integrated Circuit，集成电路)中后，再与吸烟传感器集成，做成一个控制与传感相结合的集成咪头。这种集成咪头的控制电子烟的方式使得对电子烟的雾化器的驱动方式、电子烟充电电路的控制方式等相对固定。

[0003] 所以，一方面，采用这种集成咪头的电子烟控制方式，对电子烟的雾化器驱动的调节和电子烟充电电路等的控制方式不具灵活性。另一方面，采用这种集成咪头的电子烟控制方式，如果需要更改雾化器的驱动控制或更改电子烟充电电路的控制方式，就需要更改整个集成咪头的芯片设计。更改芯片的成本高，且各种电子烟都使用相同功能的集成咪头，使得电子烟不具特点。

实用新型内容

[0004] 本实用新型要解决的技术问题在于，针对现有技术的上述电子烟控制电路的控制方式复杂且不灵活的缺陷，提供一种电子烟。

[0005] 本实用新型解决其技术问题所采用的技术方案是：

[0006] 一种电子烟，所述电子烟包括一雾化器和一用于供电的电池，还包括控制电路，所述控制电路包括接口，该接口与所述雾化器相接或与用于给所述电池充电的充电器相接，所述控制电路还包括：

[0007] 微控制器、分别与所述微控制器电性连接的吸烟传感器、开关电路、外围电路，且所述外围电路、开关电路、吸烟传感器还分别与所述电池电性连接，所述外围电路、开关电路还分别与所述接口电性连接；

[0008] 所述外围电路包括分别与所述微控制器电性连接的短路检测电路、充电检测电路，其中，所述充电检测电路用于检测所述接口电路是否与所述充电器电性连接；所述短路检测电路用于检测所述电池的充电或者对所述雾化器的供电是否发生短路；

[0009] 所述微控制器用于当所述接口与所述雾化器相接时，根据所述短路检测电路的检测结果控制所述开关电路的导通或截止实现给所述雾化器供电，或当所述接口与所述充电器相接时，根据所述充电检测电路和短路检测电路的检测结果控制所述开关电路的导通或截止实现给所述电池充电。

[0010] 所述外围电路还包括分别与所述微控制器电性连接的状态指示电路和电池电压检测电路；其中，所述状态指示电路还分别与所述接口和电池电性连接，所述电池电压检测电路还与所述电池电性连接；

[0011] 所述状态指示电路用于对所述控制电路的工作状态进行显示；

[0012] 所述电池电压检测电路用于检测所述电池的电压，当电池电压低于预设值时，所

NJOY Exhibit 1002.748

述微控制器控制所述开关电路截止。

[0013] 所述状态指示电路包括第一电阻、发光二极管，第一电阻的一端连接所述电池的正极、另一端连接所述发光二极管的阳极，所述发光二极管的阴极连接所述微控制器的第二输出脚。

[0014] 所述电池电压检测电路包括二极管，二极管的阳极连接电池的正极，阴极连接微控制器的 VDD 引脚。

[0015] 所述充电检测电路包括第二电阻、第三电阻，所述第二电阻的一端连接所述接口、另一端连接所述第三电阻的一端，所述第三电阻的另一端连接所述接口，所述第二电阻和第三电阻之间连接所述微控制器的第一输入脚。

[0016] 所述短路检测电路包括第四电阻，所述第四电阻的一端连接所述微控制器的第二输入脚、另一端连接所述接口。

[0017] 所述开关电路包括一场效应管，其中，所述场效应管的栅极连接所述微控制器的第一输出脚、源极连接地、漏极连接所述接口。

[0018] 所述吸烟传感器的一端连接所述微控制器的第三输入脚、一端连接电池的正极、一端连接电池的负极。

[0019] 所述微控制器为单片机，其型号为 Sn8P2711B。

[0020] 所述微控制器的 VDD 引脚还通过第一电容接地，所述微控制器的 VSS 引脚接地。

[0021] 实施本实用新型的电子烟，具有以下有益效果：可实现灵活控制电子烟的雾化器的驱动、电子烟的充电等，且控制方式简单易更改，更改的成本低；还能实现电子烟电池的充电短路保护、雾化器驱动输出短路保护、防止长时间吸烟防烫嘴保护、电子烟的充电插入和拔出检测等功能。

附图说明

[0022] 下面将结合附图及实施例对本实用新型作进一步说明，附图中：

[0023] 图 1 是本实用新型一实施例的电子烟结构图；

[0024] 图 2 是图 1 所示的电子烟的外围电路的结构图

[0025] 图 3 是本实用新型一实施例的电子烟的电路图。

具体实施方式

[0026] 为了对本实用新型的技术特征、目的和效果有更加清楚的理解，现对照附图详细说明本实用新型的具体实施方式。

[0027] 本实用新型实施例的电子烟控制电路由微控制器 301、吸烟传感器 302、开关电路 303、外围电路 304 组成，通过将这几部分分开可实现灵活控制电子烟的雾化器驱动、电子烟的充电等，且只需对微控制器 301 的控制信号进行改变就可实现控制方式的更改。相对于集成咪头的电子烟，其控制方式和指示方式灵活，便于定制，且保护功能丰富，产品安全可靠。此外，通过外围电路 304 的设计还能实现电子烟电池的充电短路保护、雾化器驱动输出短路保护、防止长时间吸烟防烫嘴保护、电子烟的充电时充电器的插入和拔出检测等功能。

[0028] 如图 1 所示为本实用新型一实施例的电子烟的结构图，所述电子烟包括一雾化器

NJOY Exhibit 1002.749

100 和一用于供电的电池 200，控制电路 300 包括接口 305，该接口 305 与雾化器 100 相接或与用于给电池 200 充电的充电器相接。该接口 305 包括与电池 200 的正极相对应的 J1 端和与电池 200 的负极相对应的 J2 端。若该接口 305 与充电器相连，则 J1 端接充电器的正极，J2 端接充电器的负极。

[0029] 控制电路 300 还包括微控制器 301、分别与微控制器 301 电性连接的吸烟传感器 302、开关电路 303、外围电路 304，且吸烟传感器 302、开关电路 303、外围电路 304 还分别与电池 200 电性连接，外围电路 304、开关电路 303 还分别与接口 305 电性连接。

[0030] 微控制器 301 用于根据吸烟传感器 302 和外围电路 304 的输入信号控制开关电路 303 的导通或截止，当接口 305 与雾化器 100 相接时，控制开关电路 303 的导通或截止实现给所述雾化器 100 供电，当接口 305 与充电器相接时，控制开关电路 303 的导通或截止实现给电池 200 充电。微控制器 301 可选用单片机。本实用新型的一实施例中选用型号为 Sn8P2711B 的单片机，也可选用其他具有相同功能的单片机或 MCU。该型号为 Sn8P2711B 的单片机的第一脚为 VDD 引脚，第二脚为 P0.2/Xout 脚，第三脚为 P0.4/RST/Vpp 脚，第四脚 P5.3/BZ1/PWM1，第五脚为 P5.4/BZ0/PWM0 脚，第九脚为 P4.4/AIN4 脚，第十脚为 VSS 脚。

[0031] 开关电路 303 用于根据微控制器 301 的控制信号导通或截止。开关电路 303 包括一开关器件，该开关器件的一端接微控制器 301 的第四脚、一端接地，还有一端接接口 305 的 J2 端。

[0032] 外围电路 304 用于将电池的电压信号和负载的电压信号输入到微控制器 301 以及对控制电路 300 的工作状态进行显示。

[0033] 如图 2 所示，为本实用新型一实施例的电子烟的控制电路的外围电路的结构图。本实用新型的电子烟的控制电路外围电路 304 包括：分别与所述微控制器 301 电性连接的短路检测电路 401、充电检测电路 402、状态指示电路 403 和电池电压检测电路 404。状态指示电路 403 还分别与接口 305 和电池 200 相连，电池电压检测电路 404 还与电池 200 相连；

[0034] 其中，充电检测电路 402 用于检测所述接口电路是否与充电器相接；

[0035] 短路检测电路 401 用于检测所述电池的充电或者对雾化器的供电是否发生短路；

[0036] 状态指示电路 403 用于对控制电路的工作状态进行显示；

[0037] 电池电压检测电路 404 用于检测电池的电压，当电池电压低于预设值时，微控制器 301 控制开关电路截止。该预设值由微控制器 301 进行设置，可根据电子烟控制电路的实际情况进行设置，使得当电子烟电池 200 的电压小于一定值时能够断开开关电路，从而实现对电池低压的保护。

[0038] 如图 3 所示，为本实用新型一实施例的电子烟的电路图。在本实用新型的电子烟控制电路中，开关器件可为场效应管 Q1，其中，接微控制器 301 的第四脚的一端为其栅极，接地的一端为其源极，接接口 305 的 J2 端的一端为其漏极。此外，该开关器件还可为三极管、晶体管、晶闸管等，其连接方式和场效应管 Q1 的连接方式相同。

[0039] 如图 3 所示，在本实用新型的电子烟控制电路中，外围电路 304 中的状态指示电路 403 包括第一电阻 R1、发光二极管 D1，第一电阻 R1 的一端接电池的正极、另一端接发光二极管 D1 的阳极，发光二极管 D1 的阴极接微控制器的第五脚。电池电压检测电路 404 包括二极管 D2，二极管 D2 的阳极接电池 200 的正极、阴极接微控制器 301 的 VDD 引脚。充电检

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测电路 402 包括第二电阻 R2、第三电阻 R3，第二电阻 R2 的一端接 J1 端、另一端接第三电阻 R3 的一端，第三电阻 R3 的另一端接 J2 端，第二电阻 R2 和第三电阻 R3 之间接微控制器 301 的第三脚。短路检测电路 401 包括第四电阻 R4，第四电阻 R4 的一端接微控制器 301 的第四脚、另一端接 J2 端。

[0040] 通过发光二极管 D1 可对控制电路 300 的工作状态进行显示。

[0041] 通过对第二电阻 R2、第三电阻 R3 进行电压采样可实现对充电器的插入和拔出的检测。

[0042] 二极管 D2 的作用为防止纹波，因为当电池电量耗完时，电池的电压会发生剧烈的改变，通过二极管 D2 可防止此时的电压剧烈改变而产生的纹波。

[0043] 微控制器 301 的 VDD 引脚还通过电容 C1 接地，微控制器 301 的 VSS 引脚接地。由于微控制器 301 的 VDD 引脚是与电池 200 的正极相连，因此，通过对 VDD 引脚的电压进行检测，可实现电池低电压检测，当电池电压过低时，可通过控制场效应管 Q1 截止以实现对电池的保护。

[0044] 吸烟传感器 302 的一端接微控制器 301 的第二脚、一端接电池的正极，还有一端接电池的负极。吸烟传感器 302 通过与微控制器 301 相连接，将检测到的用户的吸烟信号传送给微控制器 301 的第二脚。当微控制器 301 的第二脚的电平某一时间段内均处于高电平时，说明电子烟这段时间都处于吸烟状态，此时，可通过控制场效应管 Q1 的截止实现防烫嘴功能。该时间段可进行设置，即可对允许长时间吸烟的时间进行控制。

[0045] 本实用新型电子烟控制电路的工作原理为：

[0046] 当接口 305 与充电器相连接对电池进行充电时，充电器的正极接 J1 端、负极接 J2 端，由电阻 R2、电阻 R3、场效应管 Q1 组成充电电路。此时，电阻 R2 和电阻 R3 之间的采样电压发生变化，使得微控制器 301 的第三脚的电平发生变化，微控制器 301 检测到这种变化后，判断为充电开始，置第一输出端 P5.3 为高电平，使得场效应管 Q1 导通，从而实现对电池 200 的充电。

[0047] 当充电器移除后，电阻 R2 和电阻 R3 之间的采样电压变为零，使得微控制器 301 的第三脚的电平发生变化，微控制器 301 检测到这种变化后，判断为充电结束，置第四脚为低电平，使得场效应管 Q1 截止，从而实现停止对电池 200 的充电。

[0048] 当充电电路不进行充电时，控制电路 300 可作为驱动雾化器 100 工作的电路。该电路包括二极管 D2、电池 200、场效应管 Q1。雾化器 100 连接在 J1 和 J2 端。当微控制器 301 与吸烟传感器 302 连接的第二脚检测到吸烟传感器 302 的传送的电平信号时，微控制器 301 控制场效应管 Q1 导通，电池 200 给雾化器 100 供电。微控制器 301 可通过 VDD 引脚检测到电池 200 的供电电压，当电池 200 的供电电压低时，控制场效应管 Q1 截止实现对电池的保护。

[0049] 且微控制器 301 还能够控制第四脚输出稳定的占空比的 PWM 脉冲，控制场效应管 Q1 的通断，从而通过调节输出电压实现对雾化器 100 的驱动方式的调节。

[0050] 在电子烟充电或给雾化器供电的过程中，微控制器 301 可通过检测第九脚的电压变化实现短路的保护。其具体实现过程为：若发生短路则第九脚检测到的电压发生变化，则微控制器 301 置第四脚为低电平，使得场效应管 Q1 截止，从而使充电或供电停止，实现充电过程和输出短路保护。

NJOY Exhibit 1002.751

[0051] 发光二极管 D1 可指示控制电路的各种工作状态，以及实现吸烟、停吸的淡入淡出显示。其具体实现为，微控制器 301 可通过控制第五脚的电压使得发光二极管的发光强度不同，从而指示电子烟处于何种工作状态或处于某异常的工作状态。或者，通过控制第五脚的输出电压连续增大或减小，从而实现发光二极管 D1 的亮度的连续变化，实现吸烟或停吸时出现淡入和淡出的显示效果。

[0052] 应理解，本实用新型实施例中的微控制器 301 采用的是型号为 Sn8P2711B 的单片机，但本领域技术人员在本实用新型的启示下，采用其他具有相同功能的单片机或 MCU 以实现本实用新型的功能也在本实用新型的保护范围之内。且任何包含本实用新型的控制电路的电子烟也均在本实用新型的保护范围之内。

[0053] 上面结合附图对本实用新型的实施例进行了描述，但是本实用新型并不局限于上述的具体实施方式，上述的具体实施方式仅仅是示意性的，而不是限制性的，本领域的普通技术人员在本实用新型的启示下，在不脱离本实用新型宗旨和权利要求所保护的范围情况下，还可做出很多形式，这些均属于本实用新型的保护之内。

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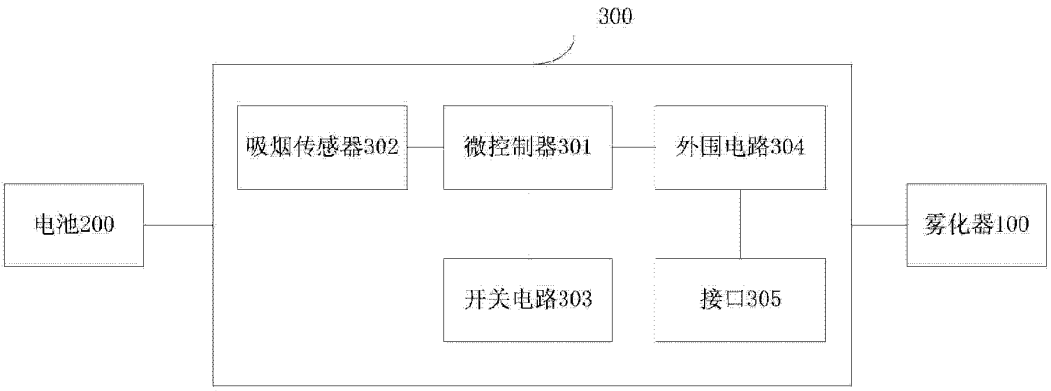


图 1

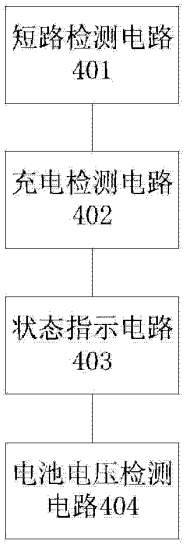


图 2

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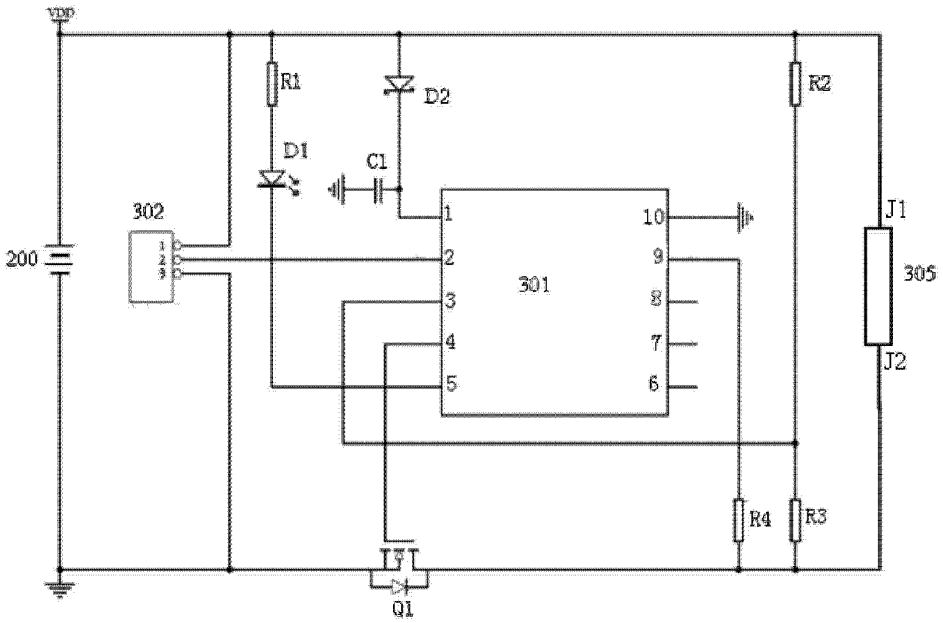


图 3

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Espacenet

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Electronic cigarette preventing smoke from condensing

Inventor(s): LIU QIUMING ± (LIU QIUMING)

Applicant(s): LIU QIUMING ± (LIU QIUMING)

Classification: **- international:** ***A24F47/00***
- cooperative: **A24F47/008**

Application number: CN20132021952U 20130116

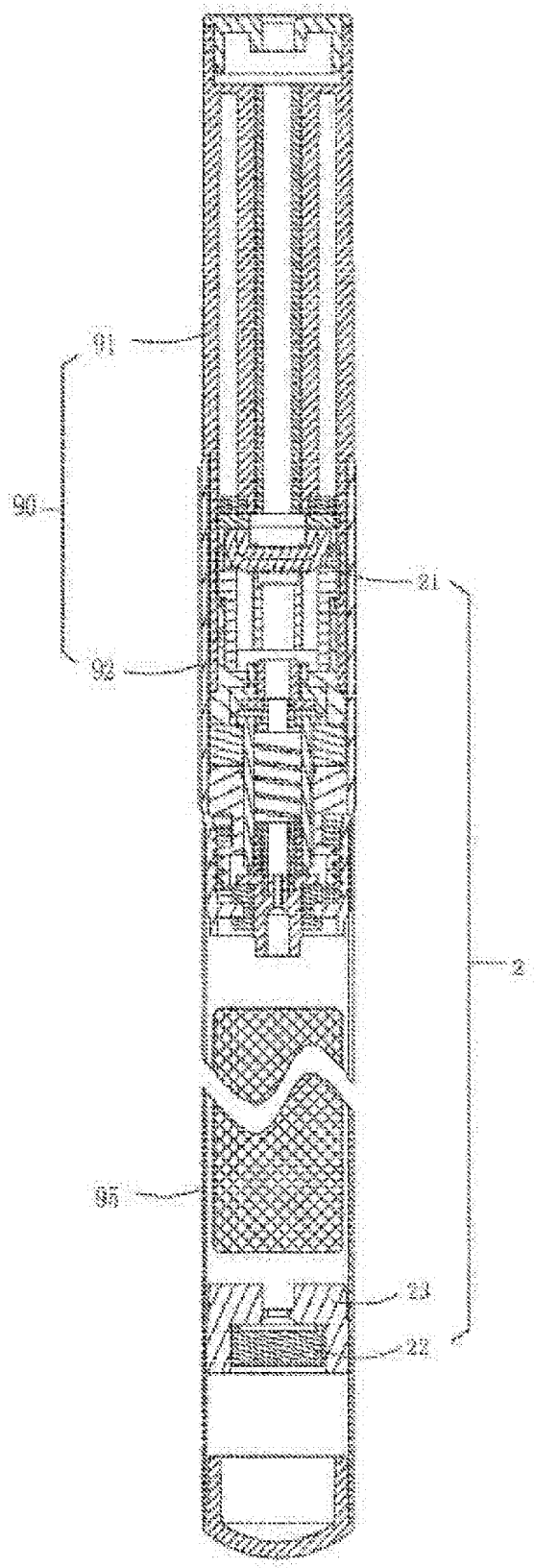
Priority number(s): WO2012CN85927 20121205 ; CN20132021952U 20130116

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Abstract of CN203168035 (U)

The utility model relates to an electronic cigarette preventing smoke from condensing. The electronic cigarette preventing the smoke from condensing comprises a suction rod and a power supply rod, wherein the suction rod and the power supply rod are detachably connected. An atomizer used for atomizing tobacco juice stored inside the suction rod into smoke and a smoke channel which enables the smoke to circulates outside the suction rod are arranged inside the suction rod, wherein a tobacco juice anti-condensing mechanism used for preventing smoke from being condensed on the inner wall of the smoke channel in circulation is arranged in the suction rod. The electronic cigarette preventing the smoke from condensing greatly increases smoke amount entering into the mouth of a smoker, and can prevent the tobacco juice drops from being inhaled into the mouth of the smoker and reduce the amount of the tobacco juice drops inhaled into the mouth of the smoker. The electronic cigarette preventing the smoke from condensing reduces manufacturing and using cost of an electronic cigarette, and brings convenience to disassembling and assembling and replacing of the electronic cigarette.

NJOY Exhibit 1002.755



NJOY Exhibit 1002.756

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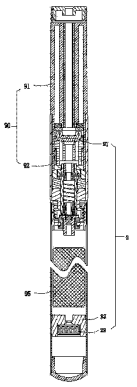
权利要求书2页 说明书6页 附图7页

(54)实用新型名称

防烟雾冷凝的电子烟

(57)摘要

本实用新型涉及一种防烟雾冷凝的电子烟，包括可拆装地连接的吸杆和电源杆，所述吸杆内设有用于将存储于吸杆内的烟液雾化转变为烟雾的雾化器及供所述烟雾流通至吸杆外部的烟雾通道，其中，所述吸杆内设有用于防止烟雾在流通中冷却凝结在烟雾通道内壁上的防烟液冷凝机构。本实用新型的电子烟，其能增大进入吸烟者口中的烟雾量，且能防止和减少烟液滴被吸入吸烟者口中；其降低了电子烟的制造和使用成本，且便于电子烟的拆装和更换。



CN 203168035 U

NJOY Exhibit 1002.757

1. 一种防烟雾冷凝的电子烟，包括可拆装地连接的吸杆和电源杆，所述吸杆内设有用于将存储于吸杆内的烟液雾化转变为烟雾的雾化器及供所述烟雾流通至吸杆外部的烟雾通道，其中，所述吸杆内设有用于防止烟雾在流通中冷却凝结在烟雾通道内壁上的防烟液冷凝机构。

2. 如权利要求 1 所述的电子烟，其中，所述防烟液冷凝机构为穿设于烟雾通道内部的隔热部件。

3. 如权利要求 2 所述的电子烟，其中，所述隔热部件为由表面传热系数低的材质制成的管状部件。

4. 如权利要求 3 所述的电子烟，其中，所述隔热部件的外侧壁与所述烟雾通道的内壁之间密封连接。

5. 如权利要求 1 所述的电子烟，其中，所述防烟液冷凝机构为所述烟雾通道，其为由隔热材质制成的呈管状的独立部件。

6. 如权利要求 1 至 5 中任一项所述的电子烟，其中，所述吸杆还包括用于连接所述雾化器和电源杆且将电源杆内的电源传输给雾化器的连接器，该连接器的一端与雾化器磁性连接，连接器的另一端与所述电源杆可拆装地连接。

7. 如权利要求 6 所述的电子烟，所述雾化器的与连接器对接的连接端设有第一连接机构，所述第一连接机构包括分别作为第一连接机构第一电极的第一座体和借助于第一绝缘套安装于第一座体上且作为第一连接机构第二电极的第一极柱；所述连接器的与雾化器对接的连接端设有第二连接机构，所述第二连接机构包括作为第二连接机构第一电极的第二座体和借助于第二绝缘套安装于第二座体上且作为第二连接机构第二电极的第二极柱，所述第一座体和第二座体均是整体或局部形成有可相互磁性吸附的第一磁吸部和第二磁吸部；所述第一磁吸部与第二磁吸部相互磁性吸附使第一座体和第二座体相抵接且第一极柱和第二极柱相抵接。

8. 如权利要求 7 所述的电子烟，其中，所述第一座体呈筒状，第一极柱借助于第一绝缘套插置于第一座体中部；所述第二座体呈筒状，所述第二极柱借助于第二绝缘套插置于第二座体中部；所述第二极柱穿设于第二绝缘套中，第二绝缘套固定于第二座体内，第二绝缘套上与所述第二极柱相反的一端设有用于与所述电源杆内的电极相电连接的电源杆上极柱，电源杆上极柱利用一限位套而夹持于第二绝缘套内，第二绝缘套的内部还设有一弹簧，所述弹簧的两端分别抵接于第二极柱和电源杆上极柱而将第二极柱和电源杆上极柱均保持于伸出第二绝缘套的状态；对应地，所述电源杆上与连接器相连接的一端设有一电源杆下极柱与所述电源杆上极柱相抵接。

9. 如权利要求 8 所述的电子烟，其中，所述第二绝缘套为一端设有顶壁而另一端开口的圆筒体，其包括侧壁、顶壁及由顶壁沿轴向向外延伸的凸缘，所述侧壁和顶壁合围形成用于容置所述弹簧的内腔，所述顶壁上还设有供所述第二极柱伸出的极柱孔；所述第二座体呈中空的圆筒体结构，其一端插入所述连接器的内部并固定于连接器内，另一端设有用于与所述电源杆相连接的外螺纹接头，对应地，所述电源杆上设有与其相配合的内螺纹接头，所述电源杆下极柱设于所述内螺纹接头内，所述电源杆下极柱利用一下极柱绝缘套固定于所述内螺纹接头内；电源杆内部设有电源，所述内螺纹接头和电源杆下极柱分别与电源的第一电极和第二电极电连接；所述第二绝缘套插入所述第二座体内并利用其侧壁涨紧于第

NJOY Exhibit 1002.758

二座体内，同时，其穿过一中部设有轴向贯通孔的永磁体并利用其凸缘将该永磁体固定于该第二座体上。

10. 如权利要求 7 所述的电子烟，其中，所述连接器具有一用于固定所述第二连接机构的连接器套管，该连接器套管为沿轴向贯通的圆筒体，该连接器套管的一端设有所述第二连接机构，另一端供所述第一连接机构插入其内而与所述第二连接机构相磁性连接。

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防烟雾冷凝的电子烟

技术领域

[0001] 本实用新型涉及电子烟领域，尤其是一种能防止烟雾冷凝且利用磁力连接的电子烟。

背景技术

[0002] 现有的电子烟包括吸杆和电源杆，吸杆和电源杆采用螺纹连接，吸杆内设有用于储存烟液的烟液杯、用于将烟液雾化转变为烟雾的雾化机构及用于使雾化机构和电源杆实现电连接的连接机构，烟液杯、雾化机构和连接机构形成一体不可分离。吸杆内还设有供烟雾流通的烟雾通道，该烟雾通道可与吸杆外套一体成型或为独立部件，烟雾通道一般采用塑胶或金属材质制成。由于塑胶或金属的表面传热系数高，当较高温度的杯雾化后的烟雾流经较低温度的由塑胶或金属材质制成的烟雾通道时，根据热传递的对流换热的原理，烟雾在流出烟雾通道外部之前在其内壁上快速冷却凝结成烟液，烟液会顺着气流方向吸入吸烟者的口腔，造成吸烟者抽烟时吸到烟液和烟雾量偏少的问题。另外，由于吸杆作为一个整体不可分割，当烟液用完需要更换新的烟液杯和雾化机构时，必须更换整个吸杆，导致吸杆的制造和使用成本均较高。因此，有必要使吸杆分体制作，且又能方便吸杆的雾化机构和连接机构之间的安装、拆卸和更换。

实用新型内容

[0003] 本实用新型的目的在于提供一种防烟雾冷凝的电子烟，以增大进入吸烟者口中的烟雾量，且能避免烟液被吸入吸烟者口中，或大大减少被吸入吸烟者口中的烟液量。

[0004] 为达到上述目的，本实用新型提供一种防烟雾冷凝的电子烟，包括可拆装地连接的吸杆和电源杆，所述吸杆内设有用于将存储于吸杆内的烟液雾化转变为烟雾的雾化器及供所述烟雾流通至吸杆外部的烟雾通道，其中，所述吸杆内设有用于防止烟雾在流通中冷却凝结在烟雾通道内壁上的防烟液冷凝机构。

[0005] 其中，所述防烟液冷凝机构为穿设于烟雾通道内部的隔热部件。

[0006] 其中，所述隔热部件为由表面传热系数低的材质制成的管状部件。

[0007] 其中，所述隔热部件的外侧壁与所述烟雾通道的内壁之间密封连接。

[0008] 其中，所述防烟液冷凝机构为所述烟雾通道，其为由隔热材质制成的呈管状的独立部件。

[0009] 其中，所述吸杆还包括用于连接所述雾化器和电源杆且将电源杆内的电源传输给雾化器的连接器，该连接器的一端与雾化器磁性连接，连接器的另一端与所述电源杆可拆装地连接。

[0010] 所述雾化器的与连接器对接的连接端设有第一连接机构，所述第一连接机构包括分别作为第一连接机构第一电极的第一座体和借助于第一绝缘套安装于第一座体上且作为第一连接机构第二电极的第一极柱；所述连接器的与雾化器对接的连接端设有第二连接机构，所述第二连接机构包括作为第二连接机构第一电极的第二座体和借助于第二绝缘套

NJOY Exhibit 1002.760

安装于第二座体上且作为第二连接机构第二电极的第二极柱，所述第一座体和第二座体均是整体或局部形成有可相互磁性吸附的第一磁吸部和第二磁吸部；所述第一磁吸部与第二磁吸部相互磁性吸附使第一座体和第二座体相抵接且第一极柱和第二极柱相抵接。

[0011] 其中，所述第一座体呈筒状，第一极柱借助于第一绝缘套插置于第一座体中部；所述第二座体呈筒状，所述第二极柱借助于第二绝缘套插置于第二座体中部；所述第二极柱穿设于第二绝缘套中，第二绝缘套固定于第二座体内，第二绝缘套上与所述第二极柱相反的一端设有用于与所述电源杆内的电极相电连接的电源杆上极柱，电源杆上极柱利用一限位套而夹持于第二绝缘套内，第二绝缘套的内部还设有一弹簧，所述弹簧的两端分别抵接于第二极柱和电源杆上极柱而将第二极柱和电源杆上极柱均保持于伸出第二绝缘套的状态；对应地，所述电源杆上与连接器相连接的一端设有一电源杆下极柱与所述电源杆上极柱相抵接。

[0012] 其中，所述第二绝缘套为一端设有顶壁而另一端开口的圆筒体，其包括侧壁、顶壁及由顶壁沿轴向向外延伸的凸缘，所述侧壁和顶壁合围形成用于容置所述弹簧的内腔，所述顶壁上还设有供所述第二极柱伸出的极柱孔；所述第二座体呈中空的圆筒体结构，其一端插入所述连接器的内部并固定于连接器内，另一端设有用于与所述电源杆相连接的外螺纹接头，对应地，所述电源杆上设有与其相配合的内螺纹接头，所述电源杆下极柱设于所述内螺纹接头内，所述电源杆下极柱利用一下极柱绝缘套固定于所述内螺纹接头内；电源杆内部设有电源，所述内螺纹接头和电源杆下极柱分别与电源的第一电极和第二电极电连接；所述第二绝缘套插入所述第二座体内并利用其侧壁涨紧于第二座体内，同时，其穿过一中部设有轴向贯通孔的永磁体并利用其凸缘将该永磁体固定于该第二座体上。

[0013] 其中，所述连接器具有一用于固定所述第二连接机构的连接器套管，该连接器套管为沿轴向贯通的圆筒体，该连接器套管的一端设有所述第二连接机构，另一端供所述第一连接机构插入其内而与所述第二连接机构相磁性连接。

[0014] 采用上述技术方案后，本实用新型具有如下有益效果：首先，在吸杆内部设有防止烟液冷凝的防烟液冷凝机构，增大了进入吸烟者口中的烟雾量，且能避免烟液滴被吸入吸烟者口中，或大大减少被吸入吸烟者口中的烟液量。其次，雾化器和连接器分体制作，雾化器内的烟液使用完毕后，只需更换雾化器而连机器可以保留不必更换，节约了制造和使用成本。再次，雾化器内的第一连接机构插入所述连接器内并与其内的第二连接机构磁性连接，雾化器与连接器的组装和拆卸非常方便。再次，第二连接机构设置了可始终露出第二绝缘套外部的第二极柱和电源杆上极柱分别与雾化器和电源杆上相应的第一电极和电源杆下极柱抵接，使得连接器与所述雾化器和电源杆的电路连接可靠。再次，所述烟液杯的底部设有导液组件，利用其隔夜组件和储液部件相结合，其导液效果良好。最后，电子烟内部形成独特的空气通道，电子烟和外部的空气流通顺畅。

[0015] 下面结合附图对本实用新型实施例作进一步的详细描述。

附图说明

[0016] 图 1 是本实用新型实施例电子烟的主视图。

[0017] 图 2 是本实用新型实施例电子烟的爆炸图。

[0018] 图 3 是本实用新型实施例电子烟的剖视图。

NJOY Exhibit 1002.761

[0019] 图 4 是本实用新型实施例电子烟的雾化器的爆炸图。

[0020] 图 5 是本实用新型实施例电子烟的雾化器的剖视图。

[0021] 图 6 是本实用新型实施例电子烟的连接器的爆炸图。

[0022] 图 7 是本实用新型实施例电子烟的连接器的剖视图。

[0023] 图 8 是本实用新型实施例电子烟的电源杆的剖视图。

具体实施方式

[0024] 需要说明的是，在不冲突的情况下，本申请中的实施例及实施例中的特征可以相互结合，下面结合附图和具体实施例对本实用新型作进一步详细说明。

[0025] 如图 1 至 8 所示，本实用新型实施例提供一种防烟雾冷凝的电子烟，该电子烟包括吸杆 90 和电源杆 95，吸杆 90 由可插接组装在一起的雾化器 91 和连接器 92 组成，所述连接器 92 位于雾化器 91 和电源杆 95 之间，用于连接雾化器 91 和电源杆 95，并将电源杆 95 内的电源传输给雾化器 91，该连接器 92 的一端与雾化器 91 磁性连接，连接器 92 的另一端与所述电源杆 95 可拆卸地连接。所述雾化器 91 的与连接器 92 对接的连接端设有第一连接机构 5，对应地，所述连接器 92 的与雾化器 91 对接的连接端设有第二连接机构 6，所述雾化器 91 和连接器 92 之间通过磁力吸附而相互连接成一体，雾化器 91 和连接器 92 以一方插入另一方的插接方式吸附连接，本实施例中以图 1 所示的方向为准。

[0026] 如图 4 至 5 所示，所述雾化器 91 包括呈中通的筒体结构的吸筒 1、雾化装置 2、烟液杯 3、带有通气孔(图中未标号)的吸嘴盖 4 及用于与连接器 92 相连接的第一连接机构 5。所述吸嘴盖 4 和第一连接机构 5 分别安装于吸筒 1 的两端，雾化装置 2 和烟液杯 3 位于吸筒 1 内。吸筒 1 包括露出所述连接器 92 外部的外露段 11 和用于插入所述连接器 92 内的插入段 12，外露段 11 与插入段 12 之间设有一限位台阶 13，第一连接机构 5 设于连接器 92 的插入段 12 的一端端头。吸筒 1 内部设有沿轴向贯通的通气孔。

[0027] 所述第一连接机构 5 包括作为第一连接机构第一电极的第一座体 51、作为第一连接机构第二电极的第一极柱 52 及第一绝缘套 53，所述第一极柱 52 中部设有轴向贯通的通气孔。第一极柱 52 套设固定于所述第一绝缘套 53 内，第一极柱 52 借助于第一绝缘套 53 插置于第一座体 51 的中部，第一极柱 52 和所述第一绝缘套 53 组成第一极柱组件。本实施中，所述第一座体 51 和所述第一极柱 52 分别作为第一连接机构 5 的第一电极(如负电极)和第二电极(如正电极)。所述第一座体 51 采用可被磁铁吸附的磁性材质例如铁质材料制成，其插入吸筒 1 内与所述雾化装置 2 相抵接。第一座体 51 的形状与所述吸筒 1 的内壁相适配，其呈筒体结构，其利用外壁涨紧固定于所述雾化器 91 连接端的内壁上；所述第一座体 51 的端部侧壁上沿径向向外延伸形成用于与所述吸筒 1 的端部相适配的定位凸缘；第一座体 51 的内壁上形成一卡环用于安装所述第一极柱 52，第一极柱 52 利用所述第一绝缘套 53 固定于该卡环内，第一极柱 52 的中部设有轴向贯通的通气孔。

[0028] 所述雾化装置 2 包括雾化机构 21、雾化机构控制线路板 22 及用于容置和固定该雾化机构控制线路板 22 的线路板固定座 23，本实施例中，雾化机构 21 设于吸筒 1 内，而雾化机构控制线路板 22 和线路板固定座 23 设于所述电源杆 95 内，雾化机构控制线路板 22 上设有微型气动开关以控制电路导通而使雾化机构 21 启动工作。

[0029] 所述雾化机构 21 用于将烟液雾化转变成烟雾，其包括电热丝 211、用于吸收烟液

NJOY Exhibit 1002.762

和支撑该电热丝 211 的导液件 212 及用于支撑所述导液件 212 的雾化座 213，所述电热丝 211 缠绕于所述导液件 212 上，导液件 212 能吸收和储存烟液，可由玻璃纤维或具有吸液和隔液性能的材质如棉质材料制成。本实例中，该导液件 212 容置固定于所述雾化座 213 内，电热丝 211 的两端穿出雾化座 213 再与所述连接器 92 内的正电极和负电极电连接。所述雾化座 213 大致呈圆筒形，其内部设有用于卡装所述导液件 212 的卡槽，其中部设有轴向贯通的通气孔，该通气孔的两侧还设有沿轴向贯通的用于供所述电热丝穿过的穿线孔，雾化座 213 利用侧壁涨紧固定于所述吸筒 1 的内壁上，雾化座 213 的设有卡槽的另一端与所述第一座体 51 相抵接而被所述第一座体 51 固定于吸筒 1 内，且使得所述导液件 212 与所述烟液杯 3 相抵接以便于导液件 212 吸收从烟液杯 3 内被引导流出来的烟液。

[0030] 所述烟液杯 3 包括用于存储烟液的杯筒 31 及用于将杯筒 31 内的烟液引导给所述雾化机构 21 以便将烟液雾化的导液组件。所述杯筒 31 为一端开口而另一端封闭的杯体，其横截面呈圆环形，其与所述吸筒 1 形成一体。所述导液组件包括设于杯筒 31 底部的隔液部件 32 及贴合于隔液部件 32 底部的储液部件 33。所述隔液部件 32 上设有若干个导液孔，烟液的流量大小由所述导液孔的尺寸和数量控制。隔液部件 31 紧贴于杯筒 31 的开口端以密封烟液。储液部件 33 亦能像海绵一样能吸水和蓄水，其采用耐高温的且具有吸液和隔液性能的材质制成，储液部件 33 利用其侧壁涨紧固定于所述吸筒 1 的内壁上，其一端紧贴于所述隔液部件 32 上以将所述隔液部件 32 固定于杯筒 31 的底部，储液部件 33 的另一端与所述导液件 212 相抵接。烟液自杯筒 31 内经隔液板 31 渗透并吸收和储存于储液部件 32 内并进一步被所述导液件 212 吸收以供所述电热丝 211 将烟液雾化。

[0031] 所述杯筒 31 的中部设有呈筒状的烟雾通道 35 供烟雾流通，本实施例的烟雾通道 35 与杯筒 31 一体成型，杯筒 31 由金属或塑胶材质制成，烟雾通道 35 的中部为沿轴向延伸的通孔，由于烟雾通道 35 为与杯筒 31 相同的金属或塑胶材质制成，为防止烟雾在流出烟雾通道 35 外部之前在其内壁上快速冷却凝结成烟液，在杯筒 31 内设有用于防止烟液冷凝的防烟液冷凝机构，该防烟液冷凝机构可采用以下两种方式：

[0032] 第一实施方式是：在烟雾通道 35 内增加一个由表面传热系数低的材料制成的隔热部件 36。该隔热部件 36 穿设于烟雾通道 35 内，其为轴向设有中通孔的管状部件，烟雾从该隔热部件 36 的中通孔流出烟雾通道 35 外部。为使防冷凝的效果更佳，所述隔热部件 36 的外侧壁与所述烟雾通道 35 的内壁之间密封连接，所述隔热部件 36 的长度不大于烟雾通道 35 的长度。在本实施例中，所述隔热部件 36 的外侧壁与所述烟雾通道 35 的内壁之间以过盈配合实现二者密封连接。所述表面传热系数低的材料为以下具有隔热效果的材料中的任一种：玻璃纤维管、化纤管、木浆纤维管、硬质纸质管或木质管。

[0033] 第二实施方式是：采用由第一实施方式所述的表面传热系数低的材料制成的烟雾通道，此时，该烟雾通道为独立于杯筒 31 的单个部件，其为沿轴向设有中通孔的管状部件，烟雾从该烟雾通道的中通孔流出烟雾通道外部。

[0034] 采用所述的第一实施方式或第二实施方式的防烟液冷凝机构的好处是，由于表面传热系数低的材料其吸热速度慢，烟雾在烟雾通道 35 内不会被迅速冷却凝结成烟液，或者烟雾在冷凝成烟液之前就已经被吸入吸烟者口中，也就能避免烟液被吸入吸烟者口中，或大大减少被吸入吸烟者口中的烟液量；其次，由于烟雾不凝结，所有的烟雾都有效的吸入吸烟者的口中，其烟雾量较大，口感更好，效果更逼真。

NJOY Exhibit 1002.763

[0035] 如图 6 及图 7 所示，所述连接器 92 整体呈筒状，其包括连接器套筒 921，连接器套筒 921 上与所述雾化器 91 相连接的一端设有与所述第一连接机构 5 相连接的第二连接机构 6。所述第二连接机构 6 包括作为第二连接机构第一电极的第二座体 61、设于第二座体 61 内的第二极柱组件 62 及永磁体 922。第二极柱组件 62 插入第二座体 61 内且同时将永磁体 922 固定于第二座体 61 内。

[0036] 所述第二座体 61 呈中空的圆筒体结构，其一端插入所述连接器套筒 921 的内部并固定于连接器套筒 921 内，另一端设有用于与所述电源杆 95 相连接的外螺纹接头。所述第二级柱组件 62 包括第二绝缘套 621、设于第二绝缘套 621 两端且始终伸出第二绝缘套 621 外部的第二极柱 622 和电源杆上极柱 623、设于第二绝缘套 621 内部且其两端分别抵接于所述第二极柱 622 和电源杆上极柱 623 上以使得二者始终伸出第二绝缘套 621 外的弹簧 624、所述电源杆上极柱 623 利用一限位套 625 而设于所述第二绝缘套 621 的一端。所述第二极柱 622 和电源杆上极柱 623 的中部均设有轴向贯通的通气孔，其作为第二连接机构第二电极。由所述第二绝缘套 621、第二极柱 622、电源杆上极柱 623、所述弹簧 624 及所述限位套 625 组成第二极柱组件 62，以保证连接器 92 分别与所述雾化器 91 和电源杆 95 的线路连接可靠。

[0037] 所述第二绝缘套 621 大致呈杯体形状，其采用绝缘材质制成，包括侧壁、顶壁及由侧壁和底壁合围形成的用于容置所述弹簧 624 的内腔，第二绝缘套 621 上与其顶壁相对的一端为开口端，所述顶壁上还设有供所述第二极柱 622 伸出的第二极柱孔（图中未标号）。所述顶壁上沿径向向外延伸出一凸缘（图中未标号），第二绝缘套 621 穿过所述永磁体并插入所述第二座体 61 内并利用其外壁与第二座体涨紧固定，同时利用所述凸缘将所述永磁体 922 固定于所述第二座体 61 上。

[0038] 所述限位套 625 大致呈圆筒体形状，其中部设有轴向贯通孔（图中未标号），其端部侧壁上沿径向相外延伸有一限位凸缘，限位套 625 插入所述第二绝缘套 621 内并利用其侧壁涨紧于第二绝缘套 621 的内腔侧壁上，并利用所述限位凸缘限位。所述贯通孔供所述电源杆上极柱 623 伸出限位套 625 外部即伸出第二绝缘套 621 外部。

[0039] 所述永磁体 922 为圆环体结构，该永磁体 922 内设有中通孔（图中未标号）供所述第二绝缘套 621 穿过，永磁体 922 固定于所述第二连接机构 6 内。

[0040] 所述第一座体 51 整体或局部形成第一磁吸部，在本实施例中，第一座体 51 整体作为第一磁吸部。所述第二座体 61 整体或局部形成可与第一磁吸部对应磁性吸附的第二磁吸部。为便于连接器上的第二座体 61 与所述雾化器上的第一座体 51 对接时更好地定位和固定，第一座体 51 可采用可导电的磁铁或磁性材料制成，所述磁性材料可采用铁质材料，从而由第一座体 51 构成一第一磁吸部，也可以是在第一座体 51 上设置由可导电的磁铁或磁性材料制成的独立结构件来构成所述第一磁吸部；或者所述第一磁吸部的一部分由可导电材料制成。而相应地，第二座体 61 也可以采用可导电的磁铁或磁性材料制成，从而由第二连座体 61 整体构成可与第一座体 51 上的第一磁吸部对应磁性吸附的第二磁吸部，也可以是在第二座体 61 内设置由可导电的磁铁或磁性材料制成的独立的结构件来构成所述第二磁吸部，或者所述第二磁吸部的一部分由可导电材料制成。在本实施例中，即采用了独立设计的磁铁或磁性材料制成的永磁体 922 来作为第二磁吸部。因此，第一磁吸部与第二磁吸部的匹配关系可以是磁铁与磁铁、磁铁与磁性材料或磁性材料与磁铁。

NJOY Exhibit 1002.764

[0041] 如图 3 所示，当雾化器 91 的第一连接机构 5 插入连接器 92 的连接器套管 921 中并插入到位后，此时，第一座体 51 的一端与所述第二连接机构 6 的永磁体 922 相抵接或接近，由于永磁体 922 的磁吸力，第一座体 51 被永磁体 922 牢固吸住而不能轻易脱离连接器 91，第二连接机构 6 的第二极柱 622 受第一连接机构 5 的第一极柱 52 的端面的抵顶而克服弹簧 624 的弹力稍微回缩并在弹簧 624 的作用下紧抵于第一极柱 52 上，确保第一极柱 52 和第二极柱 622 接触良好；并且，第一座体 51 的侧壁与连接器套管 921 的内壁是周圈相接触实现导电的，由此即实现雾化器 91 的电路与连接器 92 内部电路的对应连通。

[0042] 如图 8 所示，所述电源杆 95 大致呈筒状，其与所述连接器 92 相连接的一端设有与所述外螺纹接头相配合的内螺纹接头 951，在该内螺纹接头 951 内部设有一与所述电源杆上极柱 623 相抵接以导通电路的电源杆下极柱 952，所述电源杆下极柱 952 利用一绝缘套 953 固定于所述内螺纹接头 951 内；电源杆下极柱 952 中部设有轴向贯通的通气孔。所述内螺纹接头 951 和电源杆下极柱 952 分别作为电源杆 95 的第一电极和第二电极。电源杆 95 内部设有蓄电池 955 等部件。蓄电池 955 的第一电极和第二电极分别与内螺纹接头 951 和电源杆下极柱 952 电连接。所述电源杆 95 的另一端还设有封盖 956，封盖 956 上设有指示灯和进气孔(图中未标示)。

[0043] 此外，如图 3 所示，外部空气从所述电源杆底部的封盖 956 上的进气孔进入电源杆 95 内，分别经电源杆下极柱 952 和电源杆上极柱 623 的通气孔进入第二绝缘套 621 内，接着继续分别经第二极柱 622 和第一极柱 52 的通气孔进入雾化器 91 内，再经雾化座 213 内的通气孔和吸筒 1 内的通气孔，最终由吸嘴盖 4 上的通气孔流出吸杆 90 外，使得电子烟内部形成独特的空气通道，电子烟和外部的空气流通顺畅。当然，外部空气也可以直接从吸嘴盖 4 上的通气孔进入雾化器 91 内。

[0044] 尽管已经示出和描述了本实用新型的实施例，需要说明的是，在不冲突的情况下，本申请中的实施例及实施例中的特征可以相互结合，对于本领域的普通技术人员而言，可以理解在不脱离本实用新型的原理和精神的情况下可以对这些实施例进行多种变化、修改、替换和变型，本实用新型的范围由所附权利要求及其等同范围限定。

NJOY Exhibit 1002.765

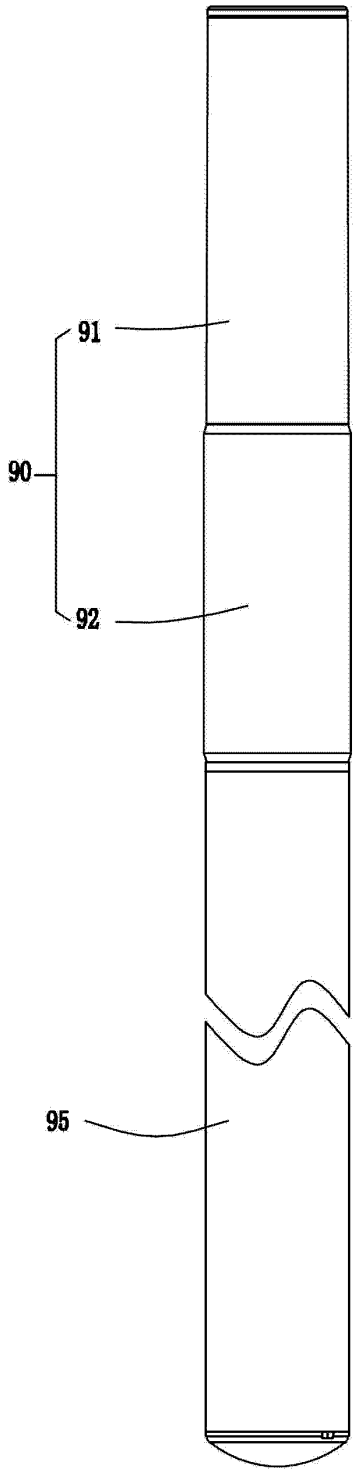


图 1

NJOY Exhibit 1002.766

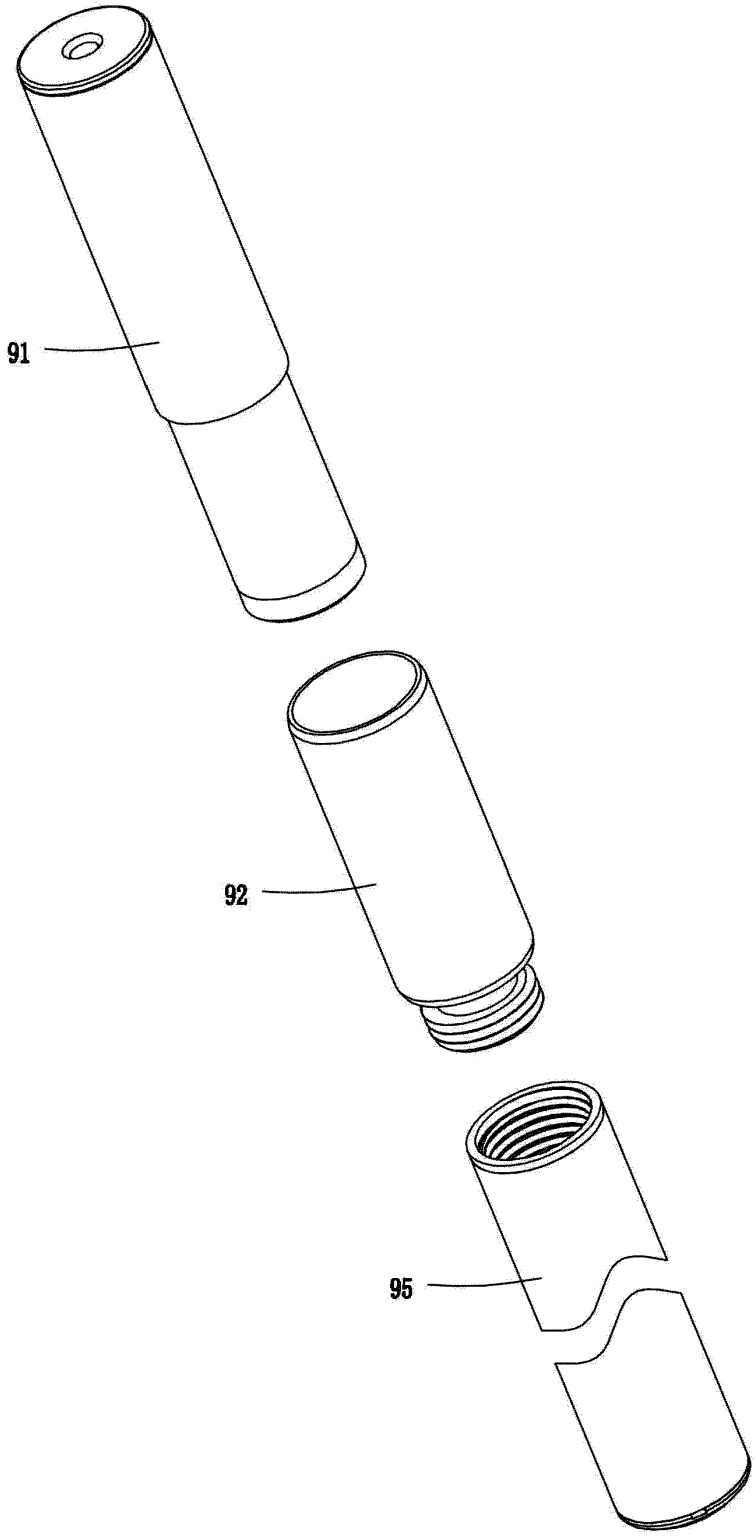


图 2

NJOY Exhibit 1002.767

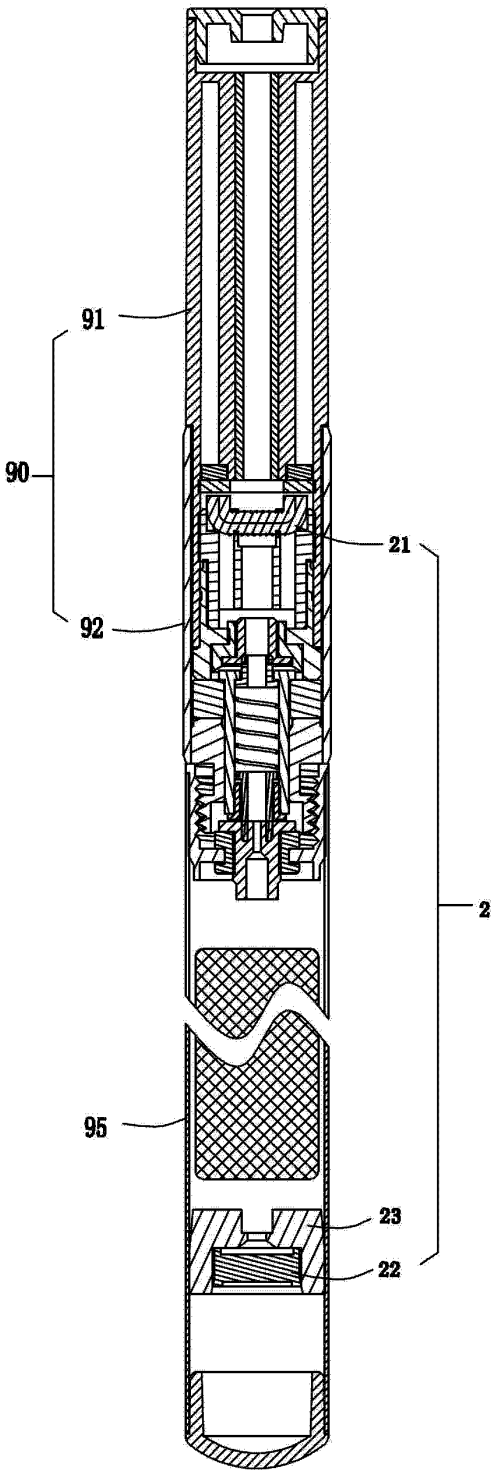


图 3

NJOY Exhibit 1002.768

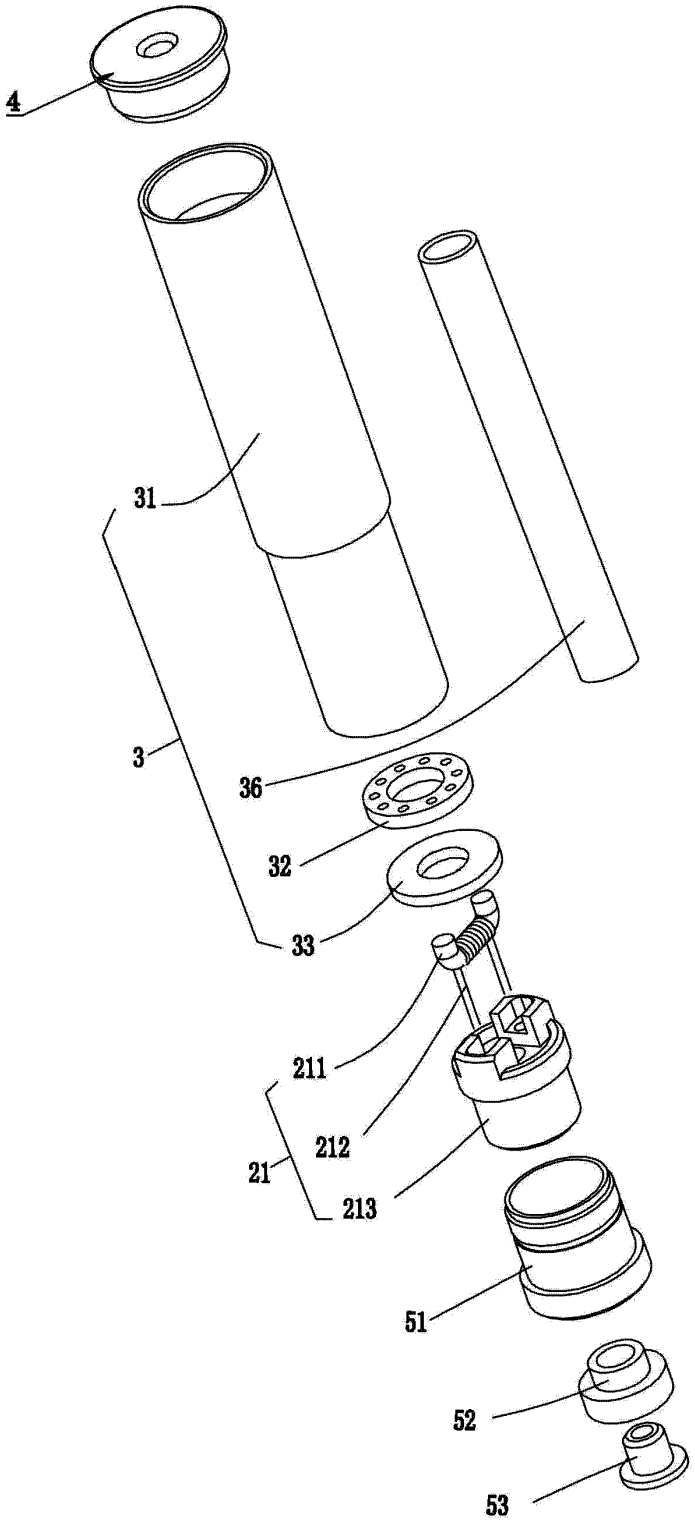


图 4

NJOY Exhibit 1002.769

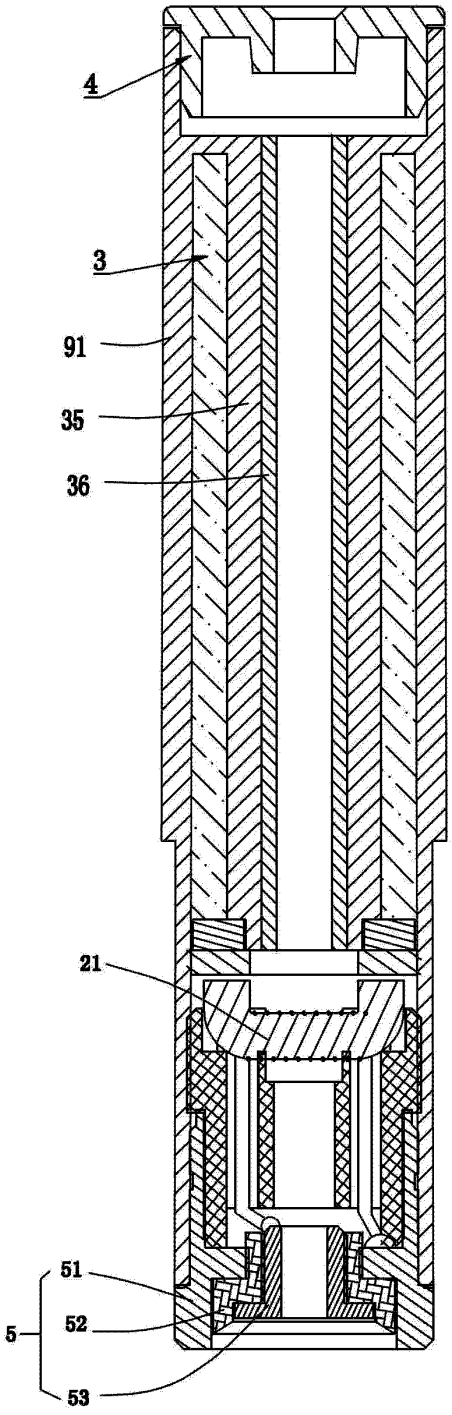


图 5

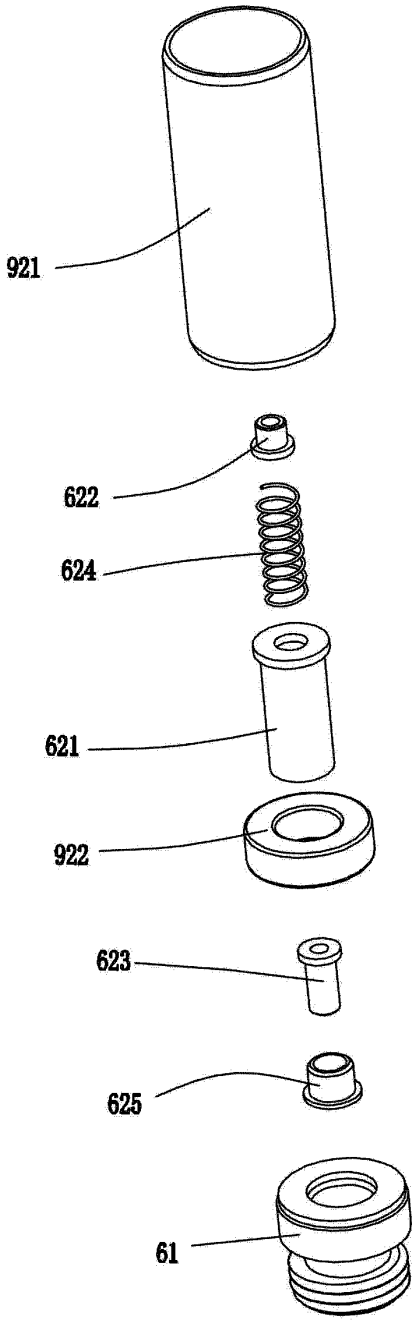


图 6

NJOY Exhibit 1002.770

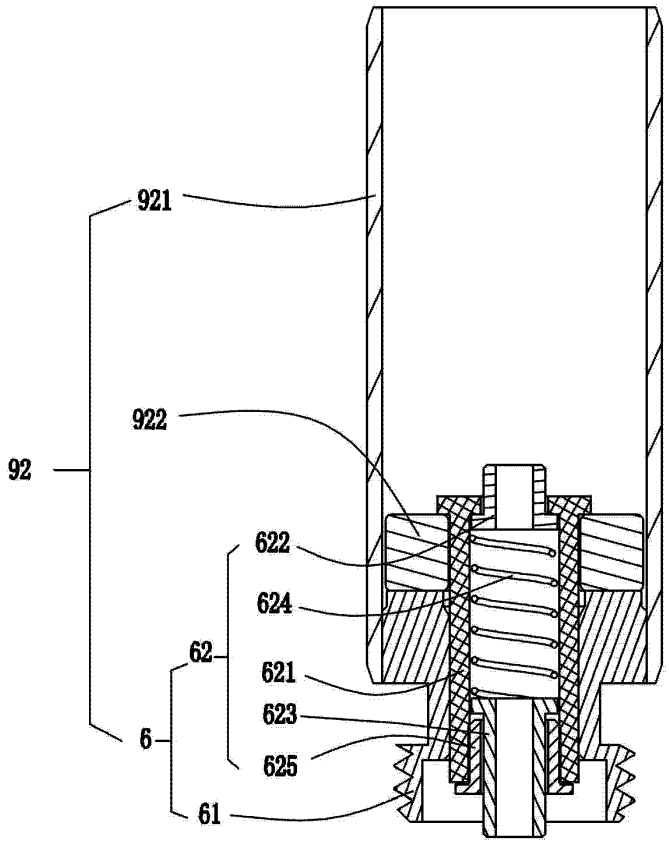


图 7

NJOY Exhibit 1002.771

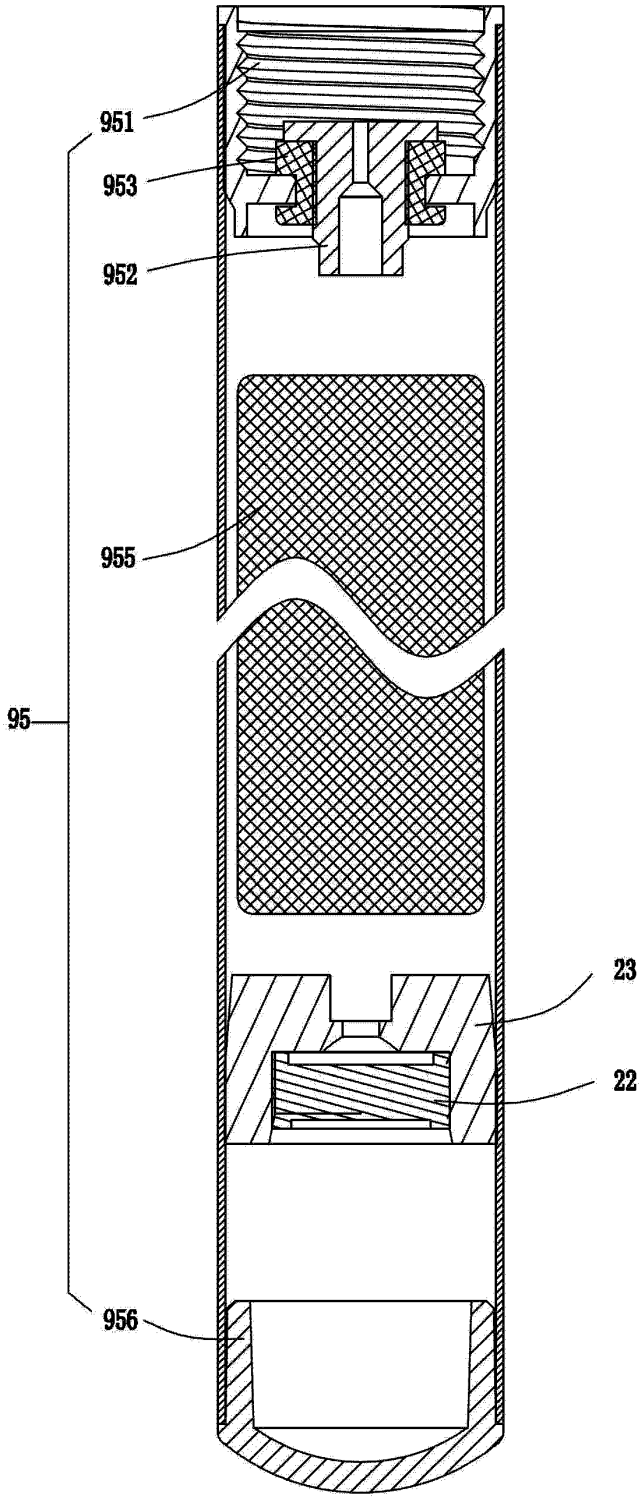


图 8

NJOY Exhibit 1002.772

Espacenet

Bibliographic data: CN203182012 (U) — 2013-09-11

Magnetic type electronic cigarette

Inventor(s): CHEN SHIKAI ± (CHEN SHIKAI)

Applicant(s): ALD GROUP LTD ± (ALD GROUP LIMITED)

Classification: **- international:** ***A24F47/00***
- cooperative:

Application number: CN2013239489U 20130125

Priority number(s): CN2013239489U 20130125

Abstract of CN203182012 (U)

A magnetic type electronic cigarette overcomes the defects that a battery pole and an atomizer of an electronic cigarette in the prior art are connected through threads and the connecting process is complex. The magnetic type electronic cigarette comprises a battery pole and an atomizer, and one end of the battery pole is provided with components which are connected with the atomizer. The components connected with the atomizer comprise an electrode copper core, a fixing frame, an annular magnet, a T-shaped insulation sleeve, a spring and an annular copper piece. One end of the electrode copper core is inserted into the annular magnet, the T-shaped insulation sleeve is arranged between the electrode copper core and the annular magnet, the other end of the electrode copper core is inserted in an electrode copper core inserting hole of the fixing frame, and the spring is arranged between the electrode copper core and the fixing frame. One end of the spring is contacted with a boss of the electrode copper core, and the other end of the spring is contacted with a limiting protrusion of the fixing frame. The outer wall of the annular magnet is fixedly connected with the inner wall of the annular copper piece, and the outer wall of the fixing frame is fixedly connected with the inner wall of the annular copper piece. The magnetic type electronic cigarette is simple, convenient and accurate to connect, and is suitable for the environment where the electronic cigarette is used.

NJOY Exhibit 1002.773

(19)中华人民共和国国家知识产权局

(12)实用新型专利

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(51)Int.Cl.
A24F 47/00(2006.01)

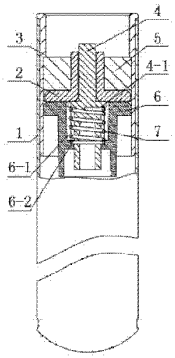
权利要求书1页 说明书2页 附图2页

(54)实用新型名称

一种磁吸式电子烟

(57)摘要

一种磁吸式电子烟，旨在克服现有技术中的电子烟的电池杆和雾化器采用螺纹连接过程繁琐的缺点，提供一种磁吸式电子烟，该电子烟包括电池杆和雾化器，电池杆一端设有连接雾化器的组件，所述的连接雾化器的组件包括：电极铜芯、固定架、环形磁铁、T形绝缘套、弹簧和环形铜件，电极铜芯一端插入环形磁铁内，电极铜芯和环形磁铁之间设有T形绝缘套，电极铜芯另一端插入固定架的电极铜芯插入孔内，电极铜芯和固定架之间设有弹簧，弹簧一端和电极铜芯的凸台接触，弹簧另一端和固定架的限位凸起接触，环形磁铁外壁和环形铜件的内壁固定连接，固定架外壁和环形铜件的内壁固定连接。本实用新型连接更加简便、准确，适用于使用电子烟的环境。



CN 203182012 U

NJOY Exhibit 1002.774

1. 一种磁吸式电子烟，该电子烟包括电池杆和雾化器，电池杆一端设有连接雾化器的组件，其特征在于，所述的连接雾化器的组件包括：电极铜芯（4）、固定架（6）、环形磁铁（5）、T 形绝缘套（2）、弹簧（7）和环形铜件（3），电极铜芯（4）外缘设有凸台（4-1），固定架（6）中间设有铜芯插入孔（6-1），铜芯插入孔（6-1）内侧设有限位凸起（6-2），电极铜芯（4）一端插入环形磁铁（5）内，电极铜芯（4）和环形磁铁（5）之间设有 T 形绝缘套（2），电极铜芯（4）另一端插入固定架（6）的铜芯插入孔（6-1）内，电极铜芯（4）和固定架（6）之间设有弹簧（7），弹簧（7）一端和电极铜芯（4）的凸台（4-1）接触，弹簧（7）另一端和固定架（6）的限位凸起（6-2）接触，环形磁铁（5）外壁和环形铜件（3）的内壁固定连接，固定架（6）外壁和环形铜件（3）的内壁固定连接，环形铜件（3）的外壁和电池杆的壳体（1）内壁固定连接。

2. 根据权利要求 1 所述的一种磁吸式电子烟，其特征在于，所述的环形磁铁（5）外壁和环形铜件（3）的内壁压接。

3. 根据权利要求 1 所述的一种磁吸式电子烟，其特征在于，所述的固定架（6）上设有卡钩，环形铜件（3）上设有相对应的插槽，固定架（6）的卡钩插入环形铜件（3）的插槽内和环形铜件（3）固定连接。

4. 根据权利要求 1 所述的一种磁吸式电子烟，其特征在于，所述的固定架（6）为塑胶固定架。

5. 根据权利要求 4 所述的一种磁吸式电子烟，其特征在于，所述的固定架（6）和 T 形绝缘套（2）上设有开孔。

6. 根据权利要求 1 所述的一种磁吸式电子烟，其特征在于，所述的环形铜件（3）的外壁和电池杆的壳体（1）内壁压接。

7. 根据权利要求 1 所述的一种磁吸式电子烟，其特征在于，所述的雾化器的连接头（11）为铁质材料。

8. 根据权利要求 1 所述的一种磁吸式电子烟，其特征在于，还包括充电器，所述的充电器的连接头（15）为铁质材料。

NJOY Exhibit 1002.775

一种磁吸式电子烟

技术领域

[0001] 本实用新型涉及一种电子烟，尤其涉及一种连接方式为磁吸式的电子烟。

背景技术

[0002] 电子烟又名虚拟香烟，主要用于戒烟和替代香烟。电子烟的基本结构一般由三部分组成：电池杆、雾化器和烟弹，雾化器一端和电池杆连接、另一端和烟弹连接，电池杆中的电池为雾化器工作提供电源，雾化器将烟弹内的烟油雾化产生烟雾。由于现有的电池杆和雾化器的接口均为螺纹接口，使用时需要将电池杆和雾化器的螺纹接口旋转对接，不仅对接过程繁琐，如果旋转不到位，电池杆和雾化器之间不能形成良好的接触，还会影响使用。

实用新型内容

[0003] 本实用新型克服了现有技术中的电子烟的电池杆和雾化器采用螺纹连接过程繁琐的缺点，提供了一种磁吸式电子烟。

[0004] 本实用新型实现发明目的采用的技术方案是：一种磁吸式电子烟，该电子烟包括电池杆和雾化器，电池杆一端设有连接雾化器的组件，所述的连接雾化器的组件包括：电极铜芯、固定架、环形磁铁、T 形绝缘套、弹簧和环形铜件，电极铜芯外缘设有凸台，固定架中间设有电极铜芯插入孔，电极铜芯插入孔内侧设有限位凸起，电极铜芯一端插入环形磁铁内，电极铜芯和环形磁铁之间设有 T 形绝缘套，电极铜芯另一端插入固定架的电极铜芯插入孔内，电极铜芯和固定架之间设有弹簧，弹簧一端和电极铜芯的凸台接触，弹簧另一端和固定架的限位凸起接触，环形磁铁外壁和环形铜件的内壁固定连接，固定架外壁和环形铜件的内壁固定连接，环形铜件的外壁和电池杆的壳体内壁固定连接。

[0005] 所述的雾化器的连接头为铁质材料。还包括充电器，所述的充电器的连接头为铁质材料。

[0006] 本实用新型的有益效果是：利用磁铁对铁质材料具有吸附力这一特性，将环形磁铁设置在电池杆的连接雾化器的组件中，雾化器或充电器靠近电池杆时，电池杆内的环形磁铁对铁质材料的雾化器或充电器的连接头产生吸附力，可顺利的将雾化器或充电器的连接头吸入电池杆的内槽，整个对接过程简便、准确。

[0007] 下面结合附图与具体实施方式对本实用新型作进一步的描述。

附图说明

[0008] 图 1 为本实用新型的电池杆的结构示意图。

[0009] 图 2 为本实用新型的雾化器的结构示意图。

[0010] 图 3 为本实用新型的充电器的结构示意图。

[0011] 附图中，1 为电池杆的壳体、2 为 T 形绝缘套、3 为环形铜件、4 为电极铜芯、4-1 为凸台、5 为环形磁铁、6 为固定架、6-1 为铜芯插入孔、6-2 为限位凸起、7 为弹簧、8 为雾化器电极、9 为绝缘环、10 为雾化器壳体、11 为雾化器连接头、12 为充电器壳体、13 为绝缘环、14 为

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充电器铜芯、15 为充电器连接头。

具体实施方式

[0012] 如附图 1 所示，本实施例的一种磁吸式电子烟，该电子烟包括电池杆和雾化器，电池杆一端设有连接雾化器的组件。所述的连接雾化器的组件包括：电极铜芯 4、固定架 6、环形磁铁 5、T 形绝缘套 2、弹簧 7 和环形铜件 3。电极铜芯 4 外缘设有凸台 4-1，固定架 6 中间设有铜芯插入孔 6-1，铜芯插入孔 6-1 内侧设有限位凸起 6-2，限位凸起 6-2 的中间留有电极铜芯 4 穿过的通孔。电极铜芯 4 一端插入环形磁铁 5 内，电极铜芯 4 和环形磁铁 5 之间设有 T 形绝缘套 2，T 形绝缘套 2 包裹在电极铜芯 4 外，T 形绝缘套 2 底部和凸台 4-1 接触，可有效的防止电极铜芯 4 和环形磁铁 5 接触。电极铜芯 4 另一端插入固定架 6 的铜芯插入孔 6-1 内并穿过限位凸起 6-2，电极铜芯 4 和固定架 6 之间设有弹簧 7，弹簧 7 套在电极铜芯 4 外，弹簧 7 一端和电极铜芯 4 的凸台 4-1 接触，弹簧 7 另一端和固定架 6 的限位凸起 6-2 接触，弹簧 7 可有效的支撑电极铜芯 4。环形铜件 3 具有一定的长度，环形磁铁 5 外壁和环形铜件 3 的内壁固定连接，固定架 6 外壁和环形铜件 3 的内壁固定连接，环形铜件 3 的外壁和电池杆的壳体 1 内壁固定连接。

[0013] 实际安装时，先将环形磁铁 5 外壁和环形铜件 3 的内壁压接，将环形磁铁 5 固定在环形铜件 3 上，接着在环形磁铁 5 的中空部分先后插入 T 形绝缘套 2 和电极铜芯 4，然后将弹簧 7 套在电极铜芯 4 另一端外，最后从下方将固定架 6 固定在环形铜件 3 上，将弹簧 7 限制在电极铜芯 4 和固定架 6 之间。本实施例优选的固定架 6 上设有卡钩，环形铜件 3 上设有相对应的插槽，固定架 6 的卡钩插入环形铜件 3 的插槽内和环形铜件 3 固定连接。待电极铜芯 4、固定架 6、环形磁铁 5、T 形绝缘套 2、弹簧 7 和环形铜件 3 固定安装后，将环形铜件 3 的外壁和电池杆的壳体 1 内壁压接，电池杆的连接雾化器的组件安装完成。本实施例优选的固定架 6 为塑胶固定架，固定架 6 和 T 形绝缘套 2 上设有开孔，可有效的保证电池杆内的空气流通，和传统的在电极铜芯 4 上开孔的方案相比，工艺更加简单。

[0014] 为了配合本实施例的电池杆，如附图 2 所示，相对应的雾化器的连接头 11 为铁质材料，雾化器的连接头 11 固定在雾化器壳体 10 上，雾化器的连接头 11 和雾化器电极 8 之间设有绝缘环 9。实际使用时，当雾化器靠近电池杆尾部时，电池杆的环形磁铁 5 对雾化器的连接头 11 产生吸附力，可顺利的将雾化器的连接头 11 吸入电池杆的内槽，当雾化器的连接头 11 被拉入到空槽时，电极铜芯 4 受到雾化器的连接头 11 压力，迫使弹簧 7 压缩，电极铜芯 4 高度下降，电极铜芯 4 与雾化器电极 8、环形铜件 3 和雾化器的连接头 11 均能平衡接触，从而保证了正、负电极对接，实现电子烟的正常工作。

[0015] 为了配合本实施例的电池杆，如附图 3 所示，还包括充电器，所述的充电器的连接头 15 为铁质材料，充电器的连接头 15 固定在充电器壳体 12 上，充电器的连接头 15 和充电器铜芯 14 之间设有绝缘环 13。实际使用时，当充电器靠近电池杆尾部时，环形磁铁 5 对充电器的连接头 15 产生吸附力，可顺利的将充电器的连接头 15 吸入电池杆的内槽，使正、负电极得到连接，实现充电器对电池杆充电。

[0016] 利用磁铁对铁质材料具有吸附力这一特性，将雾化器或充电器的连接头吸入电池杆的内槽，使电池杆和雾化器、电池杆和充电器的连接更加简便、准确。

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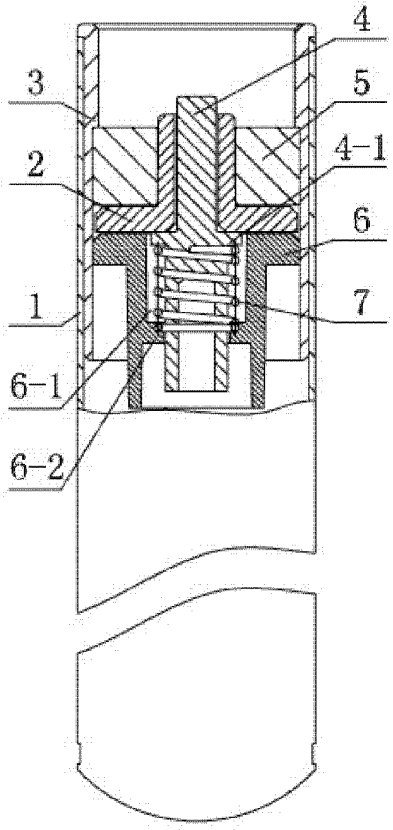


图 1

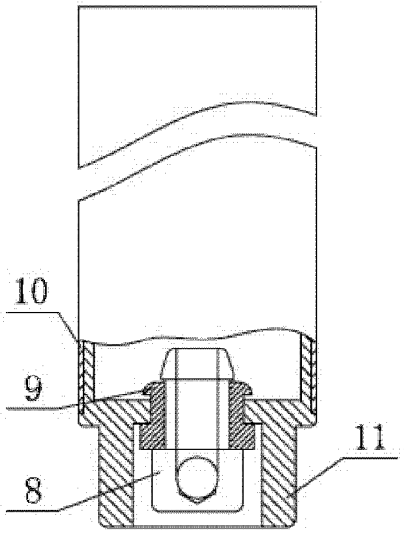


图 2

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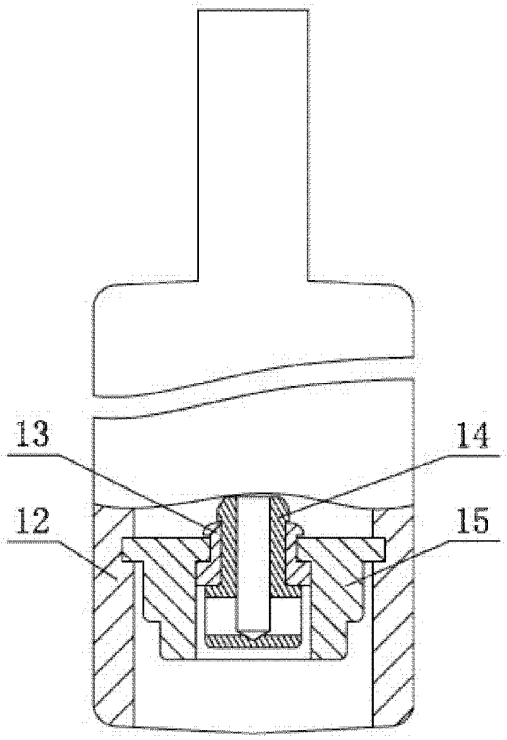


图 3

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Espacenet

Bibliographic data: CN204120231 (U) — 2015-01-28

Electronic cigarette

Inventor(s): HUANG JINZHEN ± (HUANG JINZHEN)

Applicant(s): HUANG JINZHEN ± (HUANG JINZHEN)

Classification: **- international:** ***A24F47/00***
- cooperative:

Application number: CN20142437314U 20140804

Priority number(s): CN20142437314U 20140804

Abstract of CN204120231 (U)

The utility model discloses an electronic cigarette which is composed of an atomizer assembly and a battery assembly. A power input terminal of the atomizer assembly is provided with a pair of conductive needle electrodes electrically connected with two electrodes of a heating wire. The conductive needle electrodes are arranged in an atomizer connection base. The output end of the battery assembly is provided with a pair of resilient terminals electrically connected with a battery. The resilient terminals are arranged in a battery connection base. The atomizer connection base is connected with the battery connection base in a clamping mode. When the atomizer connection base is connected with the battery connection base in the clamping mode, the conductive needle electrodes are correspondingly and electrically connected with the resilient terminals respectively. The electronic cigarette has the advantages of being simple in structure, convenient to manufacture and low in material cost and machining cost.

NJOY Exhibit 1002.780

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(12)实用新型专利

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A24F 47/00(2006.01)

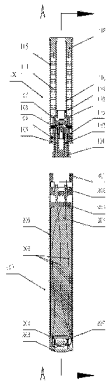
权利要求书1页 说明书3页 附图1页

(54)实用新型名称

电子烟

(57)摘要

本实用新型公开了一种电子烟，包括雾化器组件和电池组件两部分构成，所述的雾化器组件的电源输入端子为电性连接加热丝二极的一对导电电极针，所述导电电极针设置在一雾化器连接座内，所述的电池组件的输出端为电性连接电池的一对弹性端子，所述弹性端子设置在一电池连接座内，所述雾化器连接座和电池连接座相互卡接；所述雾化器连接座和电池连接座相互卡接时，所述导电电极针与弹性端子对应分别电性连接。本实用新型具有结构简单、制造方便、原料成本和加工成本低的优点。



CN 204120231 U

NJOY Exhibit 1002.781

1. 一种电子烟，其特征在于：包括雾化器组件和电池组件两部分构成，所述的雾化器组件的电源输入端子为电性连接加热丝二极的一对导电电极针，所述导电电极针设置在一雾化器连接座内，所述的电池组件的输出端为电性连接电池的一对弹性端子，所述弹性端子设置在一电池连接座内，所述雾化器连接座和电池连接座相互卡接；所述雾化器连接座和电池连接座相互卡接时，所述导电电极针与弹性端子对应分别电性连接。

2. 根据权利要求 1 所述的电子烟，其特征在于：所述电池连接座为塑料电池连接座，所述雾化器连接座为塑料雾化器连接座。

3. 根据权利要求 1 所述的电子烟，其特征在于：所述弹性端子固定在电池连接座内的两个小孔内，所述电池组件中的电池的正负极分别通过导线电性连接主控板的输入端；所述主控板的输出端分别通过导线电性连接二弹性端子，构成电池组件的输出接口。

4. 根据权利要求 1 所述的电子烟，其特征在于：所述电池组件包括电池组件壳体以及依次设置在电池组件壳体内的电池连接座、绝缘垫、锂电池、主控板和灯帽。

5. 根据权利要求 1 所述的电子烟，其特征在于：所述雾化器组件包括雾化器组件壳体，所述雾化器组件壳体前端通过雾化器固定座固定有雾化器连接座，所述雾化器组件壳体内设置有一贯通的出烟管，所述出烟管下方设置有雾化室上盖，所述雾化器组件壳体上端设置有吸嘴塞，所述雾化器组件壳体、出烟管、吸嘴塞、雾化器固定座和雾化室上盖之间形成储液室，所述雾化室上盖与雾化器固定座通过密封环密封设置。

6. 根据权利要求 5 所述的电子烟，其特征在于：所述雾化器固定座上端与雾化室上盖之间设置有轴对称的缺口，一引油绳横跨出烟管且二端穿入并堵塞缺口，所述引油绳置于出烟管的部分外套有一加热丝，所述加热丝的二端分别电性连接在导电电极针上。

7. 根据权利要求 1 或所述的电子烟，其特征在于：所述电池组件中的电池为锂电池。

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电子烟

技术领域

[0001] 本实用新型涉及电子烟，尤其是涉及一种结构简单、制造方便、原料成本和加工成本低的电子烟。

背景技术

[0002] 当前电子烟作为香烟的替代品，具有环保和无二手烟危害的优点，已经被人们广泛接受。电子烟一般分为电池组件和雾化器组件两部分。

[0003] 图 1 为传统电子烟电池组件和雾化器组件分离后的剖面图，参考图 1，传统电子烟的电池组件一般由电池外电极环 401、电池内电极环 402、绝缘环 403、固定架 404、电池杆 405、锂电池 406、主控板 407、灯帽 408 构成；锂电池 406 的正负极通过导线输入到主控板 407，控制的输出再通过导线焊接到电池外电极环 401 和内电极环 402 上，这种电池组件需要采用两个精密的五金零件（电池外电极环 401 和电池内电极环 402），因此制造费用高，同时需要很多的手工焊接工序，因此制造成本高；传统电子烟的雾化器一般都是由雾化器内电极环 301 和雾化器外电极环 302 构成，两者之间由绝缘圈 303 连接在一起，雾化器内电极环 301 和雾化器外电极环 302 相当于雾化器两个电源输入端口，加热丝 306 的两端与导线 304 通过铆接铜柱 305 连接，导线 304 的两端分别焊接在雾化器内电极环 301 和雾化器外电极环 302 上，这种雾化器的生产需要铆接加热丝 306 与导线 304，铆接好的加热丝与导线需要通过焊接工艺将加热丝与雾化器的输入端口焊接在一起，同时构成雾化器输入端口的两个结构件雾化器内电极环 301 和雾化器外电极环 302 也同样需要采用精密的车床才能加工出来，因此生产工艺复杂，成本很高；传统的雾化器是用吸油棉吸附一定体积烟油的储油方式，参考图 1，吸油棉 309 吸附烟油，经过无尘纸 307 渗透到加热丝上构成供油系统，这种方式的雾化器存在导油不均匀，加热丝直接接触无尘纸，容易产生异味，雾化器效果不一致等缺陷，同时吸油棉内的也烟油不能完全利用，而且采用多种化纤材料直接接触烟油，很不环保。

发明内容

[0004] 为解决上述问题，本实用新型的目的在于提供一种结构简单、制造方便、原料成本和加工成本低的的电子烟。

[0005] 本实用新型通过以下技术措施实现的，一种电子烟，包括雾化器组件和电池组件两部分构成，所述的雾化器组件的电源输入端子为电性连接加热丝二极的一对导电电极针，所述导电电极针设置在一雾化器连接座内，所述的电池组件的输出端为电性连接电池的一对弹性端子，所述弹性端子设置在一电池连接座内，所述雾化器连接座和电池连接座相互卡接；所述雾化器连接座和电池连接座相互卡接时，所述导电电极针与弹性端子对应分别电性连接。

[0006] 作为一种优选方式，所述电池连接座为塑料电池连接座，所述雾化器连接座为塑料雾化器连接座。

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[0007] 作为一种优选方式，所述弹性端子固定在电池连接座内的两个小孔内，所述电池组件中的电池的正负极分别通过导线电性连接主控板的输入端；所述主控板的输出端分别通过导线电性连接二弹性端子，构成电池组件的输出接口。

[0008] 作为一种优选方式，所述电池组件包括电池组件壳体以及依次设置在电池组件壳体内的电池连接座、绝缘垫、锂电池、主控板和灯帽。

[0009] 作为一种优选方式，所述雾化器组件包括雾化器组件壳体，所述雾化器组件壳体前端通过雾化器固定座固定有雾化器连接座，所述雾化器组件壳体内设置有一贯通的出烟管，所述出烟管下方设置有雾化室上盖，所述雾化器组件壳体上端设置有吸嘴塞，所述雾化器组件壳体、出烟管、吸嘴塞、雾化器固定座和雾化室上盖之间形成储液室，所述雾化室上盖与雾化器固定座通过密封环密封设置。

[0010] 作为一种优选方式，所述雾化器固定座上端与雾化室上盖之间设置有轴对称的缺口，一引油绳横跨出烟管且二端穿入并堵塞缺口，所述引油绳置于出烟管的部分外套有一加热丝，所述加热丝的二端分别电性连接在导电电极针上。

[0011] 作为一种优选方式，所述电池组件中的电池为锂电池。

[0012] 本实用新型的雾化器组件和电池组件之间通过简单结构的雾化器连接座和电池连接座通过卡接方式进行机械连接和电气连通，具有结构简单、制造方便、原料成本和加工成本低的优点。

附图说明

[0013] 图 1 为传统电子烟的剖面图；

[0014] 图 2 为本实用新型电子烟的剖面图；

[0015] 图 3 为 2 的 A-A 剖面图。

具体实施方式

[0016] 下面结合实施例并对照附图对本实用新型作进一步详细说明。

[0017] 本实施例的一种电子烟，请参照图 2 和图 3，包括相互卡接的雾化器组件 100 和电池组件 200 两部分构成，所述的雾化器组件 100 的电源输入端子为电性连接加热丝 100 二极的一对导电电极针 105，所述导电电极针 105 设置在一雾化器连接座 101 内，所述的电池组件 200 的输出端为电性连接电池 204 的一对弹性端子 202，所述弹性端子 202 设置在一电池连接座 201 内，所述雾化器连接座 101 和电池连接座 201 相互卡接；所述雾化器连接座 101 和电池连接座 201 相互卡接时，所述导电电极针 105 与弹性端子 202 对应分别电性连接。

[0018] 本电子烟的雾化器组件 100 和电池组件 200 之间通过简单结构的雾化器连接座 101 和电池连接座 201 通过卡接方式进行机械连接和电气连通，具有结构简单、制造方便、原料成本和加工成本低的优点。

[0019] 在一实施例的电子烟中，请参考附图 2 和图 3，在前面技术方案的基础上具体还可以是，电池连接座 201 为塑料电池连接座，所述雾化器 101 连接座为塑料雾化器连接座。因为本电子烟二大部分的连接方式是通过卡接方式进行连接的，因此可以用成本低的塑料制造。

NJOY Exhibit 1002.784

[0020] 在一实施例的电子烟中，请参考附图 2 和图 3，在前面技术方案的基础上具体还可以是，弹性端子 202 固定在电池连接座 201 内的两个小孔内，所述电池组件 200 中的电池 204 的正负极分别通过导线 206 电性连接主控板 207 的输入端；所述主控板 207 的输出端分别通过导线电性连接二弹性端子 202，构成电池组件的输出接口。

[0021] 在一实施例的电子烟中，请参考附图 2 和图 3，在前面技术方案的基础上具体还可以是，电池组件 200 包括电池组件壳体 205 以及依次设置在电池组件壳体 205 内的电池连接座 201、绝缘垫 203、电池 204、主控板 207 和灯帽 208。

[0022] 在一实施例的电子烟中，请参考附图 2 和图 3，在前面技术方案的基础上具体还可以是，雾化器组件 100 包括雾化器组件壳体 113，所述雾化器组件壳体 113 前端通过雾化器固定座 103 固定有雾化器连接座 102，所述雾化器组件壳体 113 内设置有一贯通的出烟管 110，所述出烟管 110 下方设置有雾化室上盖 109，所述雾化器组件壳体 113 上端设置有吸嘴塞 112，所述雾化器组件壳体 113、出烟管 110、吸嘴塞 112、雾化器固定座 103 和雾化室上盖 109 之间形成储液室用于储存烟液，所述雾化室上盖 109 与雾化器固定座 103 之间通过密封环 104 密封设置。

[0023] 在一实施例的电子烟中，请参考附图 2 和图 3，在前面技术方案的基础上具体还可以是，雾化器固定座 103 上端设置有轴对称的缺口，一引油绳 107 横跨出烟管 110 且二端穿入并堵塞缺口，所述引油绳 107 置于出烟管 110 的部分外套有一加热丝 108，所述加热丝 108 的二端分别电性连接在导电电极针 105 上。引油绳 107 利用毛细渗透原理将烟液导引到加热丝 108 上，通过加热丝 108 的通电发热蒸发烟液形成烟雾。

[0024] 在一实施例的电子烟中，请参考附图 2 和图 3，在前面技术方案的基础上具体还可以是，电池组件 200 中的电池 204 为锂电池。

[0025] 以上是对本实用新型电子烟进行了阐述，用于帮助理解本实用新型，但本实用新型的实施方式并不受上述实施例的限制，任何未背离本实用新型原理下所作的改变、修饰、替代、组合、简化，均应为等效的置换方式，都包含在本实用新型的保护范围的内。

NJOY Exhibit 1002.785

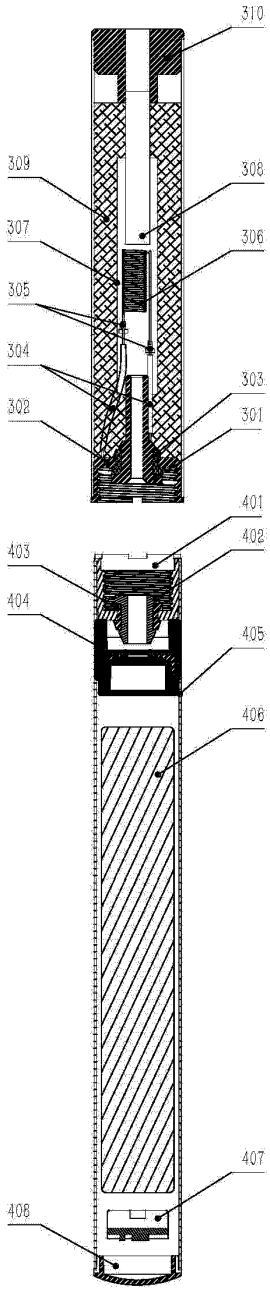


图 1

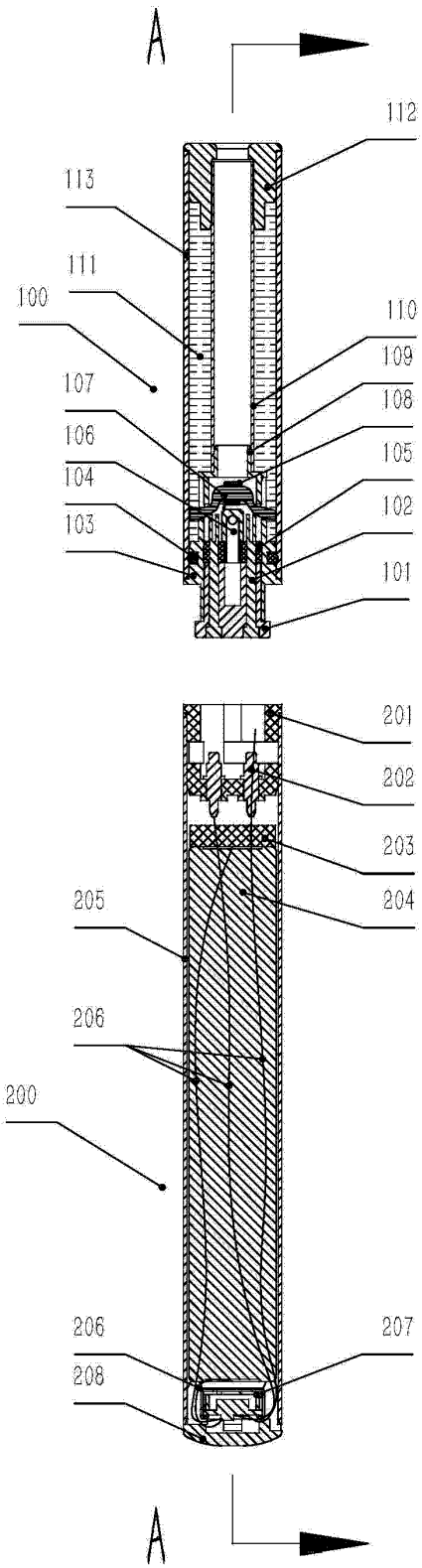


图 2

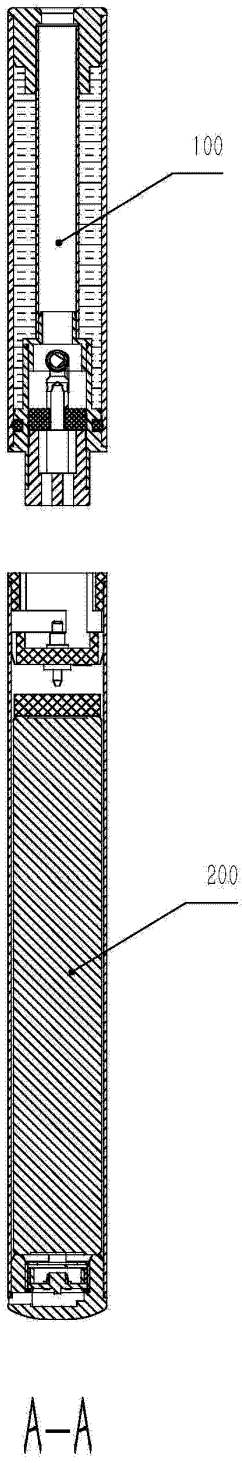


图 3

NJOY Exhibit 1002.786

Espacenet

Bibliographic data: CN204132390 (U) — 2015-02-04

Novel atomizer with controllable smoke generating fluid

Inventor(s): XU JUN ± (XU JUN)

Applicant(s): SHENZHEN BEISIDING TECHNOLOGY CO LTD ± (SHENZHEN BEISIDING TECHNOLOGY CO., LTD)

Classification: **- international:** ***A24F47/00***
- cooperative:

Application number: CN20142394912U 20140717

Priority number(s): CN20142394912U 20140717

Abstract of CN204132390 (U)

The utility model discloses a novel atomizer with controllable smoke generating fluid. A cigarette holder is arranged on a cigarette holder seat; a liquid inlet cover is arranged at the lower end of the cigarette holder seat; a sliding block is arranged in a liquid outlet of a liquid storage box; an upper cover of an adjusting ring is arranged at the upper end of the adjusting ring; the sliding block is arranged at the upper end of the adjusting ring; a lower cover of the adjusting ring is fixed at the lower end of the adjusting ring; positive and negative contacts are arranged at the lower end of the base; an air guiding tube is arranged at the lower end of a breather tube; a heating wire is wound on a liquid guiding rope and is fixed on positive and negative poles of an atomizing core seat assembly; and the liquid guiding rope penetrates in a small hole of an atomizing cover and is wound in a liquid storing groove of the atomizing cover. When an electronic cigarette is used or not used, tobacco juice which enters an atomizing cavity can be unsealed or sealed automatically, and is prevented from leaking or deteriorating; and the novel atomizer is used safely and healthfully.

NJOY Exhibit 1002.787

(19)中华人民共和国国家知识产权局

(12)实用新型专利

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(22)申请日 2014.07.17

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(72)发明人 许俊

(51)Int.Cl.
A24F 47/00(2006.01)

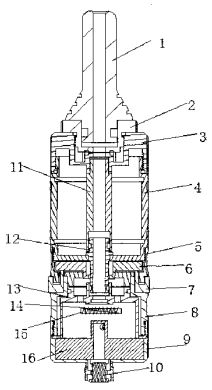
权利要求书1页 说明书2页 附图4页

(54)实用新型名称

一种新型可控出烟液雾化器

(57)摘要

本实用新型公开了一种新型可控出烟液雾化器，烟嘴安装在烟嘴座上，所述进液盖设置在烟嘴座的下端，所述储液箱的出液口处设有滑动块，所述调节环上盖设置在调节环上端，所述滑动块安装在调节环的上端，所述调节环下盖固定在调节环的下端，所述底座下端安装有正负触头，所述导气管安装在通气管的下端，所述发热丝缠绕在导液绳上，并固定在雾化芯座总成的正负极上，所述导液绳穿过雾化罩的小孔缠绕在雾化罩的储液槽内。本实用新型可以在使用与不使用电子烟时，自行对进入雾化腔室内的烟液进行开通与关闭结构，不必再担心漏液与烟液变质，使用更安全更健康。



CN 204132390 U

NJOY Exhibit 1002.788

1. 一种新型可控出烟液雾化器，其特征在于：包括烟嘴、烟嘴座、进液盖、储液箱、调节环上盖、滑动块、调节环、调节环下盖、底座、正负触头、通气管、导气管、雾化罩、发热丝、导热绳和雾化芯座总成，所述烟嘴安装在烟嘴座上，所述进液盖设置在烟嘴座的下端，所述储液箱的出液口处设有滑动块，所述调节环上盖设置在调节环上端，所述滑动块安装在调节环的上端，所述调节环下盖固定在调节环的下端，所述底座下端安装有正负触头，所述导气管安装在通气管的下端，所述发热丝缠绕在导液绳上，并固定在雾化芯座总成的正负极上，所述导液绳穿过雾化罩的小孔缠绕在雾化罩的储液槽内。

2. 根据权利要求 1 所述的一种新型可控出烟液雾化器，其特征在于：所述储液箱上端连接控制烟液流出与关闭机构，且控制烟液流出与关闭机构下端连接雾化座。

NJOY Exhibit 1002.789

一种新型可控出烟液雾化器

技术领域

[0001] 本实用新型涉及电子烟技术领域，尤其是一种新型可控出烟液雾化器。

背景技术

[0002] 众所周知，吸烟危害人体健康，因为香烟点燃后会释放出数千种化合物，这些化合物绝大部分对人体有害，主要包括焦油、一氧化碳、尼古丁生物碱、胺类、重金属元素、有机农药等。电子烟主要用于戒烟和替代香烟，包括壳体、吸嘴、设置在壳体内的雾化器、存储烟液的烟弹、以及为雾化器供电的电池。雾化器的导液绳插入烟弹中进行取液来实现雾化，然而雾化器的导液绳插入烟弹中与烟液直接接触，在不使用时烟液容易沿着导液绳流出，出现漏液现象容易导致电池短路及爆炸，同时烟液与导液绳长期接触容易导致烟液变质不益于健康，现在的电子烟行业并没有一种结构来控制烟液进入雾化器，同时使烟液与导液绳分离的功能。为解决这些问题，特提出一种新型可控出烟液雾化器。

实用新型内容

[0003] 针对上述问题，本实用新型旨在提供一种安全健康的新型可控出烟液雾化器。

[0004] 为实现该技术目的，本实用新型的方案是：

[0005] 一种新型可控出烟液雾化器，包括烟嘴、烟嘴座、进液盖、储液箱、调节环上盖、滑动块、调节环、调节环下盖、底座、正负触头、通气 管、导气管、雾化罩、发热丝、导热绳和雾化芯座总成，所述烟嘴安装在烟嘴座上，所述进液盖设置在烟嘴座的下端，所述储液箱的出液口处设有滑动块，所述调节环上盖设置在调节环上端，所述滑动块安装在调节环的上端，所述调节环下盖固定在调节环的下端，所述底座下端安装有正负触头，所述导气管安装在通气管的下端，所述发热丝缠绕在导液绳上，并固定在雾化芯座总成的正负极上，所述导液绳穿过雾化罩的小孔缠绕在雾化罩的储液槽内。

[0006] 作为优选，所述储液箱上端连接控制烟液流出与关闭机构，且控制烟液流出与关闭机构下端连接雾化座。

[0007] 作为优选，所述调节环上盖、调节环、滑动块和调节环下盖构成控制烟液流出与关闭机构。

[0008] 所述底座、正负触头、雾化芯座总成、发热丝、雾化罩和导液绳组成雾化座。

[0009] 本实用新型通过调节环转动使滑动块实现上下移动，使得滑动块上下移动来开通密封储液箱的出液口。通过对发热丝加热实现雾化，再通过导气管、通气管、烟嘴排出。可以在使用与不使用电子烟时，自行对进入雾化腔室内的烟液进行开通与关闭结构，不必再担心漏液与烟液变质，使用更安全更健康。

附图说明

[0010] 图 1 为本实用新型的剖视结构示意图；

[0011] 图 2 为本实用新型的主视图；

NJOY Exhibit 1002.790

[0012] 图 3 为本实用新型的俯视图；

[0013] 图 4 为本实用新型的仰视图。

具体实施方式

[0014] 下面结合附图和具体实施例对本实用新型做进一步详细说明。

[0015] 如图 1-4 所示，本实用新型实施例的一种新型可控出烟液雾化器，包括烟嘴 1、烟嘴座 2、进液盖 3、储液箱 4、调节环上盖 5、滑动块 6、调节环 7、调节环下盖 8、底座 9、正负触头 10、通气管 11、导气管 12、雾化罩 13、发热丝 14、导热绳 15 和雾化芯座总成 16，所述烟嘴 1 安装在烟嘴座 2 上，所述进液盖 3 设置在烟嘴座 2 的下端，所述储液箱 4 的出液口处设有滑动块 6，所述调节环上盖 5 设置在调节环 7 上端，所述滑动块 6 安装在调节环 7 的上端，所述调节环下盖 8 固定在调节环 7 的下端，所述底座 9 下端安装有正负触头 10，所述导气管 12 安装在通气管 11 的下端，所述发热丝 14 缠绕在导液绳 15 上，并固定在雾化芯座总成 16 的正负极上，所述导液绳 15 穿过雾化罩 13 的小孔缠绕在雾化罩 13 的储液槽内。

[0016] 作为优选，所述储液箱 4 上端连接控制烟液流出与关闭机构，且控制烟液流出与关闭机构下端连接雾化座。

[0017] 作为优选，所述调节环上盖 5、调节环 7、滑动块 6 和调节环下盖 8 构成控制烟液流出与关闭机构。

[0018] 所述底座 9、正负触头 10、雾化芯座总成 16、发热丝 14、雾化罩 13 和导液绳 15 组成雾化座。

[0019] 本实用新型的工作原理为通过调节环 7 转动使滑动块 6 实现上下移动，调节环 7 向左转动，滑动块 6 往上移动并密封储液箱 4 的出液 口，调节环 7 向右转动，滑动块 6 往下移动并开通储液箱 4 的出液口。发热丝 14 缠绕在导液绳 15 上并固定在雾化芯座总成 16 的正负极上，导液绳 15 穿过雾化罩 13 小孔缠绕在雾化罩 13 的储液槽内，当调节环 7 向右转动，滑动块 6 开通储液箱 4 的出液口，烟液流入雾化罩 13 的储液槽内，使的导液绳 15 吸收烟液并传导到发热丝 14 部位，通过对发热丝 14 加热实现雾化，再通过导气管 12、通气管 11、烟嘴 1 排出。

[0020] 以上所述，仅为本实用新型的较佳实施例，并不用以限制本实用新型，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细微修改、等同替换和改进，均应包含在本实用新型技术方案的保护范围之内。

NJOY Exhibit 1002.791

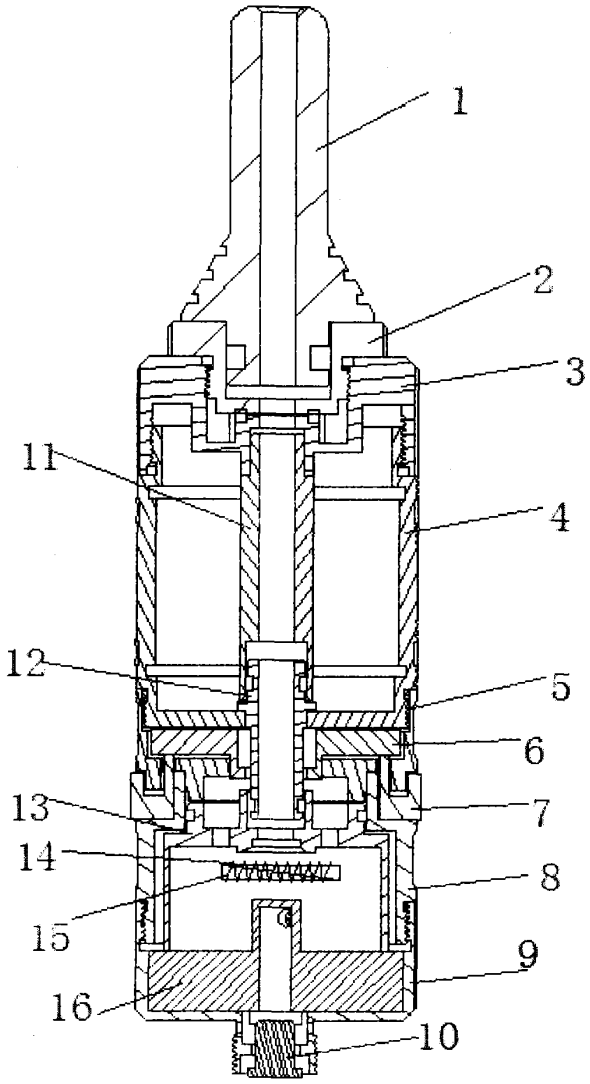


图 1

NJOY Exhibit 1002.792

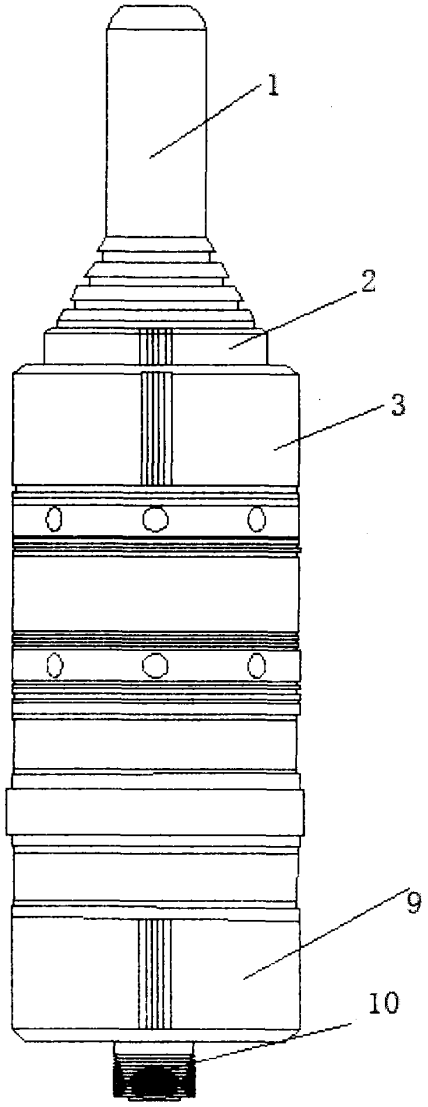


图 2

NJOY Exhibit 1002.793

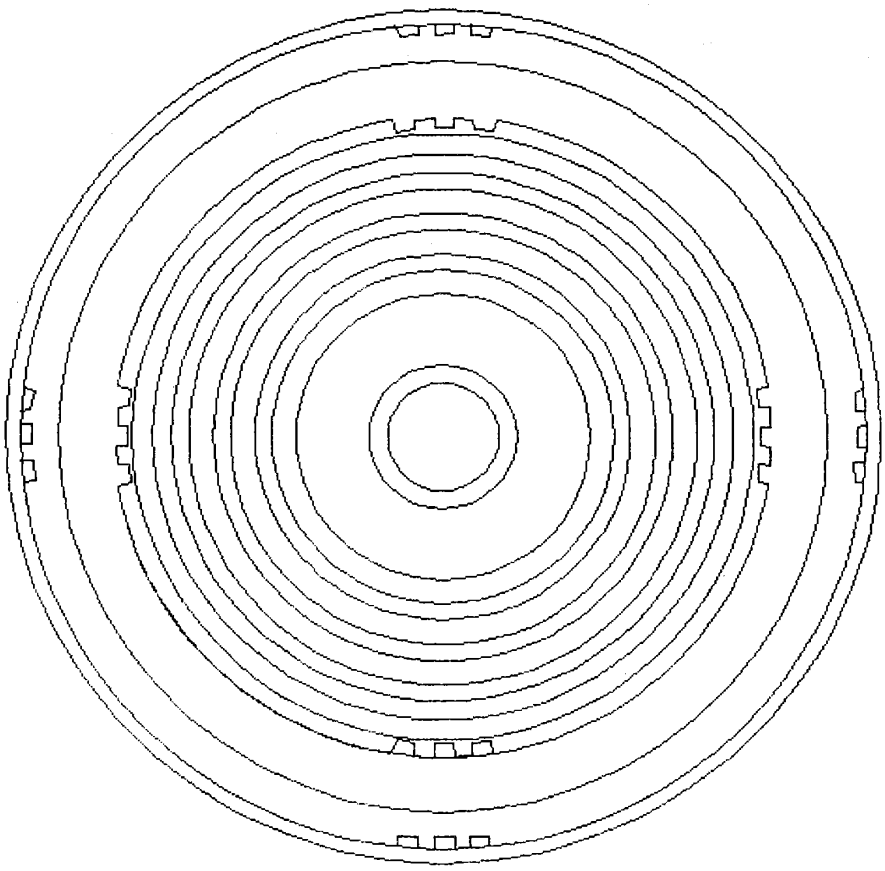


图 3

NJOY Exhibit 1002.794

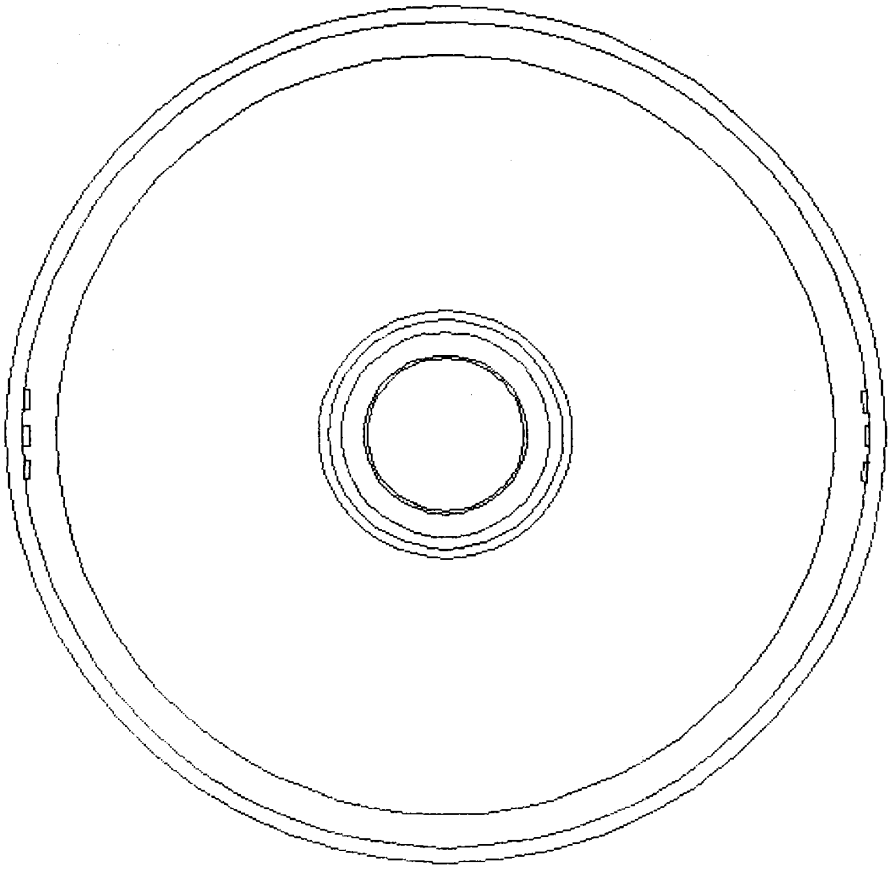


图 4

NJOY Exhibit 1002.795

Espacenet

Bibliographic data: CN204217907 (U) — 2015-03-25

Atomizing assembly and electronic cigarette

Inventor(s): LIU QIUMING ± (LIU QIUMING)

Applicant(s): HUIZHOU KIMREE TECHNOLOGY CO LTD ± (HUIZHOU KIMREE TECHNOLOGY CO., LTD)

Classification: **- international:** ***A24F47/00***
- cooperative:

Application number: CN20142543379U 20140919

Priority number(s): CN20142543379U 20140919

Abstract of CN204217907 (U)

The utility model provides an atomizing assembly and an electronic cigarette. The atomizing assembly comprises an oil cup component and an atomizing core, wherein the atomizing core is arranged in the oil cup component; the oil cup component is provided with an oil storage cavity which is used for containing tobacco tar; the atomizing core comprises an atomizing base and a heating wire component; a smoke channel through which smoke obtained by atomization circulates is arranged in the atomizing base; the heating wire component is arranged on the smoke channel, and comprises a heating wire which is used for heating atomized tobacco bar; the atomizing core also comprises an insulating pipe which is used for isolating the atomizing base from the heating wire; the insulating pipe is inserted into the atomizing base, and supports the heating wire component along the longitudinal direction of the atomizing base. The atomizing assembly and the electronic cigarette provided by the utility model have the advantages of being high in shock resistance and not easy to damage; a short circuit is avoided.

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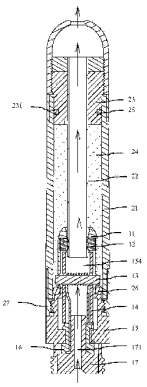
权利要求书1页 说明书6页 附图7页

(54)实用新型名称

雾化组件以及电子烟

(57)摘要

本实用新型提供一种雾化组件以及电子烟，其中，雾化组件包括油杯组件和设置于油杯组件内的雾化芯，油杯组件具有用于容纳烟油的储油腔；雾化芯包括雾化座和电热丝组件，雾化座内设置有用于供雾化所得的烟雾流通的烟雾通道，电热丝组件设置在烟雾通道上；电热丝组件包括用于加热雾化烟油的电热丝，雾化芯还包括用于隔离所述雾化座与所述电热丝的绝缘管；绝缘管插设在雾化座内，并沿雾化座的纵向支撑电热丝组件。本实用新型所提供的雾化组件以及电子烟具有避免短路、抗冲击能力强、不易受损的优点。



CN 204217907 U

NJOY Exhibit 1002.797

1. 一种雾化组件，用于与电池组件组合形成电子烟，其特征在于，所述雾化组件包括油杯组件和设置于所述油杯组件内的雾化芯，所述油杯组件具有用于容纳烟油的储油腔(24)；

所述雾化芯包括雾化座(15)和电热丝组件(13)，所述雾化座(15)内设置有用于供雾化所得的烟雾流通的烟雾通道(154)，所述电热丝组件(13)设置在所述烟雾通道(154)上，且所述电热丝组件(13)包括用于加热雾化烟油的电热丝(132)；

所述雾化芯还包括用于隔离所述雾化座(15)与所述电热丝(132)以阻止所述电热丝(132)与所述雾化座(15)的位于烟雾通道(154)处的内壁面相接触的绝缘管(14)，所述绝缘管(14)插设在所述雾化座(15)内并沿所述雾化座(15)的轴向设置，所述电热丝(132)的两端均插置于同一所述绝缘管(14)内。

2. 根据权利要求1所述的雾化组件，其特征在于，所述绝缘管(14)上相对开设有用于安装所述电热丝组件(13)的固定孔(142)，所述电热丝组件(13)的两端分别穿过所述固定孔(142)以架设在所述绝缘管(14)上；

所述雾化座(15)上也相对开设有用于安装所述电热丝组件(13)的开口(151)，所述电热丝组件(13)还包括导油件(131)，所述导油件(131)位于所述绝缘管(14)内的部分上缠绕有所述电热丝(132)，所述导油件(131)的两端分别穿过所述固定孔(142)并延伸至所述开口(151)外，以从储油腔(24)获取烟油供所述电热丝(132)加热雾化。

3. 根据权利要求2所述的雾化组件，其特征在于，所述雾化座(15)的外周面上设置有用于抵持在所述导油件(131)两端的环形凸起(158)。

4. 根据权利要求2所述的雾化组件，其特征在于，所述绝缘管(14)上还开设有与所述固定孔(142)相连通的切口(141)，所述切口(141)从所述固定孔(142)延伸至所述绝缘管(14)的外表面。

5. 根据权利要求4所述的雾化组件，其特征在于，所述切口(141)从所述固定孔(142)延伸至所述绝缘管(14)的一端面上，且所述切口(141)的方向与所述绝缘管(14)的轴向相平行。

6. 根据权利要求4所述的雾化组件，其特征在于，所述切口(141)从所述固定孔(142)延伸至所述绝缘管(14)的侧壁面，且所述切口(141)的方向与所述绝缘管(14)的轴向相垂直或相交。

7. 根据权利要求1所述的雾化组件，其特征在于，所述绝缘管(14)采用陶瓷或玻璃纤维制成。

8. 根据权利要求1所述的雾化组件，其特征在于，所述雾化芯还包括雾化盖(11)，所述雾化盖(11)可拆卸的安装在所述雾化座(15)的一端，且所述雾化盖(11)抵持在所述电热丝组件(13)上。

9. 根据权利要求1所述的雾化组件，其特征在于，所述油杯组件包括与所述雾化座(15)相连的雾化套(21)、与所述烟雾通道(154)相连通的通气管(22)以及设置在所述雾化套(21)端部的隔油件(23)；所述雾化芯、所述雾化套(21)、所述通气管(22)和所述隔油件(23)围成用于存储烟油的储油腔(24)。

10. 一种电子烟，其特征在于，包括如权利要求1所述的雾化组件和为所述雾化组件供电的电池组件。

NJOY Exhibit 1002.798

雾化组件以及电子烟

技术领域

[0001] 本实用新型涉及电子烟技术领域，更具体地说，涉及一种雾化组件以及电子烟。

背景技术

[0002] 在现有的电子烟中，包括雾化组件及电池组件，所述雾化组件包括用于存储烟油的雾化套及插设在所述雾化套的一端内的雾化芯。其中，所述雾化芯内设置有由金属材料制成的雾化座、插设在所述雾化座一端的内电极以及用于雾化所述雾化套中烟油的电热丝组件。所述电热丝组件一般横向插置于雾化座的中部区域内，且内电极和雾化座的一端通常作为电极为电热丝组件中的电热丝传导电能。

[0003] 然而，缠绕在导油件上的电热丝容易在受到冲击或长时间倾斜放置时出现偏移，使得电热丝可能会与雾化座内腔接触，进而导致整个电路出现短路，损坏控制电路板。现有技术的这一缺陷使得电子烟容易在受到撞击或滑落时受到损坏，用户体验差。

实用新型内容

[0004] 本实用新型要解决的技术问题在于为解决现有技术中的缺陷，提供一种抗冲击能力强、不易受损的雾化组件以及电子烟。

[0005] 本实用新型解决其技术问题所采用的技术方案是：提供一种雾化组件，用于与电池组件组合形成电子烟，所述雾化组件包括油杯组件和设置于所述油杯组件内的雾化芯，所述油杯组件具有用于容纳烟油的储油腔；所述雾化芯包括雾化座和电热丝组件，所述雾化座内设置有用于供雾化所得的烟雾流通的烟雾通道，所述电热丝组件设置在所述烟雾通道上，所述电热丝组件包括用于加热雾化烟油的电热丝；所述雾化芯还包括用于隔离所述雾化座与所述电热丝以阻止所述电热丝与所述雾化座的位于烟雾通道处的内壁面相接触的绝缘管，所述绝缘管插设在所述雾化座内并沿所述雾化座的轴向设置，所述电热丝的两端均插置于同一所述绝缘管内。

[0006] 在本实用新型所提供的雾化组件中，所述绝缘管上相对开设有用于安装所述电热丝组件的固定孔，所述电热丝组件的两端分别穿过所述固定孔以架设在所述绝缘管上；所述雾化座上也相对开设有用于安装所述电热丝组件的开口，所述电热丝组件还包括导油件，所述导油件位于所述绝缘管内的部分上缠绕有所述电热丝，所述导油件的两端分别穿过所述固定孔并延伸至所述开口外，以从储油腔获取烟油供所述电热丝加热雾化。

[0007] 在本实用新型所提供的雾化组件中，所述雾化座的外周面上设置有用于抵持在所述导油件两端的环形凸起。

[0008] 在本实用新型所提供的雾化组件中，所述绝缘管上还开设有与所述固定孔相连通的切口，所述切口从所述固定孔延伸至所述绝缘管的外表面。

[0009] 在本实用新型所提供的雾化组件中，所述切口从所述固定孔延伸至所述绝缘管的一端面上，且所述切口的方向与所述绝缘管的轴向相平行。

[0010] 在本实用新型所提供的雾化组件中，所述切口从所述固定孔延伸至所述绝缘管的

NJOY Exhibit 1002.799

侧壁面，且所述切口的方向与所述绝缘管的轴向相垂直或相交。

[0011] 在本实用新型所提供的雾化组件中，所述绝缘管采用陶瓷或玻璃纤维制成。

[0012] 在本实用新型所提供的雾化组件中，所述雾化芯还包括雾化盖，所述雾化盖可拆卸的安装在所述雾化座的一端，且所述雾化盖抵持在所述电热丝组件上。

[0013] 在本实用新型所提供的雾化组件中，所述油杯组件包括与所述雾化座相连的雾化套、与所述烟雾通道相连通的通气管以及设置在所述雾化套端部的隔油件；所述雾化芯、所述雾化套、所述通气管和所述隔油件围成用于存储烟油的储油腔。

[0014] 本实用新型还提供了一种电子烟，包括如前所述的雾化组件和为所述雾化组件供电的电池组件。

[0015] 实施本实用新型的雾化组件以及电子烟，具有以下有益效果：增设绝缘管以隔离电热丝和为电热丝传导电能的雾化座，避免在受到冲击或长时间倾斜放置时，电热丝出现偏移而与雾化座的内腔接触导通，使得电热丝接入电路中的电阻值发生变化，从而避免电热丝组件加热温度不稳定。

[0016] 而且，电热丝出现偏移而与雾化座的内腔接触导通，还可能会使整个电路出现短路，直接损坏控制电路板。通过以绝缘管进行隔离的方式可避免喷油漆进行隔离等方式导致吸烟时容易吸食到脱落的油漆而影响用户健康的问题，且其便于装配，生产效率高。

[0017] 此外，进一步地，所述绝缘管采用玻璃纤维制成，因而可吸附所述烟雾通道上渗漏或冷凝的烟油，更好地避免用户吸食到所述烟油，且其具有耐高温的特性，较好地避免电热丝烧焦所述绝缘管，能很好地保证用户健康；其中，绝缘管和雾化座上的环状凸起均沿轴向支撑电热丝组件，进一步保护电热丝组件以增加电热丝组件电连接的稳定性；

[0018] 因此，本实用新型中的雾化组件具有更强的抗冲击能力，避免短路，更长的使用寿命和更优的用户体验。

附图说明

[0019] 下面将结合附图及实施例对本实用新型作进一步说明，附图中：

[0020] 图 1 是本实用新型第一较佳实施例提供的雾化组件的结构示意图；

[0021] 图 2 是图 1 中雾化芯的结构示意图；

[0022] 图 3 是图 1 中雾化芯的立体拆分图；

[0023] 图 4 是图 1 中雾化芯的立体结构图；

[0024] 图 5 是本实用新型第二较佳实施例提供的雾化芯的结构示意图；

[0025] 图 6 是本实用新型第三较佳实施例提供的雾化芯的结构示意图；

[0026] 图 7 是本实用新型第四较佳实施例提供的雾化组件的结构示意图；

[0027] 图 8 是图 7 中雾化芯的立体结构图。

具体实施方式

[0028] 为了对本实用新型的技术特征、目的和效果有更加清楚的理解，现对照附图详细说明本实用新型的具体实施方式。

[0029] 本实用新型提供了一种雾化组件，用于与电池组件（图中未示出）组合形成电子烟。其中，电池组件包括用于为雾化组件供电的电池、用于控制雾化组件工作状态的控制电

NJOY Exhibit 1002.800

路板、用于与雾化组件电连接的电池电极以及用于容置电池、控制电路板和电池电极的电池套，由于本申请中电池组件的相关结构和设置属于现有技术范畴，在此不再赘述。

[0030] 实施例一：请参阅图 1、图 2、图 3 和图 4。

[0031] 本实用新型所提供的雾化组件，包括油杯组件和设置在油杯组件内的雾化芯，其中，油杯组件包括雾化套 21、通气管 22、隔油件 23 以及吸嘴组件，且雾化芯、雾化套 21、通气管 22 和隔油件 23 合围成用于存储烟油的储油腔 24。

[0032] 雾化套 21 为中空管状结构，其一端通过连接件 27 与雾化芯可拆卸的连接，其另一端分别与隔油件 23 和吸嘴组件可拆卸的连接。在本实施例中，隔油件 23 插设在雾化套 21 的端口以防止烟油漏出，吸嘴组件套设在雾化套 21 外并与所述雾化套可拆卸连接。当然，所述雾化套 21、通气管 22 及所述吸嘴组件可一体成型，在此不作具体限定。

[0033] 通气管 22 沿轴向插置于雾化套 21 内，其一端与雾化芯相连，其另一端与隔油件 23 相连；隔油件 23 和吸嘴组件上开设有相互连通的吸烟通道，通气管 22 与该吸烟通道相连通，使雾化芯雾化所得的烟雾能依次通过通气管 22 和吸烟通道进入使用者口部。

[0034] 优选的，油杯组件还包括设置在雾化套 21 与隔油件 23 之间的第一密封圈 25，用于防止储油腔 24 内的烟油通过雾化套 21 与隔油件 23 之间的间隙流出，相应的，隔油件 23 的外侧面上沿周向开设有用于容纳第一密封圈 25 的第一密封凹槽 231。

[0035] 优选的，雾化套 21 与隔油件 23 之间过盈配合连接，在防止隔油件 23 松脱的同时还可以尽量减少烟油泄漏。

[0036] 优选的，油杯组件还包括设置在雾化套 21 与雾化芯之间的第二密封圈 26，用于防止储油腔 24 内的烟油沿雾化套 21 与雾化芯之间的间隙流出。

[0037] 本实用新型中所提供的雾化芯具体包括用于与雾化套 21 等结构连接以组成雾化组件的雾化座 15、用于加热雾化烟油的电热丝组件 13 以及用于隔离雾化座 15 与电热丝组件 13 中的电热丝 132 的绝缘管 14，雾化座 15 内设置有用于供雾化所得的烟雾流通的烟雾通道 154，电热丝组件 13 设置在烟雾通道 154 上。

[0038] 结合图 3，雾化座 15 大致为中间外径大、两端外径小的管状结构，其外侧面上沿周向开设有用于容纳第二密封圈 26 的第二密封凹槽 153。

[0039] 雾化座 15 中外径最大的部分为手持部 152，手持部 152 的一侧安装有内电极 17 和用于与外部的电池组件可拆卸连接的螺纹结构；手持部 152 的另一侧也设置有用于与连接件 27 可拆卸连接的螺纹结构，用于与连接件 27 配合可拆卸的夹紧固定雾化套 21。

[0040] 优选的，手持部 152 的外周面上设置有滚花结构，用于增大摩擦以便于使用者拆装雾化套 21 和 / 或电池组件，同时也可避免电子烟滑落，便于使用者握持。

[0041] 雾化座 15 为阶梯式管状结构，故具有沿轴向贯穿自身的烟雾通道 154，以供雾化后所得的烟雾流通。雾化座 15 的侧壁上还相对开设有一对用于安装电热丝组件 13 的开口 151，电热丝组件 13 位于烟雾通道 154 上且其两端分别从开口 151 中伸出。在更换电热丝组件 13 时，只需沿着开口 151 直接取放电热丝组件 13 即可。

[0042] 内电极 17 上沿轴向开设有供外界气体进入的第一进气通道 171，该第一进气通道 171 与烟雾通道 154 相连通。使用者吸烟时，外界气体通过第一进气通道 171 进入烟雾通道 154，并流经设置在烟雾通道 154 上的电热丝组件 13 以形成烟雾，所形成的烟雾继续沿着烟雾通道 154 进入与之相连通的通气管 22，进而通过吸嘴组件上开设的吸烟通道进入使用者

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口部。

[0043] 内电极 17 插置于雾化座 15 上靠近电池组件的一端，内电极 17 和雾化座 15 分别与外部的电池组件电连接，以作为电极给电热丝组件 13 传导电能。优选的，雾化座 15 和内电极 17 均采用导电材料制成或表面涂覆有导电材料，其中，内电极 17 与电池组件中的第一电极（图中未示出）电连接，雾化座 15 与电池组件中的第二电极（图中未示出）电连接。

[0044] 为确保内电极 17 与雾化座 15 之间电性隔离，本实施例中的雾化芯还包括套设在内电极 17 与雾化座 15 之间的绝缘套 16。可以理解的是，电性隔离的方法并不局限于使用绝缘套 16，还可以采用在内电极 17 与雾化座 15 相接触的界面上涂覆绝缘介质等，在此不作具体限定。

[0045] 电热丝组件 13 包括导油件 131 和电热丝 132。

[0046] 其中，绝缘管 14 插设在雾化座 15 内，以用于隔离雾化座 15 与电热丝 132，以阻止所述电热丝 132 与所述雾化座 15 的位于烟雾通道 154 处的内壁面相接触，所述电热丝 132 的两端均插置于同一所述绝缘管 14 内。绝缘管 14 上也相对开设有供导油件 131 伸出的固定孔 142。导油件 131 由吸油材料制成，其两端分别穿过固定孔 142 和开口 151，以伸入储油腔 24 内吸取烟油供电热丝 132 加热雾化；电热丝 132 缠绕固定在导油件 131 中位于绝缘管 14 内的部分上，电热丝 132 的两端分别通过导线与雾化座 15 和内电极 17 电连接。

[0047] 电热丝组件 13 通过外表面包覆有绝缘层的第一导线 134 与内电极 17 电连接，电热丝组件 13 通过外表面包覆有绝缘层的第二导线 135 与雾化座 15 电连接。在本实施例中，第一导线 134 的一端被夹紧固定在绝缘套 16 与内电极 17 之间的间隙内，第二导线 135 的一端被夹紧固定在绝缘套 16 与雾化座 15 之间的间隙内，第一导线 134 与第二导线 135 的另一端分别与电热丝组件 13 中的电热丝 132 的两端电连接。由于第一导线 134 及第二导线 135 通电后不发热或发热量较小，因而可减少能量的浪费，以及便于电池组件能够驱动电热丝 132。当然，在其它实施例中，也可以无需设置所述第一导线 134 及第二导线 135，在此不作具体限定。

[0048] 优选的，雾化座 15 的内壁面向内突出形成安装凸台 157，绝缘管 14 的一端与导油件 131 相抵接，绝缘管 14 的另一端与安装凸台 157 相抵接。

[0049] 优选的，绝缘管 14 与雾化座内腔同轴设置，且所述绝缘管 14 抵持在所述电热丝组件 13 上以支撑所述电热丝组件 13，可采用玻纤、硅胶或陶瓷这类绝缘且耐热的材料制成。在本实施例中，所述绝缘管采用玻璃纤维制成，因而可吸附所述烟雾通道上渗漏或冷凝的烟油，更好地避免用户吸食到所述烟油，且其具有耐高温的特性，较好地避免电热丝烧焦所述绝缘管，能很好地保证用户健康。由于所述绝缘管 14 抵持在所述电热丝组件 13 上以支撑所述电热丝组件 13，因而雾化组件晃动时可较好地阻止电热丝 132 晃动以使所述电热丝 132 的相邻的圈与圈直接接触而导致电阻不稳定，以致烟雾量不稳定的现象。较优选地，所述绝缘管 14 由若干根玻璃纤维绳相互交错编织形成，以使其具有较好的弹性。

[0050] 优选的，雾化座 15 的外周面上设置有用于抵持在导油件 131 两端的环形凸起 158，以用于沿雾化芯的轴向支撑电热丝组件 13，防止电热丝组件 13 出现晃动或损伤而影响加热稳定性。

[0051] 此外，绝缘管 14 上还开设有与固定孔 142 相连通的切口 141，该切口 141 从固定孔 142 延伸至绝缘管 14 的外表面，以便于组装电热丝 132 和导油件 131。

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[0052] 在本实施例中，切口 141 从固定孔 142 延伸至绝缘管 14 的一端端面上，该切口 141 的方向与绝缘管 14 的轴向相平行，即切口 141 竖直设置。

[0053] 此外，雾化芯还包括雾化盖 11 和密封套 12。

[0054] 雾化盖 11 套设在雾化座 15 上远离内电极 17 的一端，雾化盖 11 上开设有与烟雾通道 154 相连通的连通孔 111，通气管 22 插置于连通孔 111 内并与烟雾通道 154 直接连通。

[0055] 密封套 12 卡设在雾化盖 11 与通气管 22 之间，用于防止储油腔 24 内的烟油沿着雾化盖 11 与通气管 22 之间的间隙流入烟雾通道 154 内。

[0056] 实施例二：请参阅图 5，并结合图 1、图 2 和图 3。

[0057] 本实施例与实施例一不同之处在于，绝缘管 14 与雾化座 15 的内腔同轴设置，切口 141 从固定孔 142 延伸至绝缘管 14 的外侧壁面，且切口 141 的方向与绝缘管 14 的轴向相垂直，即切口 141 水平设置。

[0058] 实施例三：请参阅图 6，并结合图 1、图 2 和图 3。

[0059] 本实施例与前述实施例的不同之处在于，绝缘管 14 与雾化座 15 的内腔同轴设置，切口 141 从固定孔 142 延伸至绝缘管 14 的侧壁面，且切口 141 的方向与绝缘管 14 的轴向相交，即切口 141 倾斜设置。

[0060] 实施例四：请参阅图 7 和图 8。

[0061] 本实施例与前述实施例的不同之处在于，雾化座 15 上还开设有供外界气体进入烟雾通道 154 的第二进气通道 155，绝缘管 14 上也相应开设有与第二进气通道 155 相连通的第三进气通道 143。

[0062] 此外，本实施例中的绝缘管 14 上并未开设供导油件 131 通过的固定孔 142 和切口 141，而是将绝缘管 14 设置在导油件 131 与安装凸台 157 之间。

[0063] 在本实施例中，绝缘管 14 的一端与导油件 131 相抵接，其另一端与安装凸台 157 相抵接，简化了电热丝组件 13 的组装过程，即省略了将导油件 131 和电热丝 132 安装至绝缘管 14 内的步骤。

[0064] 发热丝 132 在导油件 131 上的绕设长度小于绝缘管 14 的内径，且发热丝 132 沿轴向的投影落入绝缘管 14 的端面范围内，以确保绝缘管 14 能有效隔离电热丝 132 与雾化座 15，避免两者的直接接触导通。

[0065] 优选的，本实施例中的绝缘管 14 紧贴雾化座 15 的内壁面设置，与雾化座 15 内壁的形状和尺寸相匹配，以避免绝缘管 14 在雾化座 15 内出现晃动而不能可靠的隔离电热丝 132 和雾化座 15。

[0066] 优选的，绝缘管 14 可采用玻纤或陶瓷制成。

[0067] 当使用者吸烟时，外界气体在从第一进气通道 171 进入烟雾通道 154 的同时，还可以从第二进气通道 155 和第三进气通道 143 进入烟雾通道 154，增大了进气量，提高用户体验。

[0068] 本说明书中各个实施例采用递进的方式描述，每个实施例重点说明的都是与其他实施例的不同之处，各个实施例之间相同或相似的部分互相参见即可。

[0069] 可以理解的是，相关进气通道的开设路径并不限于本实用新型，只要能实现连通外界与烟雾通道 154 即可，在此只给出几种优选方案，并不作具体限定。

[0070] 可以理解的是，雾化芯与雾化套 21、连接件 27 以及电池组件之间的可拆卸的连接

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方式并不限于本实用新型，还可以是螺纹连接、卡扣连接、过盈配合等多种常用的可拆卸的连接方式，在此不一一具体限定。

[0071] 实施本实用新型的雾化组件以及电子烟，具有以下有益效果：增设绝缘管 14 以隔离电热丝 132 和为电热丝 132 传导电能的雾化座 15，避免在受到冲击或长时间倾斜放置时，电热丝 132 出现偏移而与雾化座 15 的内腔接触导通，使得电热丝 132 接入电路中的电阻值发生变化，从而避免电热丝组件 13 的加热温度不稳定。此外，电热丝 132 出现偏移而与雾化座 15 的内腔接触导通，还可能会使整个电路出现短路，直接损坏控制电路板。因此，本实用新型中的使用绝缘管 14 能有效增强雾化芯的抗冲击能力，避免短路，延长雾化芯的使用寿命，从而提高用户体验。

[0072] 上面结合附图对本实用新型的实施例进行了描述，但是本实用新型并不局限于上述的具体实施方式，上述的具体实施方式仅仅是示意性的，而不是限制性的，本领域的普通技术人员在本实用新型的启示下，在不脱离本实用新型宗旨和权利要求所保护的范围情况下，还可做出很多形式，这些均属于本实用新型的保护之内。

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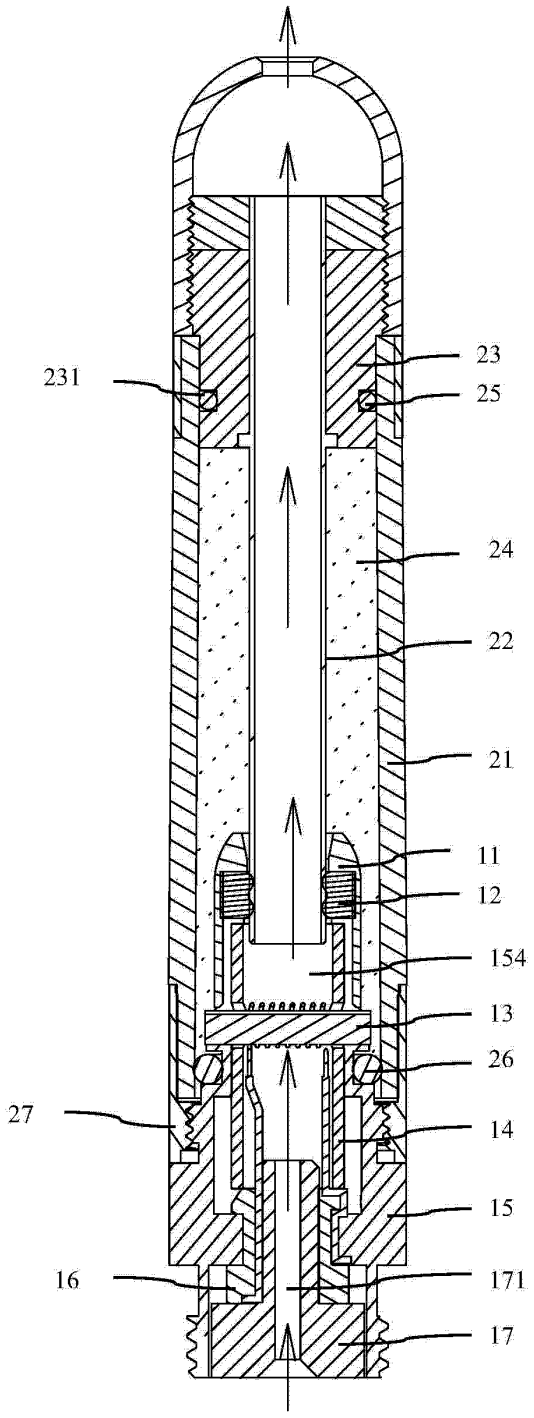


图 1

NJOY Exhibit 1002.805

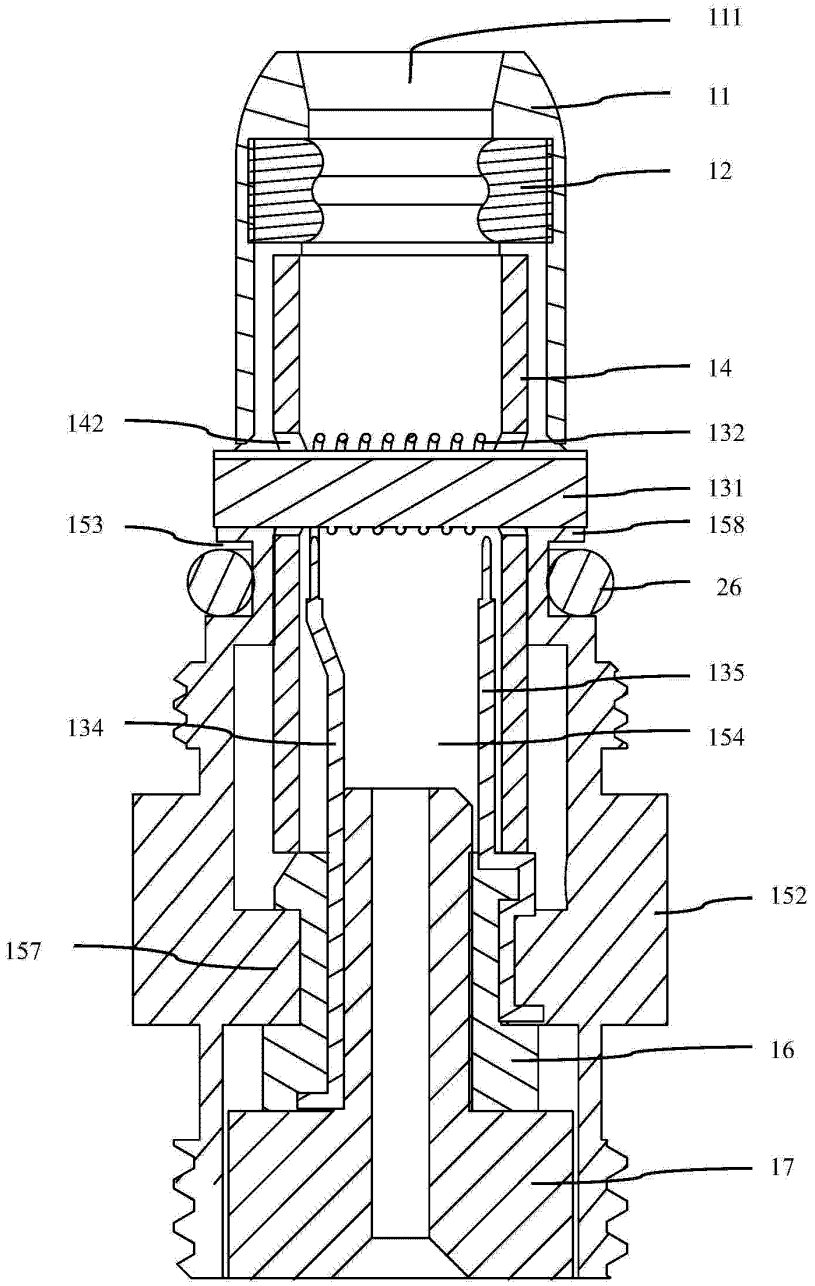


图 2

NJOY Exhibit 1002.806

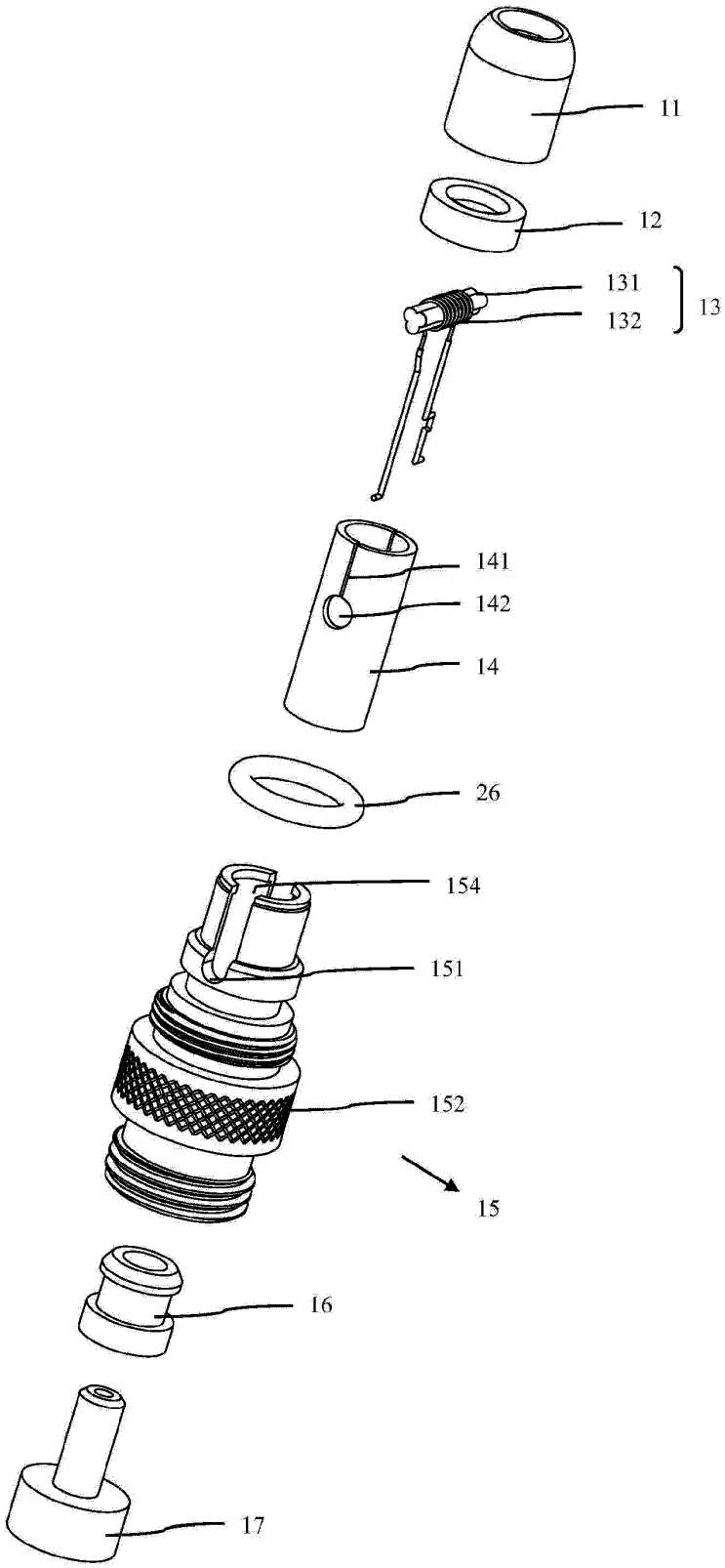


图 3

NJOY Exhibit 1002.807

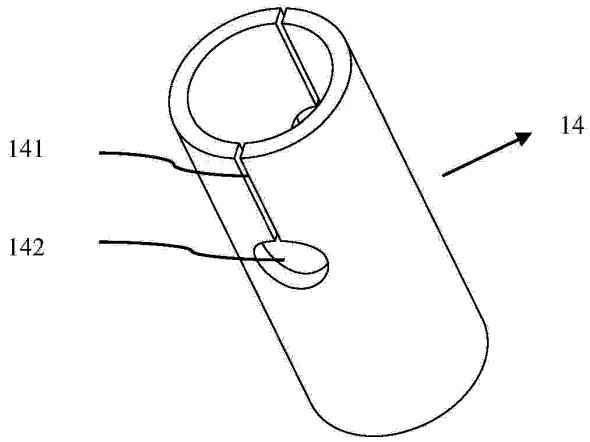


图 4

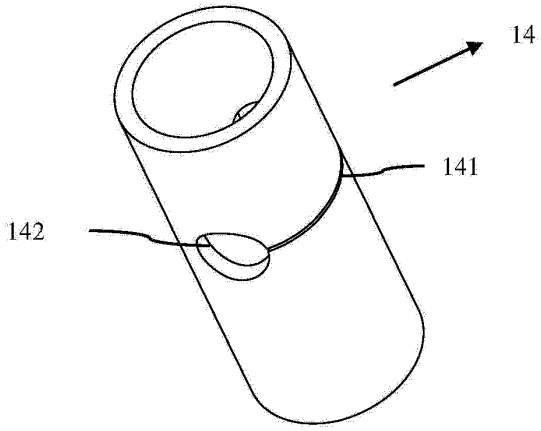


图 5

NJOY Exhibit 1002.808

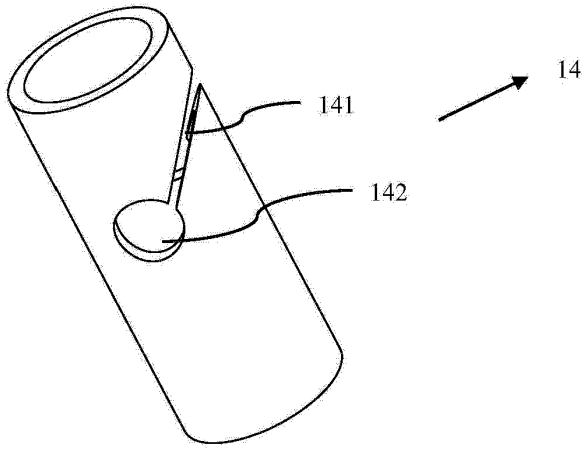


图 6

NJOY Exhibit 1002.809

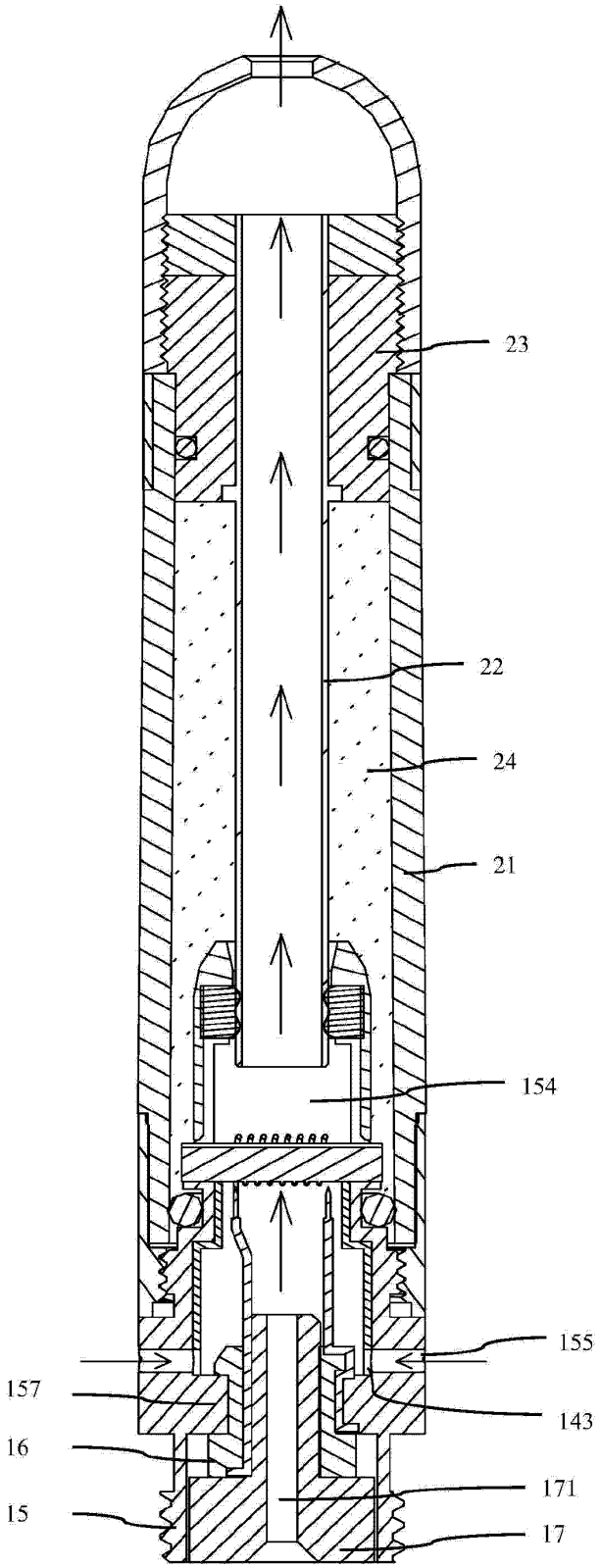


图 7

NJOY Exhibit 1002.810

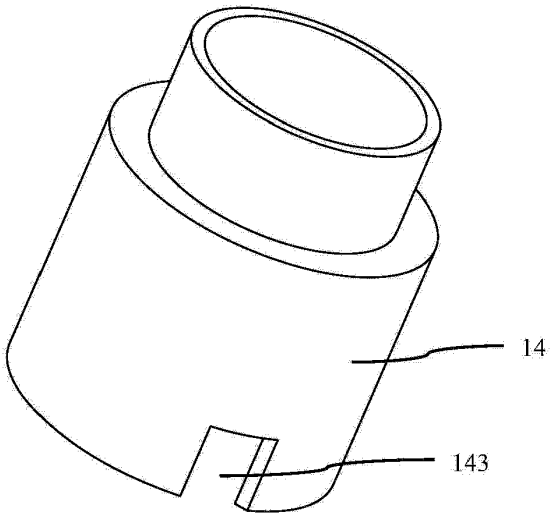


图 8

NJOY Exhibit 1002.811

Espacenet

Bibliographic data: CN204466899 (U) — 2015-07-15

Evaporator

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Applicant(s): VMR PRODUCTS LLC ± (VMR PRODUCTS, LLC)

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Abstract of CN204466899 (U)

An electronic cigarette of an evaporator can comprise a shell and an indoor atomizer which can be stored in a part of the shell, wherein the atomizer can be used to store evaporated fluids, dry substances or other evaporated substances such as wax; and also can comprise a charger which can be inserted into a room in one embodiment and can be connected to an end part of the shell in another embodiment. For example, a printing circuit board, a chargeable battery, various kinds of indicator lights, a sensor and various electronic components of a display screen increase functions of the evaporator in comparison with existing evaporators. The evaporator is also equipped with a magnet which is used to fix the atomizer or the charger onto the shell.

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Fig. 1

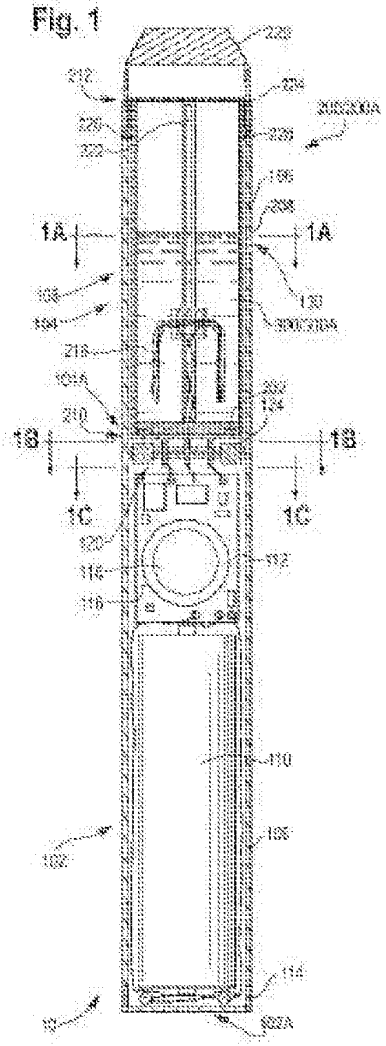
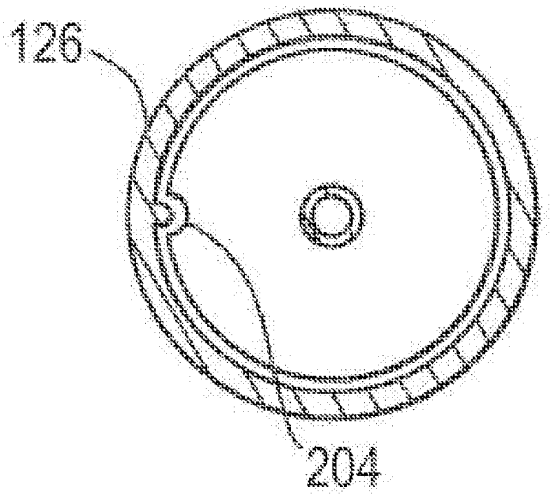


Fig. 1A



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Fig. 1B

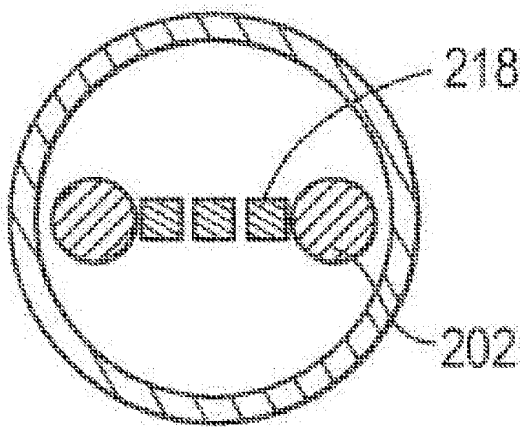
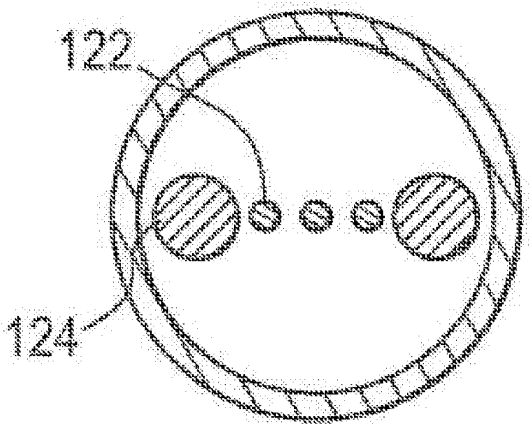


Fig. 1C



NJOY Exhibit 1002.814

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(12)实用新型专利

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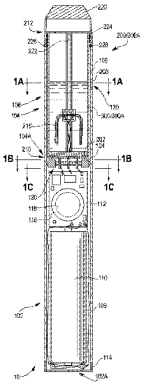
权利要求书2页 说明书12页 附图13页

(54)实用新型名称

蒸发器

(57)摘要

电子烟或蒸发器可以包括壳体以及可容纳在壳体的一部分内的室内的雾化器。雾化器可以存放可蒸发流体、干物质、或者诸如蜡的其它可蒸发物质。还可以包括在一个实施方式中可插入到室中的，并且在另一个实施方式中可以可连接到壳体的端部的充电器。例如，诸如印刷电路板、可充电电池、各种指示器灯、传感器、与显示屏的各种电子部件，从已知蒸发器提高了的蒸发器的功能性。还设有磁体，以将雾化器或者充电器固定到壳体。



CN 204466899 U

NJOY Exhibit 1002.815

1. 一种蒸发器，其特征在于，包括：

壳体，其具有电池段与雾化器接收段，所述雾化器接收段限定具有远离所述壳体的所述电池段的插入端以及邻近所述电池段的基部端的室，所述室的尺寸设计为在所述室的所述插入端容纳插入到所述室中的雾化器；

电池，其容纳在所述电池段内；

电触头，其设置在所述室的所述基部端与所述电池段之间，所述电触头包括正极触头以及与所述正极触头绝缘的负极触头；以及

电子电路，其容纳在所述壳体的所述电池段内并且可操作为在所述电池与所述电触头之间引导电流；

其中所述电触头和电池各自都与所述电子电路电连接，并且

其中当雾化器表面与磁性地吸引的室表面彼此邻近放置时，所述雾化器可固定在所述室内。

2. 根据权利要求 1 所述的蒸发器，其特征在于，所述室表面是设置在所述室的所述基部端附近的室磁体，所述室磁体与所述电触头绝缘。

3. 根据权利要求 2 所述的蒸发器，其特征在于，还包括设置在所述室的所述基部端附近的另一室磁体，所述另一室磁体与所述电触头和所述室磁体绝缘，所述另一室磁体具有与所述室磁体的极性相反的极性。

4. 根据权利要求 1 所述的蒸发器，其特征在于，所述电子电路包括印刷电路板。

5. 根据权利要求 1 所述的蒸发器，其特征在于，还包括：

激活按钮，其设置在与所述电子电路、所述电触头与所述电池电连通的所述壳体的外部上，其中通过所述蒸发器的使用者操纵所述激活按钮来操作以控制从所述电池到所述电子触头的电流；

印刷电路板；以及

指示器环，其围绕所述激活按钮的至少一部分，所述指示器环与所述电子电路、所述电触头以及所述电池电连通，所述指示器环可照亮以指示所述蒸发器的状态，所述指示器环可通过所述印刷电路板控制；

所述印刷电路板与所述电触头、所述电池、所述激活按钮以及所述指示器环电连通。

6. 根据权利要求 1 所述的蒸发器，其特征在于，还包括设置在所述壳体的所述外部上的显示屏，所述显示屏与所述印刷电路板和电池电连通，所述显示屏通过所述印刷电路板控制并且可操作为显示消息。

7. 根据权利要求 1 所述的蒸发器，其特征在于，所述电触头中的至少一个是延伸到所述室的一部分中的弹簧加载针并且当插入所述室中时当通过所述雾化器按压时可缩回。

8. 根据权利要求 1 所述的蒸发器，其特征在于，所述壳体包括设置在所述雾化器接收段的窗，从而所述室的一部分从所述壳体的外部是可见的。

9. 一种蒸发器，其包括：

壳体，其具有电池段与雾化器接收段，其特征在于，所述雾化器接收段限定具有远离所述电池段的插入端以及邻近所述电池段的基部端的室；

雾化器，其在所述插入端可插入到所述室中，所述雾化器包括：

尺寸设计为存放可蒸发物质的雾化器本体；

NJOY Exhibit 1002.816

加热元件，其设置在所述雾化器本体内或附近，可操作为加热所述可蒸发物质，

雾化器电触头，其设置在所述雾化器的外部上，

雾化器电路，其可操作为在所述雾化器电触头与所述加热元件之间引导电子流；以及

管嘴，其与所述雾化器本体流体连通，当所述雾化器插入所述室中时所述管嘴从所述室的所述插入端延伸，

其中所述加热元件通过所述电流激活并且可操作为将所述可蒸发物质加热到蒸发温度；

电池，其容纳在所述电池段内；

电池电触头，其设置在所述室的所述基部端与所述电池段之间，所述电池电触头定位为当所述雾化器插入到所述室中时与所述雾化器电触头接触；以及

电池电路，其容纳在所述电池段内并且可操作为在所述电池、所述电池电触头、所述雾化器电触头、所述加热元件与插入的所述雾化器之间引导电流。

10. 根据权利要求 9 所述的蒸发器，其特征在于，所述可蒸发物质是流体，所述加热元件包括用于吸收所述流体的毛细元件，并且所述雾化器本体的至少一部分由半透明材料组成。

11. 根据权利要求 9 所述的蒸发器，其特征在于，所述雾化器还包括设置在所述雾化器本体内并且尺寸设计为存放所述可蒸发物质的容器，其中所述加热元件设置在所述容器的至少一部分的外部并且可操作为加热所述容器由此将所述可蒸发物质加热到所述蒸发温度。

12. 根据权利要求 11 所述的蒸发器，其特征在于，所述加热元件包括与非导电材料相互缠绕的导电材料，并且所述导电材料与所述雾化器电子电路电连通。

13. 根据权利要求 11 所述的蒸发器，其特征在于，还包括容纳在所述电池段中并且与所述电池电路电连通的印刷电路板，并且

所述雾化器还包括与所述雾化器电路电连通的传感器，其中所述印刷电路板可操作为当所述雾化器插入到所述室中时处理从所述传感器接收的环境信息。

14. 根据权利要求 11 所述的蒸发器，其特征在于，所述管嘴可拆除地连接到所述雾化器本体。

15. 根据权利要求 9 所述的蒸发器，其特征在于，所述雾化器还包括用于存放所述可蒸发物质的池子，并且其中所述加热元件设置在所述池子附近以便加热所述池子。

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蒸发器

[0001] 相关申请的交叉引用

[0002] 本申请要求 2013 年 11 月 12 日提交的美国临时申请号 61/903,344、2014 年 2 月 10 日提交的美国临时申请号 61/937,851 以及 2014 年 3 月 4 日提交的美国专利申请号 14/196,729 的权益，它们的公开内容通过整体引用的方式包含于此。

技术领域

[0003] 本实用新型涉及蒸发器领域，其还可以被称作电子烟。

背景技术

[0004] 最近作为用于通过无烟吸入过程提供尼古丁的新产品而出现了电子烟。通常地，实现包括电源（通常是电池）与雾化装置。在可再使用电子烟中两个物件分成电池与雾化器，以允许含尼古丁的流体雾化器的处置与替换同时保留更昂贵的电池与相关的电路（微控制器、开关、指示 LED 等）以便另外使用。在一次性的电子烟中，两个物件结合在一起以将功能集成在一个单元，在电池能量或含尼古丁液体用尽以后该单元将被抛弃。

[0005] 用于蒸发诸如尼古丁的成分的电子烟液体通常地是丙二醇（PG）、植物甘油（VG）或聚乙二醇 400 （PEG400）、以及香味和 / 或尼古丁添加到其中的它们的混合物。此溶液通常在瓶子（以便通过使用者再填充）中、或者在一次性盒子或雾化器中销售。这些液体中包括许多不同的味道，包括与通常烟草、薄荷脑、香草、咖啡、可乐和 / 或多种水果的味道类似的味道。还可获得多种尼古丁浓缩物，并且无尼古丁溶液也是常见的。

实用新型内容

[0006] 根据本公开的蒸发器的一个实例可以包括具有电池段与雾化器接收段的壳体，雾化器接收段可以限定具有远离所述壳体的电池段的插入端以及邻近电池段的基部端的室，室的尺寸设计为在室的插入端容纳插入到室中的雾化器。蒸发器还可以包括在电池段内容纳的电池。蒸发器还可以包括设置在室的基部端与电池部分之间的电触头，电触头包括正极触头以及与正极触头绝缘的负极触头。电子电路可以容纳在所述壳体的电池段内并且可操作为在电池与电触头之间引导电流。此外，室磁体可以设置在室中或附近，室磁体可操作为使容纳在室内的雾化器固定，其中雾化器包括金属表面或者具有与室磁体的极性相反的极性的雾化器磁体。电触头与电池各自都可以与所述电子电路电连接。当雾化器表面与磁性地吸引的室表面相互邻近放置时，雾化器可以可固定在室内。

[0007] 根据本公开，在蒸发器的另一个实施方式中，蒸发器可以包括具有电池段与雾化器接收段的壳体，雾化器接收段限定具有远离电池段的插入端以及邻近电池段的基部端的室。蒸发器还可以包括在插入端可插入到室中的雾化器，并且雾化器可以包括：尺寸设计为存放可蒸发物质的雾化器本体；设置在雾化器本体内或附近的可操作为加热可蒸发物质的加热元件；设置在雾化器的外部上的雾化器电触头；可操作为在雾化器电触头与加热元件之间引导电流的雾化器电路；以及与雾化器本体流体连通的管嘴，当雾化器插入室中时管

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嘴从室的插入端延伸。加热元件可以通过电流激活并且可操作为将可蒸发物质加热到蒸发温度。电池可以容纳在电池段内。蒸发器还可以包括设置在室的基部端与电池段之间的电池电触头，电池电触头定位为当雾化器插入室中时与雾化器电触头接触。此外，蒸发器可以包括容纳在电池段内并且可操作为在电池、电池电触头、雾化器电触头、加热元件与插入的雾化器之间引导电流的电池电路。

[0008] 诸如印刷电路板、可充电电池、各种指示器灯、传感器和显示屏的各种电子部件与已知蒸发器相比提高了蒸发器的功能性。

[0009] 附图说明

[0010] 图 1 示出了本公开的电子烟的实施方式的前视图，其包括电池部分的第一实施方式，该第一实施方式具有与插入到第一实施方式的电池部分的雾化器室中的可蒸发液体一同使用的雾化器的实施方式，第一实施方式电池部分的外壳透明地示出以便描述电子烟的内部部件。

[0011] 图 1A 示出了图 1 的电子烟的横向横截面视图，其示出了电连接器与磁体。

[0012] 图 1B 示出了图 1 的电子烟的横向横截面视图，其示出了插入的雾化器的端部。

[0013] 图 1C 示出了图 1 的电子烟的横向横截面视图，其示出了雾化器室。

[0014] 图 2 示出了根据本公开的可以插入到图 1 的电池部分的雾化器室中的雾化器的实施方式的前视图，第一实施方式电池部分的外壳透明地示出以便描述电子烟的内部部件。

[0015] 图 2A 示出了图 2 的雾化器的横向横截面视图，其示出了在插入端处的雾化器的端部。

[0016] 图 2B 示出了图 2 的雾化器的横向横截面视图，其示出了气孔结构。

[0017] 图 3 示出了图 1 的电池部分的实施方式的前视图，根据本公开的充电器的实施方式插入到雾化器室中，第一实施方式电池部分的外壳透明地示出以便示出电子烟的内部部件。

[0018] 图 4- 图 7 示出了根据本公开的包括图 1- 图 3 的第一电池部分与图 1 和图 2 的雾化器的电子烟的实施方式。

[0019] 图 8 示出了根据本公开的电子烟的实施方式的前视图，其包括电池部分的第二实施方式，第二实施方式电池部分的外壳透明地示出以便示出电子烟的内部部件。

[0020] 图 9 示出了具有附接的充电器的图 8 的电子烟的前视图，第二实施方式电池部分的外壳透明地示出以便示出电子烟的内部部件。

[0021] 图 10 示出了根据本公开的雾化器的实施方式的前横截面视图。

[0022] 图 11 示出了根据本公开的雾化器的实施方式的前视图。

[0023] 图 12 示出了包括图 8- 图 9 的第二电池部分与图 8- 图 10 的雾化器的电子烟的实施方式。

[0024] 图 13 示出了根据本公开的电子烟的实施方式的前视图，电池部分的实施方式的外壳透明地示出以便示出电子烟的内部部件。

[0025] 图 14 示出了具有附接的充电器的图 13 的电子烟的前视图。

[0026] 图 15 示出了根据本公开的图 13- 图 14 的电子烟的实施方式。

具体实施方式

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[0027] 下面详细的描述与附图仅为了使相关技术领域中的普通技术人员能够制造与使用本实用新型的目的描述并且示出了本实用新型的示例性实施方式。就此，这些实施方式的详细描述与说明在实质上仅是示例性的并且决不旨在以任何方式限定本实用新型的范围或者其保护范围。还应该理解的是附图不是按照比例的并且在一些情形中省略诸如传统制造与组装的细节的对于理解本实用新型来说不必要的细节。

[0028] 根据本公开的蒸发器的一个实例可以包括具有电池段与雾化器接收段的壳体，雾化器接收段可以限定具有远离所述壳体的电池段的插入端以及邻近电池段的基部端的室，室的尺寸设计为在室的插入端容纳插入到室中的雾化器。蒸发器还可以包括容纳在电池段内的电池。蒸发器还可以包括设置在室的基部端与电池部分之间的电触头，该电触头包括正极触头以及与正极触头绝缘的负极触头。电子电路可以容纳在所述壳体的电池段内并且可操作为在电池与电触头之间引导电流。此外，室磁体可以设置在室中或附近，室磁体可操作为固定容纳在室内的雾化器，其中雾化器包括金属表面或者具有与室磁体的极性相反的极性的雾化器磁体。电触头与电池各自都可以与所述电路电连接。当雾化器表面与磁性地吸引的室表面相互邻近放置时，雾化器可以可固定在室内。

[0029] 在一些实施方式中，室磁体可以设置在室的基部端附近，室磁 体与电触头绝缘。蒸发器还可以包括设置在室的基部端附近的另一室磁体，该另一室磁体与电触头和室磁体绝缘，该另一室磁体具有与室磁体的极性相反的极性。电子电路可以包括印刷电路板。

[0030] 蒸发器的其它实施方式可以包括设置在壳体的外部上的与电子电路、电触头和电池电连通的激活按钮，其中通过蒸发器的使用者操纵激活按钮来操作以控制从电池到电子触头的电流；印刷电路板；以及指示器环，其围绕激活按钮的至少一部分，指示器环与电子电路、电触头以及电池电连通，所述指示器环可照亮以指示蒸发器的状态，指示器环可通过印刷电路板控制，并且印刷电路板可以与电触头、电池、激活按钮与指示器环电连通。蒸发器还可以包括设置在壳体外部上的显示屏，所述显示屏与所述印刷电路板和电池电连通，显示屏通过印刷电路板控制并且可操作为显示消息。电触头的至少一个可以是延伸到室的一部分中的弹簧加载针并且当通过插入室中时的雾化器按压时可缩回。壳体可以包括设置在雾化器接收段的窗，从而室的一部分通过壳体的外部是可见的。

[0031] 在蒸发器的另一个实施方式中，根据本公开，蒸发器可以包括：壳体，其具有电池段与雾化器接收段，雾化器接收段限定具有远离电池段的插入端以及邻近电池段的基部端的室。蒸发器还可以包括在插入端可插入到室中的雾化器，并且雾化器可以包括：尺寸设计为存放可蒸发物质的雾化器本体；设置在雾化器本体内或附近的可操作为加热可蒸发物质的加热元件；设置在雾化器的外部上的雾化器电触头；可操作为在雾化器电触头与加热元件之间引导电流的雾化器电路；以及与雾化器本体流体连通的管嘴，当雾化器插入室中时管嘴从室的插入端延伸。加热元件可以通过电流激活并且可操作为将可蒸发物质加热到蒸发温度。电池可以容纳在电池段内。蒸发器还可以包括设置在室的基部端与电池段之间的电池电触头，电池电触头定位为当雾化器插入到室中时与雾化器电触头接触。此外，蒸发器可以包括容纳在电池段内并且可操作为在电池、电池电触头、雾化器电触头、加热元件、与插入的雾化器之间引导电流的电池电 路。

[0032] 在公开的实施方式中，可蒸发物质可以是流体，加热元件可以包括用于吸收流体的毛细元件，并且雾化器本体的至少一部分可以由半透明材料组成。雾化器还可以包括设

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置在所述雾化器本体内并且尺寸设计为存放可蒸发物质的容器，其中加热元件设置在容器的至少一部分的外部并且可操作为加热容器由此将可蒸发物质加热到蒸发温度。加热元件可以包括与非导电性材料相互缠绕的导电性材料，并且导电性材料可以与雾化器电子电路电连通。蒸发器还可以包括容纳在电池段中并且与电池电路电连通的印刷电路板，并且雾化器还可以包括与雾化器电路电连通的传感器，并且当雾化器插入到室中时印刷电路板可操作为处理从传感器接收的环境信息。管嘴可以可拆除地连接到雾化器本体。雾化器还可以包括用于存放可蒸发物质的池子，并且加热元件可以设置在池子附近以便加热池子。

[0033] 现在参照图 1 和图 2，提供了根据本公开的电子烟 10 的实施方式。电子烟 10 可以包括可与用于存放可蒸发物质 300 的蒸发单元或雾化器 200 连接的电池部分。电池部分可以包括设置在电池部分的第一端 102A 附近的电池壳体段 102，以及设置在电池部分的第二端 104A 附近的第二雾化器接收段 104。电池部分可以包括用于覆盖或者保护如这里描述的可以内部地设置的电池部分 100 的一个或多个部件的外壳 106。外壳 106 可以基本上由金属、塑料、或者适于保护包括这里描述的电子部件的电子烟 10 的内部部件的任何其它已知或待开发材料制成。电池壳体段 102 与雾化器接收端 104 可以通常地共用外壳 106。雾化器室 108 可以设置在雾化器接收段 104 的至少一部分内。根据公开的实施方式雾化器 200 可以可插入到雾化器室 108 中。壳体 106 可以覆盖雾化器室 108 由此保护插入或接收的雾化器 200。

[0034] 用于操作电子烟 10 的电部件可以设置在电池壳体段 102 内。可以设置电池 110 以便提供如可能被电子烟 10 的各种特征要求的电能。在一些实施方式中，电池 110 可以是一次性的，诸如 AA 或 AAA 电池，而在其它实施方式中，电池 110 可以是可充电类型，例如 13450 锂离子电池、18650 的 2600mAh 锂离子电池、或者额定 2300mAh 的平面锂离子 903180 电池。多个电池 110 可以串联使用以产生能够缩短用于实现雾化器 200 中的蒸发温度的时间的较高电压。还可以设置用于控制电子烟 10 的一个或多个功能的印刷电路板（PCB）112。根据本公开 PCB112 可以通过电路电连接到电池 110 以便如所要求的引导电流流动。PCB112 可以包括一个或多个集成电路芯片以及微控制单元。还可以提供升压芯片以便如可以要求的对电路的至少一部分放大电压，以便实现这里描述的多个功能。PCB112 可以包括发光二极管（LED）、微控制器、多个电容器、多个晶体管、以及多个电阻器或者其任意组合。还可以提供用于传感电子烟 10 的重力变化的加速度计。加速度计可以操作为探测电池部分 100 的定向的倾斜或改变，并且 PCB112 可以相应地操作为对通过加速度计探测到的定向的变化作出反应。例如，可以通过摇动或倒转电子烟 10 来激活包括加速度计的电子烟 10。任何已知或者待发现的电路或 PCB112 的部件的布置都可以预期在本公开内以便实现如这里描述的电子烟的期望功能。

[0035] 在本公开的实施方式中可以设置形成一个或多个照明指示器的各种指示器灯。一种此指示器可以是设置为在第一端 102A 处或附近围绕壳体 106 的至少一部分延伸的环的电池端部指示器 114。在此一个实施方式中，电池端部指示器 114 可以设置在第一端 102A 或附近并且包括具有一种或多种颜色的一个或多个 LED 灯。例如，每种颜色都可以指示电子烟 10 的状态。状态可以与电池 110 的剩余能量、电子烟 10 的激活状态、插入的雾化器 200 的加热等级、或者可能期望通过灯颜色与电子烟 10 的使用者通信的任何其它状态相关。例如，当电子烟 10 被激活使得使用者如根据本公开描述的主动地吸入香烟 10，或者香烟 10 处

NJOY Exhibit 1002.821

于使用者能吸入的状态时，指示器 114 可以是红色或浅红色的。在此实施方式中，电池端部指示器 114 可以围绕第一端部 102A 的至少一部分延伸，使得当指示器 114 发出红色或浅红颜色时使用者可以使在第一端 102A 或附近的红颜色与点燃香烟的红光相关联。在另一个实施方式中，指示器环可以设置为照亮与电池 110 的充电或能量状态相关的一种或多种颜色。根据本公开，例如，当电池通过充足电荷操作时电池端部指示器 114 可以照亮绿色或蓝色，并且当电池通过低电荷操作时照亮黄色或红色以使使用者应该考虑给电池 110 充电。根据本公开环形指示器 116 可以设置在激活按钮 118 上或附近，这可以起到如这里所描述的激活香烟 10 的作用。当激活按钮 118 可以设置在外壳 106 的表面上时，以及环指示器 116 可以基本上是环绕按钮 118。环指示器 116 可以包括一个或多个具有用于指示电子烟 10 的多种状态的一种或多种颜色的 LED 灯。电子烟 10 的状态改变，诸如雾化器 200 的插入、通过按压按钮 118 激活电子烟 10、或者通过按压按钮 118 额外的时间使电子烟 10 去激活，可以每个都产生不同的相关与预定的颜色。可以通过 PCB112 来控制适当 LED 灯或多个 LED 灯的激活。如这里描述的，在按钮 118 与外壳 106 的表面共面或对准的实施方式中，环形指示器 116 也可以与按钮 118 与外壳 106 的表面共面或者对准。另一个指示器灯可以设置在雾化器端 104A 或者在其附近。在一个实施方式中，可以将一个或多个 LED 灯设置在位于或接近电池段 102 的雾化器接收段 104 中，以将光效从其中可以容纳电池 110 与 PCB112 的电池段 102 传送到雾化器端 104A。一个或多个透明管或光纤也可以设置在外壳 106 的表面内或正好在外壳 106 的表面下方，管子或纤维在雾化器端部 104A 处或附近终止。产生的效果是吸引人的、装饰的效果，其中设置在雾化器段中的 LED 灯被透射进光纤并沿着光纤传输。PCB112 可以潜在地更改或改变投射在光纤中的 LED 灯的颜色。颜色改变可以是周期性的，以建立稳定的颜色变化，或者颜色改变可以是与电子烟 10 的状态改变相应的。

[0036] 为了在 PCB112 与插入的雾化器 200 之间提供电连接，可以提供电连接器 120 并且电连接器 120 可以包括多个弹簧针 120。弹簧针是用于在两个电路之间建立连接的装置，并且每个都可以采用包括一 个或多个弹簧加载针 122 的圆柱体的形式，当插入雾化器室 108 时当例如通过雾化器 200 压缩时每个弹簧加载针都是可缩回的。在一个这样的实施方式中，可以设置三个弹簧针 122，一个用于建立正极电流连接、一个用于建立负极电流连接、并且一个用于建立地电流连接。每个弹簧针 122 都可以连接到可以控制输出到弹簧针 122 的电流的 PCB112。例如，PCB112 可以操作为改变或者间歇地激活电流流动到连接器 120，该变化由此调节连接中的雾化器中的加热元件的激活。当雾化器 200 未容纳在雾化器室 108 中时，每个弹簧针的头部可以延伸到雾化器室 108 中。当雾化器 200 容纳在雾化器室 108 中时，针 122 被接触并且至少部分地压缩到电池部分 102 中。如这里描述的针 122 可以被接触或者对着设置在雾化器 200 上的电接收器按压，由此在 PCB112 与雾化器 200 之间建立电连接。在本公开的实施方式中还预期其它针 122，诸如用于提供到另一个元件（诸如上述的 LED 灯或者这里描述并且在图 2 中示出的温度传感器 260）的电连接的第四针。

[0037] 连接器 120 的其它实施方式可以操作为基于一个或多个针 122 上的压降识别来自插入的雾化器 200 的信息。例如，连接器 120 可以包括控制针 122，当连接到各种类型的雾化器 200 时通过控制针 122 连接的 PCB112 可以探测跨针的压降的变化。当雾化器 200 插入到室 108 中时，设置在第一类型的雾化器 200 内的电路可以实现在控制针 122 上的第一压降，而设置在第二类型的雾化器 200 内的电路可以实现在控制针 122 上的第二压降。如果

NJOY Exhibit 1002.822

PCB112 探测第一压降，那么雾化器 200 被识别为第一类型的雾化器，然而如果 PCB112 探测第二压降，雾化器识别被为第二类型的雾化器。第一雾化器类型可以存放第一类型的可蒸发物质 300，而第二雾化器类型可以存放第二类型的可蒸发物质 300。在一个实施方式中，连接器 120 包括三个针 122：正极针、接地针、与控制针。控制针还可以用于双重功能，其中还可以通过控制针 122 发生在传感器 260 之间的通信。在本公开中预期其它已知或待开发的装置或连接器以便在 PCB112 与雾化器 200 之间建立电流。

[0038] 还可以在电子烟 10 的实施方式中提供多种特征以使雾化器 200 在雾化器室 108 内固定并且对准。例如，可以将至少一个磁体 124 设置在室 108 中或附近。与磁体 124 相反磁性的磁体 202 可以布置在雾化器 200 的表面上以便当磁体 124、202（参见图 1A、图 1B）相互接触时将雾化器 200 固定在室 108 内。应该明白并且理解的是，在一些实施方式中，电池部分磁体 124 可以附接到雾化器金属表面 202 并且，相反地，雾化器磁体 202 可以附接到电池部分金属表面 124，由此在电池部分 100 与雾化器 200 之间建立磁连接。将雾化器 200 固定在雾化器室 108 中的其它已知或待发现的装置也考虑在本公开内，包括但不限于卡合连接器、摩擦配合、将雾化器 200 通过螺纹插入到室 108 中、利用加压装置的吸入配合或者本领域中已知或者待开发的任何其它适当的固定方法。

[0039] 还可以包括一个或多个对准特征或机构以便确保雾化器 200 适当定位在雾化器室 108 中。在一个实施方式中，可以将两个磁体 124 设置在连接器 120（参见图 1A）附近，每个磁体 124 都具有相反的极性。在此实施方式中，可以在雾化器 200 的插入端 210 处设置相反极性的两个雾化器磁体 202（参见图 1B）。由于磁体 124/202 的相反极性，雾化器 200 仅可以沿着一个方向或定向插入与固定，由此方便雾化器 200 在室 108 内的对准。对准突出部或钉 126（参见图 1C）可以设置在室 108 的内表面的一部分上，并且对准狭缝或狭槽 204 可以设置在雾化器 200 的一部分上。对准突出部 126 的尺寸可以设计为匹配狭缝 204 或者沿着狭缝 204 滑动，使得雾化器 200 仅可以沿着特定、适当的定向插入。在另一个实施方式中，可以在壳体 106 的一部分上设有狭缝、裂缝、或者切口，匹配突出部设置在雾化器 200 的一部分上。例如，可以在雾化器接收段 104 处的壳体 106 的上边缘上设有切口，同时配合突出部可以设置在插入端 210 附近的雾化器 200 的一部分上，当雾化器适当地对准以便确保雾化器 200 恰当地定位在室 108 内时电池部分切口与雾化器突出部可接合。确 保雾化器 200 适当地定位在室 108 内继而确保雾化器 200 与连接器 120 的适当接触以及由此确保电子烟 10 的适当起作用。

[0040] 可以将一个或多个窗 130 设置在外壳体 106 中（参见图 1）。窗 130 可以由诸如玻璃或基本上透明塑料的半透明材料制成，以便观察电池部分 100 的内部部件。窗 130 还可以是切入到壳体 106 中的狭缝。例如，在一个实施方式中，窗 130 可以设置在雾化器接收段 104 并且更具体地雾化器室 108 上或者附近，以便当其插入到雾化器室 108 中时允许电子烟 10 的使用者观察雾化器 200。

[0041] 用于存放可蒸发材料 300 的雾化器 200 的一个实施方式是用于存放可蒸发流体 300A 的雾化器 200A，在图 1 中示出了它的实施方式。例如，可蒸发流体 300A 可以是，任何已知或者待开发的用于蒸发的流体，以便吸入尼古丁、香味或者电子烟中的其它期望的成分，此流体包括丙二醇（PG）、植物甘油（VG）、或者聚乙二醇 400（PEG400），以及香味和 / 或尼古丁已经添加到其中的它们的混合物。雾化器 200A 可以基本上是细长的并且可插入到室 108

NJOY Exhibit 1002.823

中。室 108 通过外壳 106 与电连接器 120 限定。与管嘴端 212 相对限定的雾化器 200A 的插入端 210，可以首先插入到室中并且可以最终地接触或者定位在电池部分 100 的连接器 120 附近。雾化器 200A 可以包括用于存放流体 300A 的本体 208。本体 208 的至少一部分可以由诸如玻璃或塑料的半透明或基本上半透明的材料组成，因此使用者可以看到存放在其中的流体 300A。由半透明材料组成的本体 208 的部分可以是与窗 130 可对准的并且可以接近 LED 灯或光纤以便当其插入到室 108 中时照亮雾化器 200A。当插入时可以自动地发生照明，或者可以编程为当激活或者操作诸如按钮 118 的开关时照明。

[0042] 为了蒸发流体 300A，可以将加热元件 214 与毛细元件 216 设置在雾化器本体 208 内。电流可以通过与当雾化器 200A 插入到室 108 中时接触针 122（参见图 1A）的电触头电连通的电路传送到加热元件 214。一旦流体 300A 被加热到最佳蒸发温度，使用者便可以通过设置在本体 208 上的管嘴 220 在管嘴端部 212 处或附近吸入蒸发的 流体 300A。蒸发流体可以前进通过与加热元件 214 和芯 216 流体连接的吸入管 222。吸入管 222 还可以与例如设置在外壳体 106 的侧面中的一个或多个孔或管道流体连通以便允许空气流动通过雾化器本体 208。当雾化器 200A 插入到室 108 中时可以通过 PCB112 通过连接器 120 控制传送到加热元件 214 的电流。由于使用者可以按压按钮 118 以启动为加热元件 214 充电，这继而可以将流体 300A 加热到使用者可以通过管嘴 220 吸入的蒸发温度，因此可以手动地控制电子烟 10。通过本公开还预期了电子烟 10 的自动加热版本，其中与连接器 120 集成的压力开关可以激活电流从 PCB 流动到加热元件 214 而不是通过由开关 118 的手动激活。

[0043] 因此使用者可以再填充存放在本体 208 中的流体 300A，管嘴 220 可以从本体 208 可移除。管嘴 220 可以包括螺纹 224，使得管嘴 220 可以通过螺纹与本体 208 的管嘴端 212 接合或者另选地，可以按压配合到本体 208 的管嘴端 212 上或中。可以是由塑料、橡胶、或任何其它适当材料形成的环形式的套管 226 可以设置为帮助稳定与保持雾化器 200 紧密地适配在室 108 中。此外，带颜色的环或标志 228 可以设置在雾化器本体 208 的一部分周围以便识别使用的雾化器的类型。

[0044] 现在参照图 2、图 2A 和图 2B，提供了用于保持诸如干烟草的干可蒸发材料 300B 的蒸发器 200B 的其它实施方式。容器 240 可以设置在雾化器本体 208 内。容器 240 可以由诸如金属的具有高热导率的材料制成，以便从设置在容器 240 的至少一部分周围的加热元件 214A 传送热量。其中加热元件 214 的至少一部分可以设置在容器 240 的至少一部分周围，如与从单个集中热源相反，与烤箱类似，设置在容器 240 内的材料 300B 可以从多侧受热。当电流传送到加热元件 214A 时，容器 240 的内部可以被加热到期望的蒸发温度。加热元件 214A 可以基本上包括诸如聚酰亚胺柔性带材料的非导电材料，诸如形成为线或平坦带的铜或其它金属线的导电材料贯穿该非导电材料分布。导电材料可以相互缠绕或者缠绕贯穿非导电材料以便增加被 加热表面积并且增加导电材料的阻抗，当雾化器 200B（参见图 2）插入到雾化器室 108（参见图 1）中时该导电材料可以通过连接器 120 电连接到 PCB112。在一些实施方式中导电材料的阻抗值可以是 2-3 欧姆，并且在一个实施方式中最大是 1 欧姆。在一些实施方式中，加热元件 214A 可以设置在雾化器本体 208 的大部分周围，并且在一些实施方式中加热元件 214A 可以设置在雾化器本体 208 的仅一部分附近。例如，加热元件 214A 可以仅设置在插入端 210 附近，以便通过对流而不是通过传导提供更大部分的加热。在一些实施方式中，加热元件 214A 可以设置在本体 208 的全部或大部分周围，并且 PCB112 可以

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是可操作的以便改变通过对流而不是传导提供的加热的量。例如，仅接近插入端 210 的加热元件 214A 的部分可以被激活以便通过对流加热可蒸发物质 300B，或者可以激活加热元件 214A 的全部或者几乎全部部分以便增加物质 300B 的传导加热。PCB112 可以操作为在传导加热与对流加热之间切换。

[0045] 还可以在本体 208 内提供绝缘材料 242 以控制或调节热分布。绝缘材料 242 可以设置在加热元件 214A 的外部的至少一部分周围以使本体 208 与可以传送到外壳 106(参见图 1)的过多热量温度绝缘。还可以将绝缘材料 242 设置在加热元件 214A 与容器 240 之间以便调节或者控制传送到容器 240 的热量。

[0046] 可以将一个或多个屏幕 250 设置在本体 208 内以便容纳容器 240 内的干材料 300B 以及过滤流通的空气。可以通过在雾化器本体 208 中提供一个或多个孔 252 而使空气流通。在一个实施方式中，孔 252 形成“t”形状(参见图 2B)从那里“t”的中心基本上与引导到容器 240 的孔对准。孔 252 可以能够与电池部分 100 的外壳 106 上的一个或多个孔对准，使得来自环境的空气可以穿过孔 252 并且进入到其中设有材料 300B 的容器 240 中。孔 252 可以设置在插入端 210 附近。屏幕 250 可以设置在邻近插入端 210、管嘴端 212 或者二者。在一些实施方式中，容器 240 是从雾化器本体 208 的其它部分可移除的。管嘴 220 可以是例如通过螺纹可移除或可拆除的，以便允许进入到 容器 240。上屏幕 250 可以附接或者与管嘴 220 一体地制造以便通过管嘴 220 移除。

[0047] 可以在雾化器 200 的一些实施方式中包括传感器 260。传感器 260 可以操作为传感蒸发温度，并且可以与 PCB112 电连通以将传感信息提供到 PCB112，传感信息可以因此传送到设置在如根据本公开所描述的电子烟 10 中的 LED 指示器中的一个。例如，当传感器 260 探测到已经达到容器 240 中的蒸发温度并且使用者可以进行吸入蒸发的材料 300 时，指示器 118 (参见图 1)可以照亮某颜色。PCB112 还可以包括在传感器 260 记录在预设蒸发温度范围以上的温度情况下用于自动关断的安全协议，这可以指示材料 300(包括，例如 300A、300B、300C)主动地燃烧或者将要燃烧。因此，传感器 260 可以作为热敏电阻操作。对于多种材料 300 来说蒸发范围可以在约 190 摄氏度与约 240 摄氏度之间，并且在一些实施方式中蒸发温度可以是约 230 摄氏度。在此蒸发温度范围内，蒸发材料 300 的活性成分可能开始蒸发而无需可能在约 400 摄氏度或者对于一些材料更高温度发生的主动燃烧。PCB112 可以操作为控制蒸发温度，例如调节最大蒸发温度或控制蒸发实际温度。在一个实施方式中，PCB112 可以控制或调节 10 摄氏度内的蒸发温度，并且在另一个实施方式中 PCB112 可以基于如通过电子烟 10 的使用者输入的选定的或期望的蒸发温度更细微地控制或调节 1 摄氏度内的蒸发温度。应该明白并且理解的是传感器 260 与 PCB112 之间的连通可以是双向的，使得传感器 260 可以操作为控制蒸发器功能的至少一部分或将信息传送到 PCB112 并且另外地接收来自操作为控制电子烟 10 的 PCB112 的信息。

[0048] 如图 3 中所示，充电器 400 可以插入到室 108(图 1)中以使在其中电池 110 可以是可充电的实施方式中的电池 110 (图 1)充电。通过将其插入到室 108 中并且与连接器 120 接触，充电器 400 可以将电荷提供到电池 110。充电器 400 可以包括用于将充电器 400 连接到在一个实施方式中是墙壁插座的电源的插头 410。用于不同电源的其它插头 410 也预期在本公开内，包括 USB 连接件与其它已知或待 开发的电源。可以是 LED 灯的指示器灯 420，可以设置在充电器 400 上以便例如当充电器 400 与电源连接时指示充电状态。PCB112 可以

NJOY Exhibit 1002.825

操作以改变例如 LED 指示器 114/116 的其它指示器，以指示电子烟 10 的充电状态。根据本公开，并且例如在图 9 中所示，充电器 400 可以在第一端 102A 或第一端附近可连接到电池部分。此外，如也例如在图 9 中示出的，充电器磁体 404 预期在本公开内以使充电器 400 固定地耦合到电池部分 100。在一个实施方式中，金属表面 404 设置并且定位为邻近磁体 124 或磁体 162（取决于本公开的实施方式）。在另一个实施方式中，金属表面 124 或 162 使得电池部分 100 与充电器磁体 404 磁性地耦合。此外，充电器磁体 404 可以设置为具有与电池部分磁体 124 或 162 相反的极性。

[0049] 图 4- 图 7 还示出了根据本公开的图 1- 图 3 中提供的电子烟 10 的实施方式。

[0050] 图 8 和图 9 示出了具有用于接收诸如雾化器 200 或雾化器 200B 的雾化器的电池部分 100A 的电子烟 10 的其它实施方式。PCB112 可以操作为执行各种功能，包括诸如蒸发温度控制或调节、升压、加速度计、或者用于控制 LED 工作的多个驱动器。可以设置一个或多个 LED 指示器 114 并且，在一个实施方式中，一组三个可变化颜色的 LED 灯设置在电池部分 100A 的电池端部 102A 附近。可以提供磁体 124/202 以将雾化器 200 保持在雾化器室 108 内。可以提供开关 118A 以便手动地激活或者另外地控制电子烟 10。

[0051] 具有充电触头 402 的电池充电器 400A，可以附接或连接到设置在外壳体 106 上的充电触头 160，或者另外地可暴露到环境。在一个实施方式中，充电触头 160 定位在电池端部 102A 处或者附近。充电触头 160、402 可以包括第一正极触头与第二负极触头。为了抵靠充电器 400A 的相应的充电触头 402 固定充电触头 160，可以将一个或多个磁体 162 设置在充电触头 160 附近。然后磁体 162 可以能够与设置在充电器 400A 的部分上的充电器磁体 404 接合使得当触头 160、402 相互接触时磁体 162、404 彼此邻近。为了确保触头 160、402 的适当的对准，两个磁体 162 可以设有相反的极性，并且两个充电器磁体 404 可以设有相反的极性。这些相反的极性可以确保当充电器连接到电池部分 100A 时的充电器 400A 的适当定向。在一些实施方式中，电池部分磁体 162 可以操作为磁性地吸引并且连接金属充电器表面 404，或者充电器磁体 404 可以操作为磁性地吸引并且连接金属电池表面 162，这些实施方式中的每个都由此操作为使充电器 400 与电池部分 100 磁性耦合。可以是 LED 的指示器灯 420 可以设置为指示电池 110 的充电状态。可以设置充电延伸部 410 以将充电器 400A 连接到电源，或者另选地电源可以内部地设置在充电器 400A 内。充电延伸部 410 可以是到 USB 的 AC 墙壁适配器以及到磁性插头的 USB 线。本公开的任何充电器 400 都可以包括过压和过流保护以便防止电池 110 的充电由此确保长的电池寿命并且以便减小电池 110 过热的可能性。在一个实施方式中，充电器 400 额定电流约为 1000mA，这对于一些实施方式来说将等于约两个小时的电池寿命。电池寿命将根据电池选择以及在给定实施方式中使用的电池 110 的数量而不同。

[0052] 现在参照图 10，提供了用于存放可蒸发物质 300 的雾化器 200C 的实施方式。例如，雾化器 200C 可以用作雾化器 200/200B 的可替换雾化器。在雾化器 200C 中的可蒸发物质 300 可以是蜡、油或者凝胶 300C。在雾化器 200C 中，加热元件 214 可以设置在从雾化器本体 208 可以或不可以从雾化器本体 208 移除的池子 214B 的基部。池子 214B 的尺寸可以设计为保持蜡、油或者凝胶 300C 同时如通过 PCB112 所控制的加热元件 214 可以使池子 214B 内的温度升高到蒸发温度范围。一旦蜡、油或凝胶 300C 被蒸发，使用者便可以将通过吸入管 222 并且通过管嘴 220 到外部的蒸汽吸入。在一些实施方式中，管嘴 220 通过摩擦

NJOY Exhibit 1002.826

配合、螺纹连接、或者任何其它已知或者待开发的连接装置可移除。还可以将一个或多个 O 形环密封件设置在管嘴附近以确保管嘴 220 与雾化器本体 208 之间的流体密封连接。

[0053] 图 11 示出了用于存放干可蒸发物质 300B 的雾化器 200D 的其它 实施方式。例如，雾化器 200D 可以用作雾化器 200/200B 的可替换雾化器。干物质 300B 可以存放在可移除内衬或容器 240 中。雾化器 200D 还可以包括加热元件 214A 与绝缘材料 242，其中每个都可以如关于雾化器 200B 的先前描述类似地设置与定向。气流孔或穿孔 270 可以设置在雾化器 200D 的基部。气流孔 270 可以偏离平面设置或者相对于电触头 218 未对准。气流孔 270 可以与室 108 与电池部分 100A 之间的孔对准，其可以容纳如下所述的风扇 190。还可以包括温度传感器 260。

[0054] 图 12 还示出了根据本公开的图 9- 图 11 中提供的电子烟 10 的实施方式。

[0055] 参照图 13，提供了包括电池部分 100B 的电子烟 10 的实施方式。PCB112 可以包括微控制器、升压集成电路、加速度计、以及风扇控制电路。包括叶片与电机的风扇 190 可以内部地设置在电池部分 100B 的电池段 110 中。根据本公开，风扇 190 可以操作为促进来自外电池部分 100B 的空气流动，诸如通过设置在外壳 106 中的一个或多个孔 152，通过电池段 110 并且进入到雾化器中由此建立用于吸入的空气流。在一些实施方式中，风扇 190 具有可逆操作以便在空气流路径中捕获碎屑或过多蒸汽的情况下“清理”空气流动路径。PCB112 还可以包括例如诸如图 15 中示例的可以设置在控制按钮下方的一个或多个开关。PCB112 还可以包括用于这些与其它类似开关灯的一个或多个 LED。PCB112 还可以操作为在可设置在外壳 106（例如，如图 15 中所示）的 LED 屏幕上显示状态消息。状态消息可以例如包括用于指示诸如当烟 10 被激活、充电或者达到蒸发温度时的电子烟 10 的状态的消息。LED 屏幕还可以显示例如当通过传感器探测到临界温度时的危险消息的警报或错误消息。而且，如图 14 所示，在一些实施方式中，PCB112 可以操作为识别插入到室 108 中的雾化器 200/200A/200B/200C，并且以便识别包括在雾化器 200 中的可蒸发物质 300。例如，PCB112 可以与雾化器 200 中的传感器 260 通信以便识别雾化器 200 内的可蒸发物质 300 的种类与数量。此识别可以包 括在可显示在外壳 106 上的 LED 屏幕上的状态消息中。充电器 400A 可以被用于使电池部分 100C 中的电池 110 充电。应该明白并且理解的是，在一些实施方式中，除了这里所述的充电器 400A 的连接以外还可以将充电器 400A 插入到电池部分 100A/100B 的室 108 中。还应该明白并且理解的是在其中充电器 400/400A 与电池部分 100 在除了雾化器 200 连接的位置以外位置耦合的实施方式，诸如其中充电器 400A 耦合在第一端 102A 处或附近的实施方式中，可以利用直通功能即当单元通过充电器 400A 充电时操作电子烟 10 的能力来操作电子烟 10。

[0056] 图 15 还示出了根据本公开的图 13- 图 14 中提供的电子烟 10 的实施方式。

[0057] 用于例如图 3 中的上面公开的可充电蒸发器或电子烟的一些充电器的实施方式，使用在充电器与雾化器部分的电连接器之间电触头。在这些情况下，首先将雾化器部分从室移除以暴露电连接器并且此后具有兼容电触头的充电器插入到室中。本实用新型预期在蒸发器与充电器上的连接器的其它类型与位置。因此，在一些实施方式中，本实用新型提供了用于给具有在远离雾化器接收部分并且邻近其电池部分的端部基本上横向地附接到其外壳的充电触头的蒸发器或电子烟充电的充电器 400。图 14 中示出了一个此种实施方式。在这些实施方式的一部分中，其中雾化器部分未从蒸发器移除以暴露电连接器，充电触头

NJOY Exhibit 1002.827

包括在装置中以使在电池的再充电(“直通”充电)期间可以以其通常方式操作蒸发器或电子烟。

[0058] 如掌握这里公开的本领域中的普通技术人员将会理解的,必须在蒸发器或者电子烟上或者内设置与充电器兼容的电触头。

[0059] 上面阐述的描述旨在是描述性的并且不在于限定,并且本领域中的技术人员将会认识到不同于上述结构的各种通常与已知的偏差也作为在这里描述的公开构思的范围内。

[0060] 这里说明性公开的本实用新型可以在缺少未在这里具体公开的任何元件的情况下适当地实施。这里说明性公开的本实用新型可以 在缺少未在这里具体公开的任何元件的情况下适当地实施,并且其在实质上不影响要求的实用新型的基本与新颖特性。

[0061] 附图标记列表

[0062] 10 电子烟

[0063] 100 电池部分

[0064] 100A 电池部分

[0065] 100B 电池部分

[0066] 102 电池壳体段

[0067] 102A 电池部分的第一端

[0068] 104 雾化器接收段

[0069] 104A 电池部分的第二端

[0070] 106 壳体

[0071] 108 雾化器室

[0072] 110 电池

[0073] 112PCB

[0074] 112A PCB

[0075] 114 指示器

[0076] 116 环形指示器

[0077] 118 按钮

[0078] 118A 开关

[0079] 120 电连接器

[0080] 122 针

[0081] 124 磁体

[0082] 126 突出部

[0083] 130 窗

[0084] 152 孔

[0085] 160 充电触头

[0086] 162 磁体

[0087] 190 风扇

[0088] 200 雾化器

[0089] 200A 雾化器

[0090] 200B 雾化器

NJOY Exhibit 1002.828

[0091] 200C 雾化器

[0092] 202 磁体

[0093] 204 凹槽

[0094] 208 本体

[0095] 210 插入端

[0096] 212 管嘴端

[0097] 214 加热元件

[0098] 214A 加热元件

[0099] 214B 池子

[0100] 216 芯

[0101] 218 电触头

[0102] 220 管嘴

[0103] 222 吸入管

[0104] 224 螺纹

[0105] 226 套管

[0106] 228 带颜色的环

[0107] 240 容器

[0108] 242 绝缘材料

[0109] 250 屏幕

[0110] 252 孔

[0111] 260 传感器

[0112] 300 可蒸发物质

[0113] 300A 可蒸发流体

[0114] 300B 可蒸发干物质

[0115] 300C 可蒸发蜡

[0116] 400 充电器

[0117] 400A 充电器

[0118] 402 电触头

[0119] 404 磁体

[0120] 410 插头

[0121] 420 灯

NJOY Exhibit 1002.829

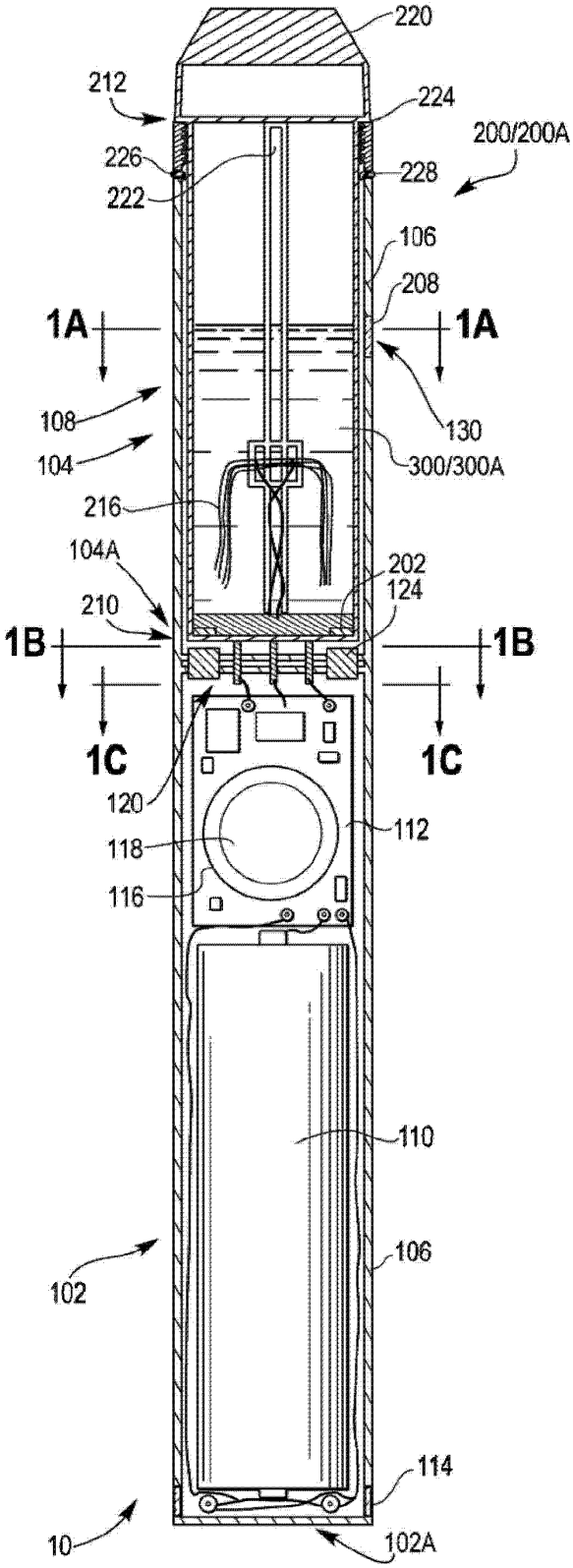


图 1

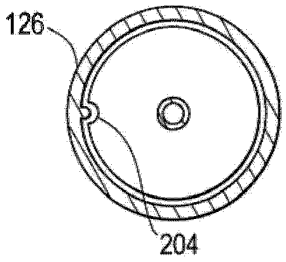


图 1A

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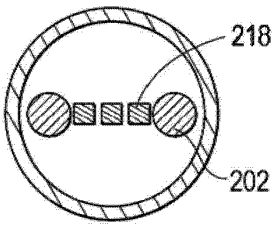


图 1B

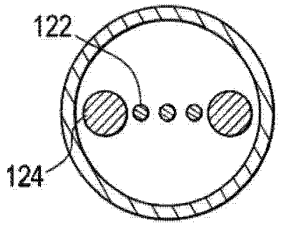


图 1C

NJOY Exhibit 1002.831

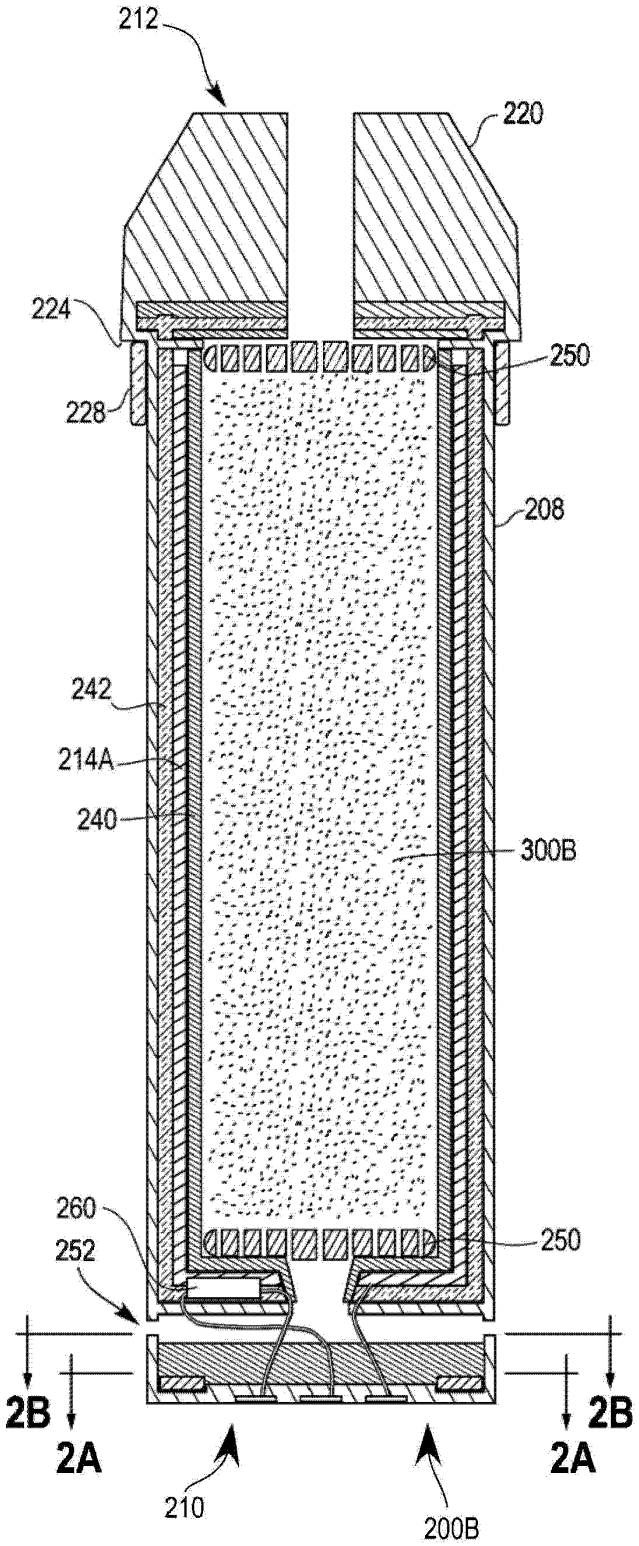


图 2

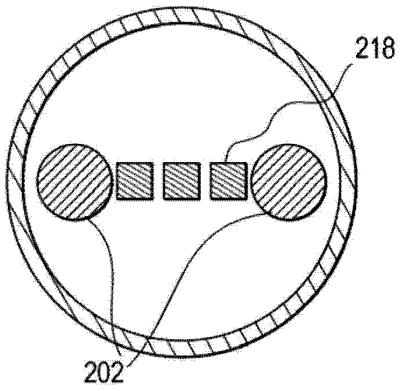


图 2A

NJOY Exhibit 1002.832

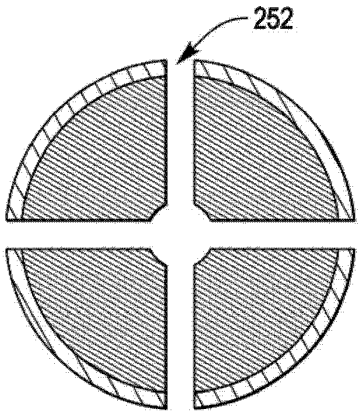


图 2B

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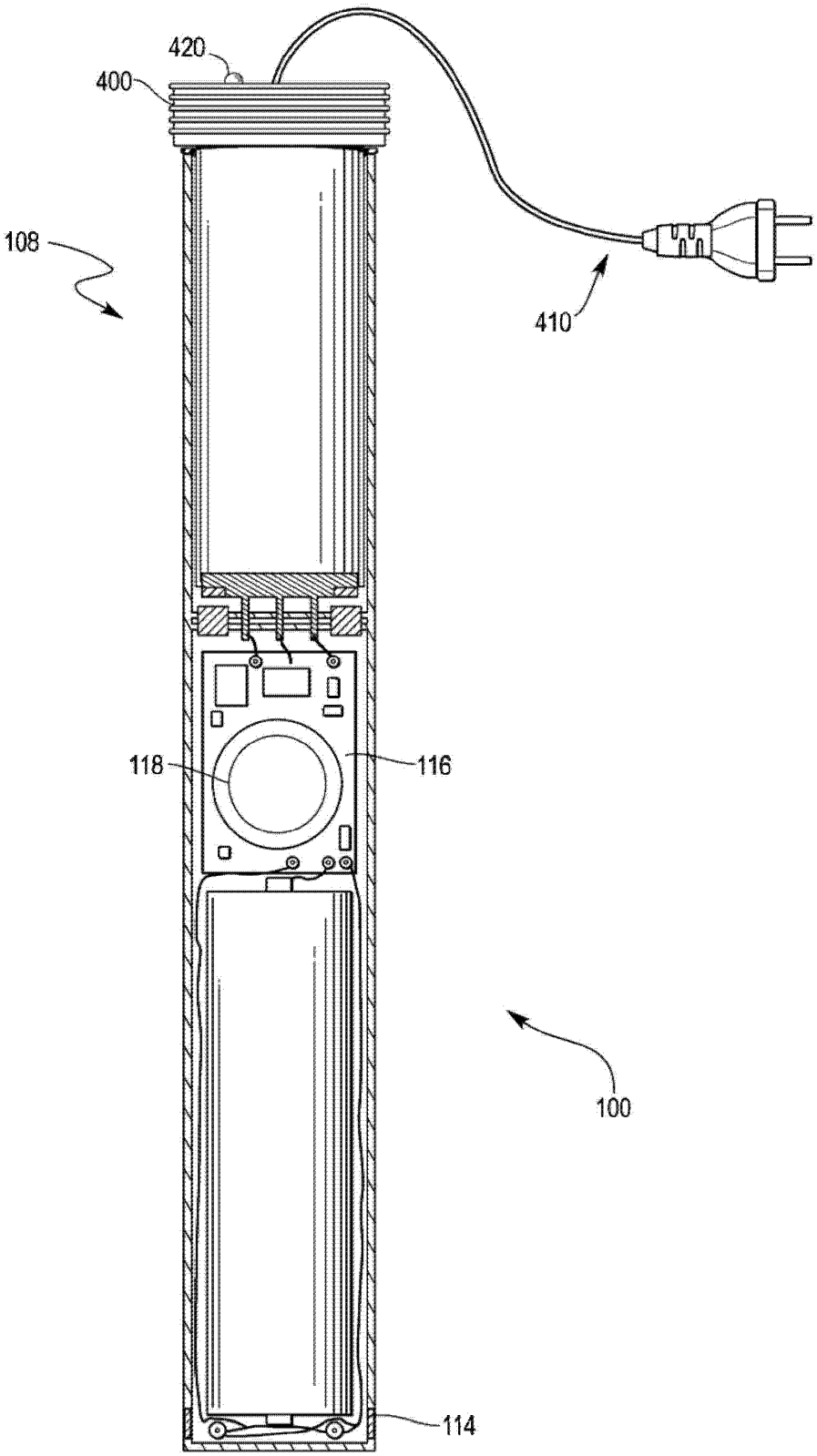


图 3

NJOY Exhibit 1002.834

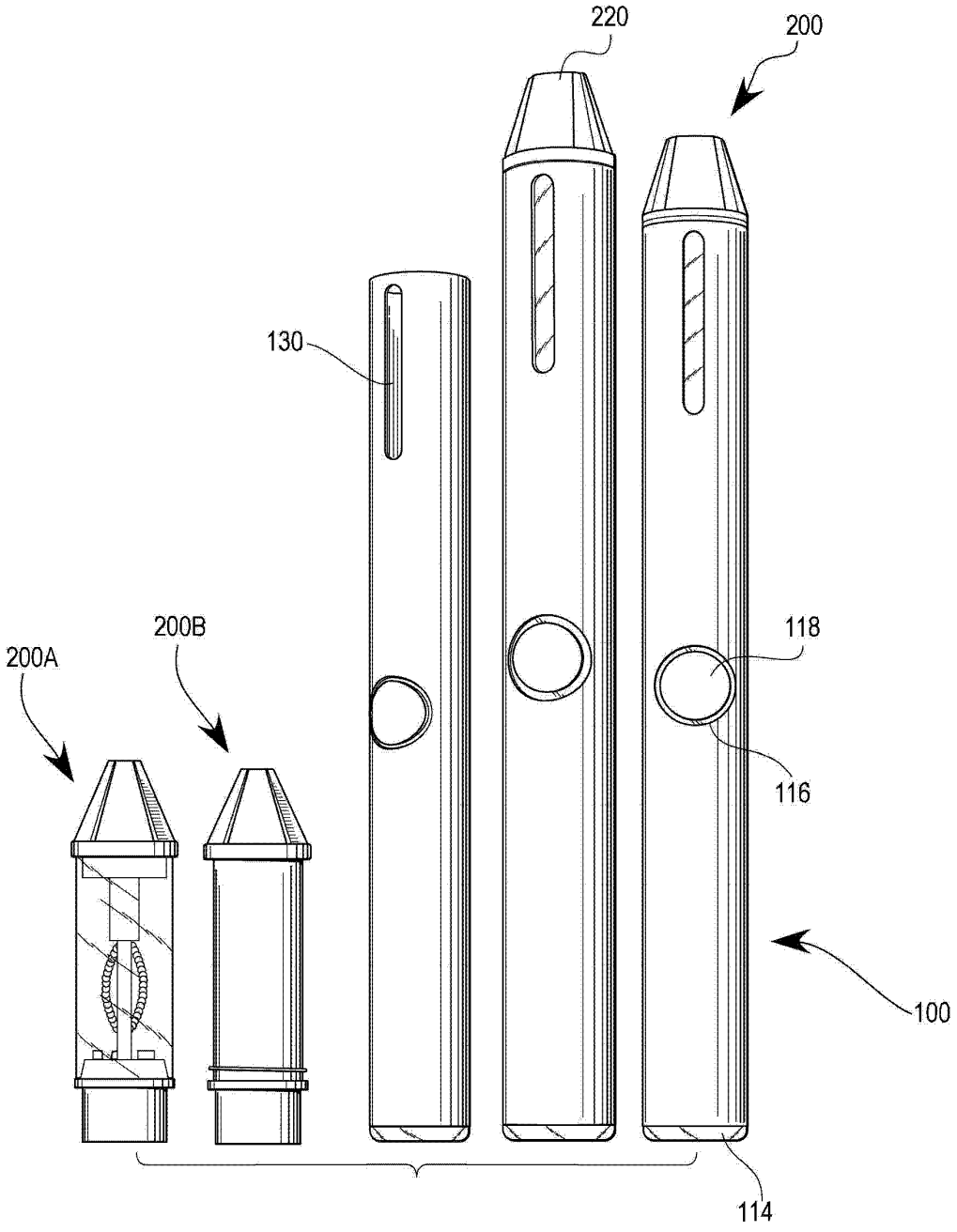


图 4

NJOY Exhibit 1002.835

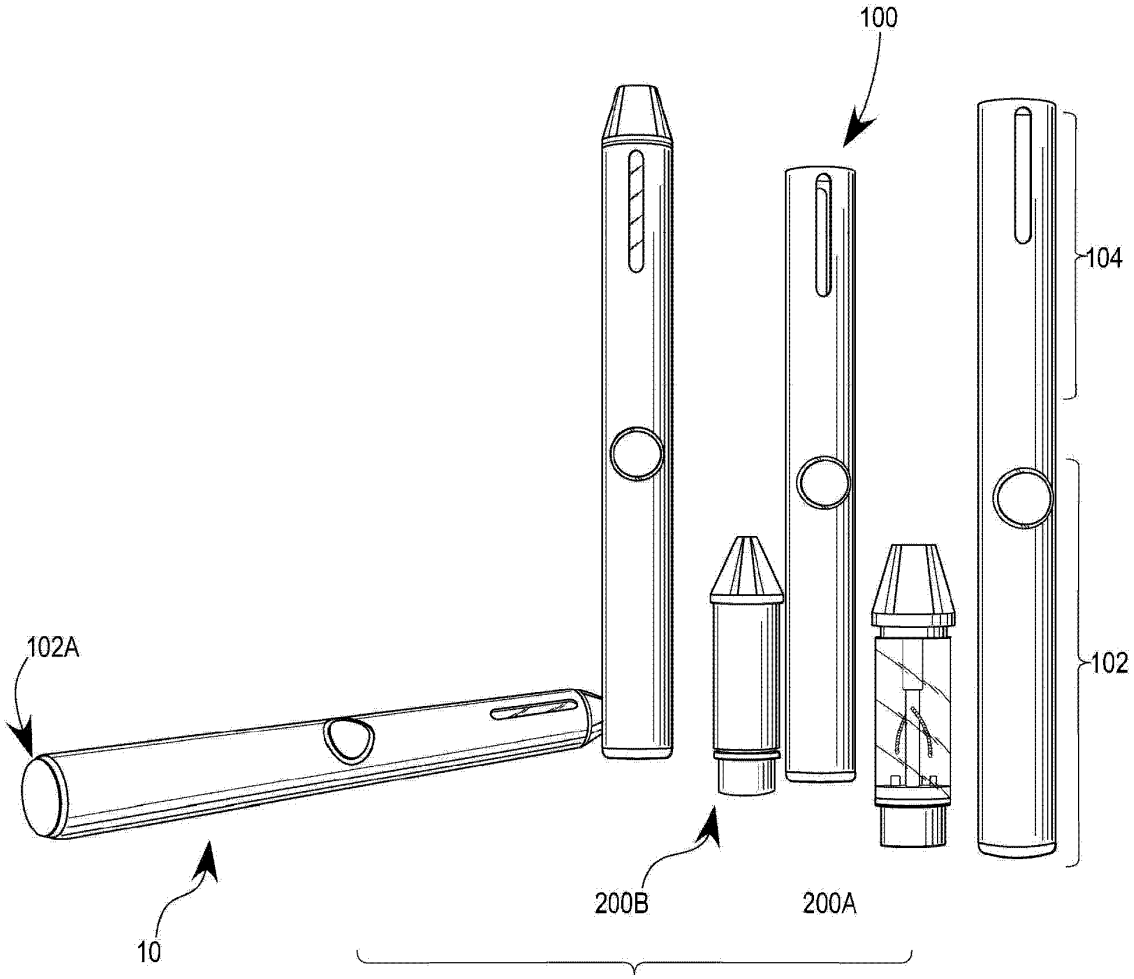


图 5

NJOY Exhibit 1002.836

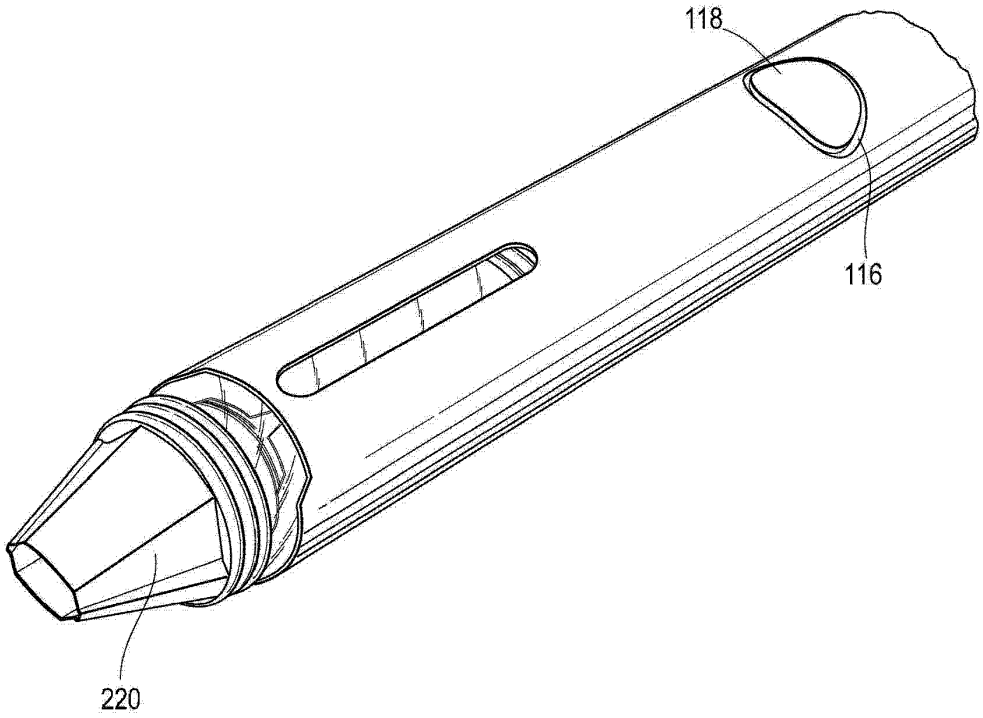


图 6

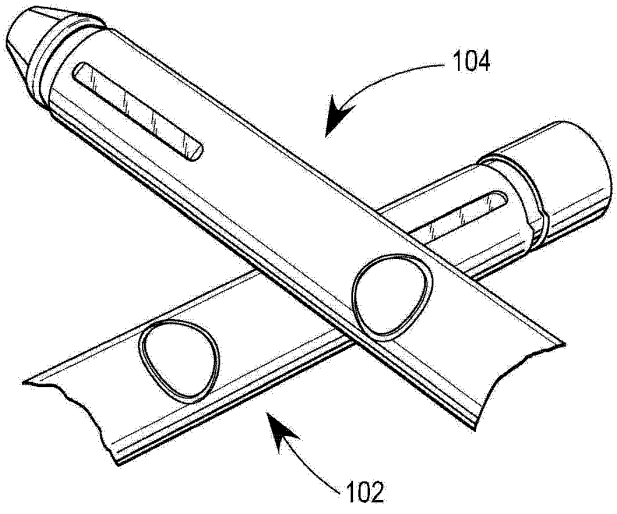


图 7

NJOY Exhibit 1002.837

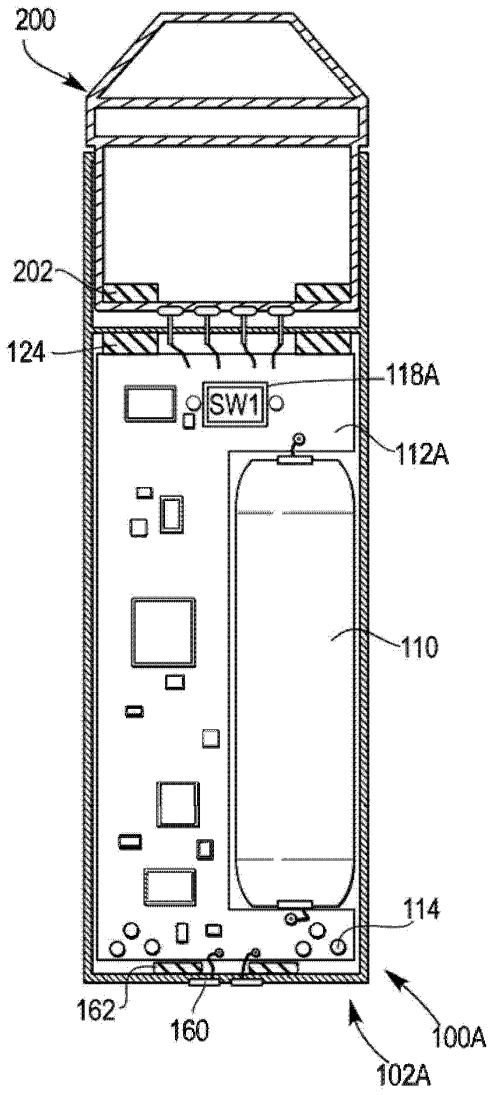


图 8

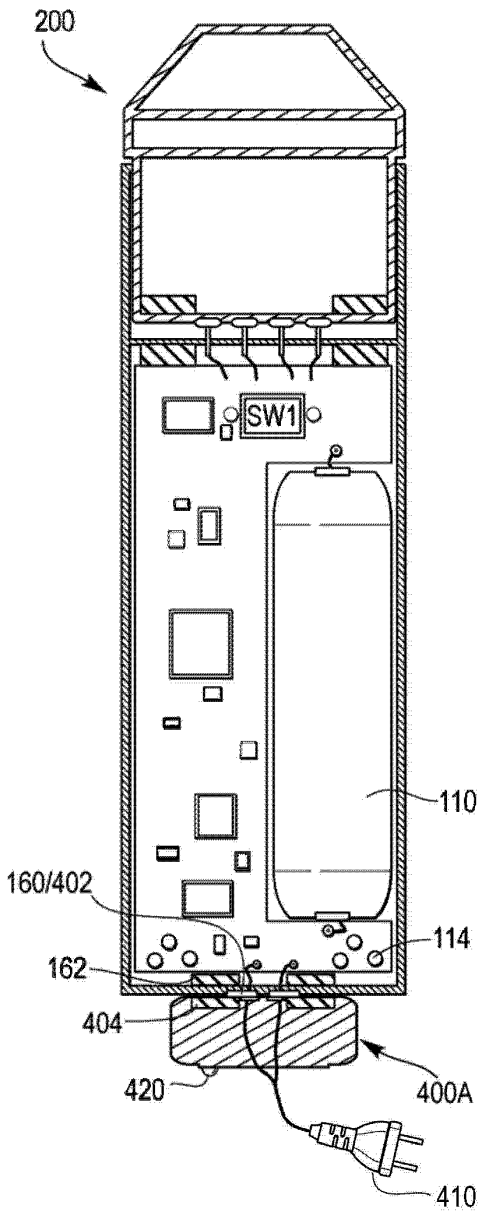


图 9

NJOY Exhibit 1002.838

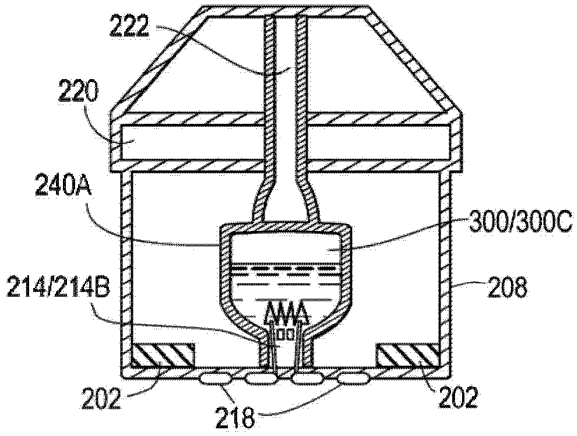


图 10

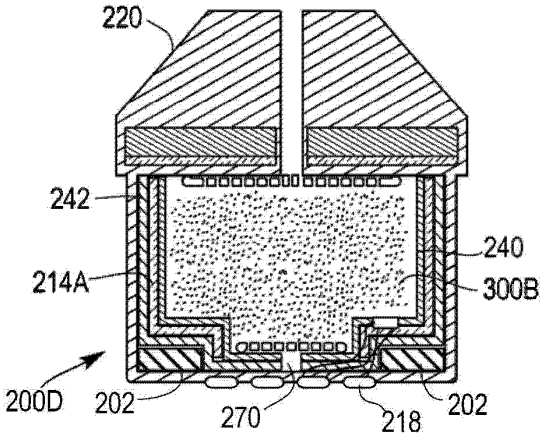


图 11

NJOY Exhibit 1002.839

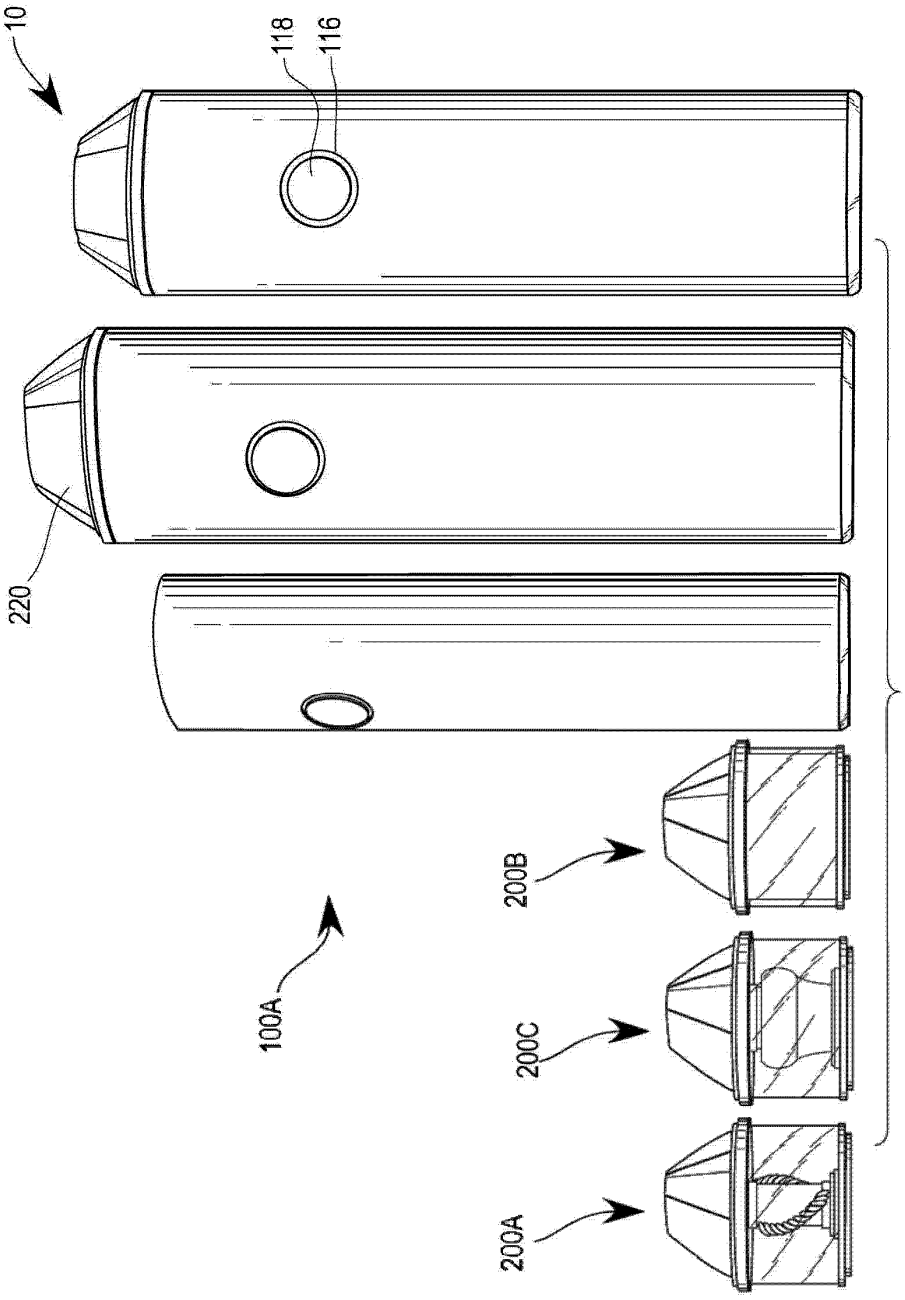


图 12

NJOY Exhibit 1002.840

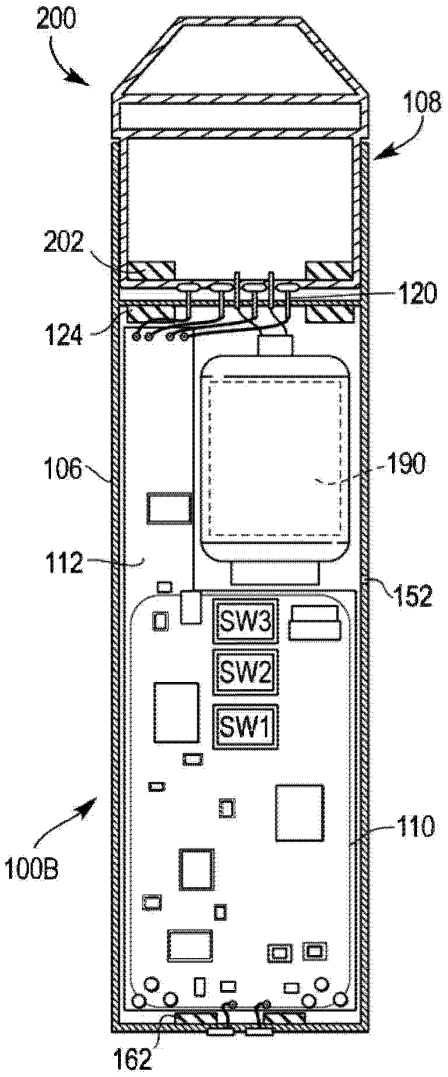


图 13

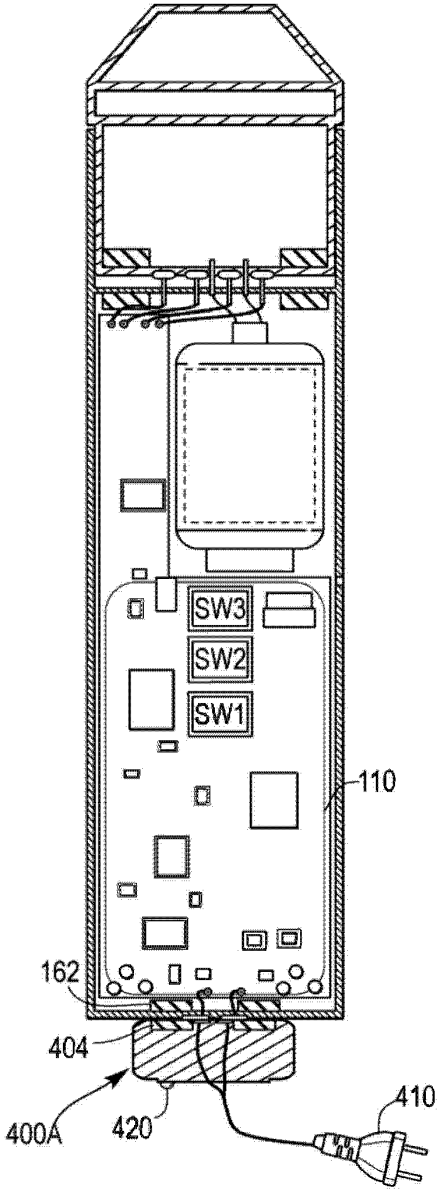


图 14

NJOY Exhibit 1002.841

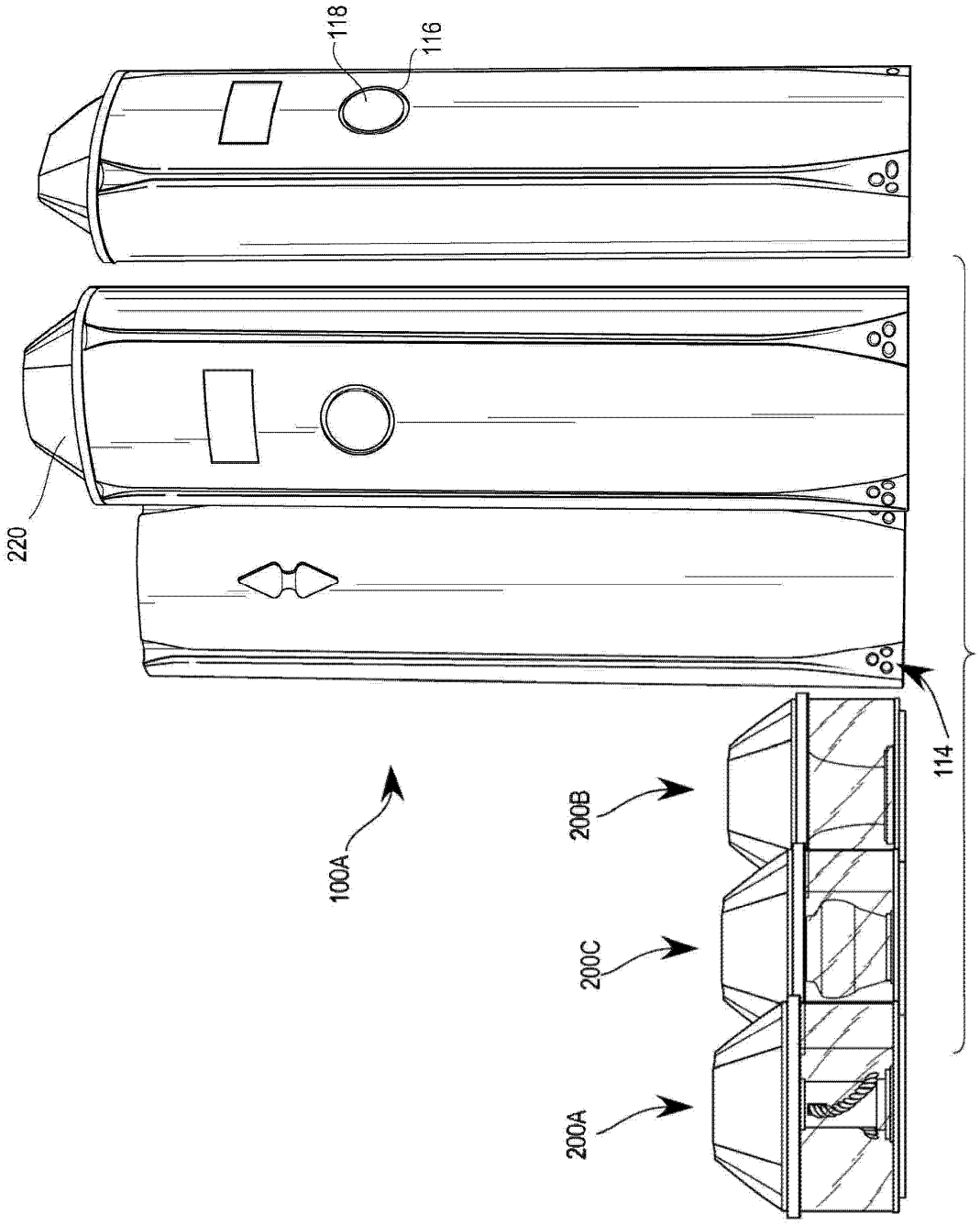


图 15

NJOY Exhibit 1002.842

Comparative Design 2:

[11] Grant Announcement No: CN301111821D [45] Date of Grant Announcement: January 13, 2010

[22] Filing date: November 14, 2008 [21] Filing No.: CN200830138383.4 Classification No.: 13-02

[72] Designer(s): Motohiro Sasada; [30] Priority: July 7, 2008 JP2008-017386 Document No.: CN301111821D

[73] Patentee: SANYO Electric Corp. Address: Osaka, Japan

[74] Patent agency: Beijing Kingsound & Partners Agent: Bin Zhang; Jiaxiang Zhao

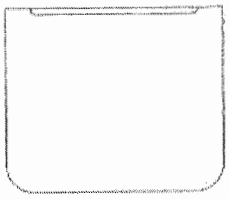
[57] Brief description: 1. The left view is omitted because of being symmetrical with the right view.
2. The left view of the cover removed state is omitted because of being symmetrical with the right view of the cover removed state.

[54] Title of Product using the Design: Charger

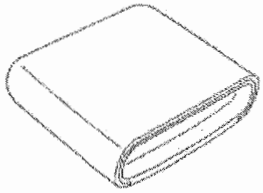
Note: 1. Part of the Bibliographic Data is not shown owing to limitations of space.
2. The views are not shown to scale for the sake of illustrative clarity.



Top view



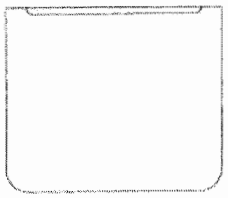
Back view



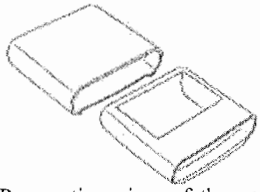
Perspective view



Top view of the cover removed state



Back view of the cover removed state



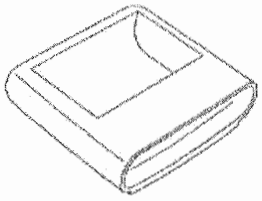
Perspective view of the cover removed state



Bottom view of the cover removed state



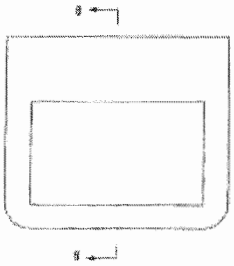
Right view of the cover removed state



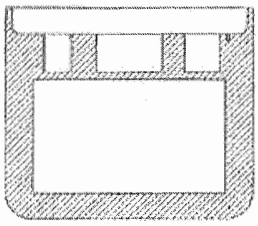
Perspective view of the host of the cover removed state

NJOY Exhibit 1002.843

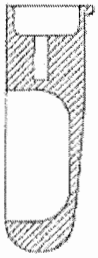
Comparative Design 2:



Front view of the cover removed state



A-A' Sectional view with internal structured omitted



B-B' Sectional view with internal structured omitted

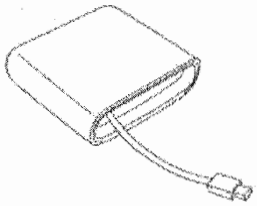


Fig. 1: State when in use

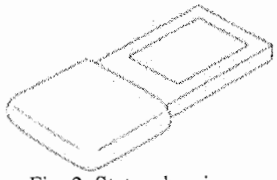


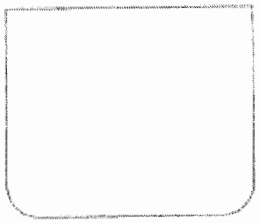
Fig. 2: State when in use



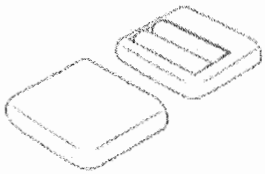
Bottom view



Right view



Front view



Perspective view when in the state with batteries encased and cover removed

NJOY Exhibit 1002.844

DesignView

Design

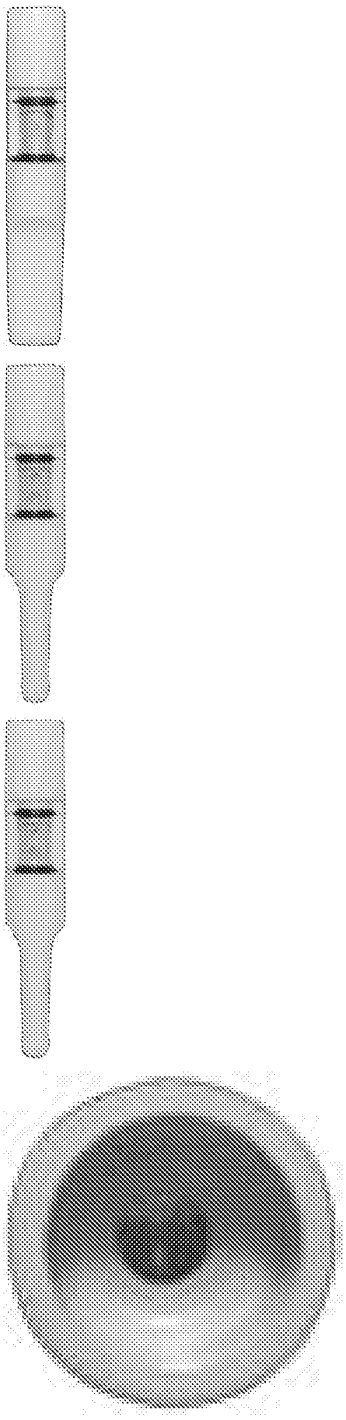
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Design number	201030279764.1
(21) Application number	201030279764.1
(25) Application language code	
Second language code	
(22) Application date	19-08-2010
(43)/(44) Application published	
Application reference	
(11) Registration number	301485739
(15) Registration date	16-03-2011
Publication date	16-03-2011
Design description	
(46) End of deferment	
(18) Expiry date	
Effective date	16-03-2011
Design current status code	Design lapsed
Design current status date	
Comment	
(82) Statements contained in the application	

(55) Representation (views of design)

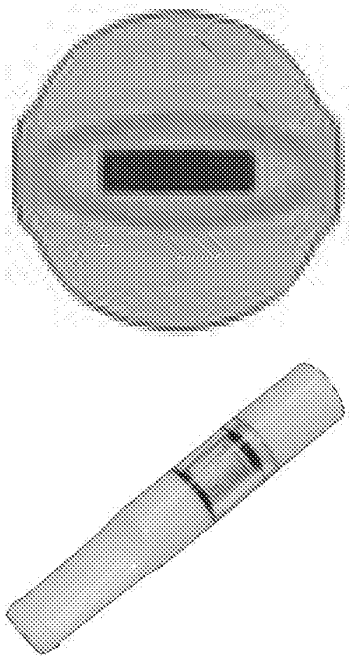


NJOY Exhibit 1002.845

DesignView



DesignView



Indication of the product and classification

Language code	(54) Indication product
zh	##(SLQXXDT-007)
en	Cigarette (SLQXXDT-007)
-	-

(51) Locarno classification 27.02

(71)(73)(78) Owner

Applicant Identifier CN702010030279764-0001-001

Name ###

(74) Representative

Representative identifier CN702010030279764-0001-001

Name ##

(72) Designer

Designer identifier	Designer name
	###

(750) Correspondence address

NJOY Exhibit 1002.847

DesignView

No entry for the design number CN702010030279764-0001

(23) Exhibition priority

No entry for the design number CN702010030279764-0001

(30) Priority

No entry for the design number CN702010030279764-0001

Publication

No entry for the design number CN702010030279764-0001

Recordals

No entry for the design number CN702010030279764-0001

Renewals

No entry for the design number CN702010030279764-0001

NJOY Exhibit 1002.848

Comparative Design 10:

[11] Grant Announcement No: CN301547686S [45] Date of Grant Announcement: May 11, 2011

[22] Filing date: November 1, 2010 [21] Filing No.: CN201030587563.8 Classification No.: 27-99

[72] Designer(s): Weihua Qiu [30] Priority: Document No.: CN301547686S

[73] Patentee: Changzhou Fu'aifa I&E Co.,ltd Address: 607, Building 2, Fuchen Mansion, Taihu East Road 8, New North District, Changzhou, Jiangsu 213022

[74] Patent agency: Changzhou Weiyi IP Law Firm Agent: Xuecheng He

[57] Brief description:
1. Title of the design: Oral Portable Sucking Atomizer.
2. Use of the design: The design is used as an apparatus to smoke electronic cigarettes.
3. Main design points of the design: The front view of the product.
4. View that can mostly represent the main design points: The front view.
5. The left view of the product is omitted because of being symmetrical with the right view. The bottom view is omitted because of having no design points.

[54] Title of Product using the Design: Oral Portable Sucking Atomizer

Note: 1. Part of the Bibliographic Data is not shown owing to limitations of space.
2. The views are not shown to scale for the sake of illustrative clarity.



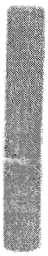
Front view



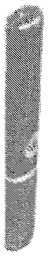
Top view



Right view



Back view



Perspective view

NJOY Exhibit 1002.849

Comparative Design 3:

[11] Grant Announcement No: CN301753038S [45] Date of Grant Announcement: December 7, 2011

[22] Filing date: June 10, 2011 [21] Filing No.: CN201130167619.9 Classification No.: 27-99

[72] Designer(s): Yonghai Li; Zhongli Xu [30] Priority: Document No.: CN301753038S

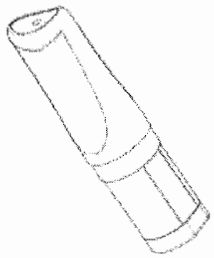
[73] Patentee: Yonghai Li; Zhongli Xu Address:, Floor(s) 1/2/3, Building C, Tangwei High Tech Parks, Fuyong Street, Bao'an District, Shenzhen, Guangdong 518000

[74] Patent agency: Beijing IntellecPro Law Firm Agent: Xiaoyong Sun

[57] Brief description:
1. Title of the design: Cartridge (EGO-T).
2. Use of the design: As a component of an electronic cigarette, it serves to store smoke juice and also as a smoke channel.
3. Main design points of the design: The six views and perspective view.
4. The specified perspective view.

[54] Title of Product using the Design: Cartridge (EGO-T)

Note: 1. Part of the Bibliographic Data is not shown owing to limitations of space.
2. The views are not shown to scale for the sake of illustrative clarity.



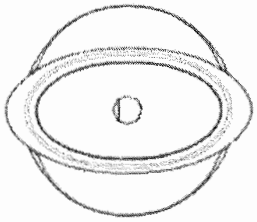
Perspective view



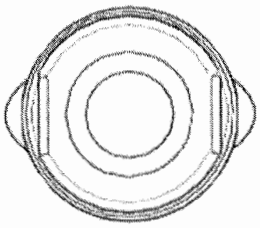
Front view



Back view



Top view



Bottom view



Left view



Right view

NJOY Exhibit 1002.850

Comparative Design 5:

[11] Grant Announcement No: CN301797114S [45] Date of Grant Announcement: January 11, 2012

[22] Filing date: July 7, 2011 [21] Filing No.: CN201130214049.4 Classification No.: 27-99

[72] Designer(s): Jianyong Wu [30] Priority: Document No.: CN301797114S

[73] Patentee: Shenzhen JSB Technology Co., Ltd. Address: 3rd/4th Floor, Building 3, Xianyuxing Industrial Park, Fuhe Road, Gonghe Community, Shajing Street, Bao'an District, Shenzhen, Guangdong 518000

[74] Patent agency: Shenzhen Jingying IP Law Firm 44242

Agent: Xinlin Li

[57] Brief description: 1. Title of the design: Electronic cigarette cartridge (JSB-I).
2. The product is an electronic smoking set.
3. Main design points of the design: The appearance design of the product.
4. The reference view showing the state in use is the main design view.

[54] Title of Product using the Design: Electronic Cigarette Cartridge (JSB-I)

Note: 1. Part of the Bibliographic Data is not shown owing to limitations of space.
2. The views are not shown to scale for the sake of illustrative clarity.



Front view



Back view



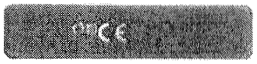
Left view



Right view



Top view



Bottom view



Reference view showing the state in use

NJOY Exhibit 1002.851

Comparative Design 8:

[11] Grant Announcement No: CN301955679S [45] Date of Grant Announcement: June 13, 2012

[22] Filing date: December 16, 2011 [21] Filing No.: CN201130484186.X Classification No.: 27-99

[72] Designer(s): Lou Gu [30] Priority: Document No.: CN301955679S

[73] Patentee: Lou Gu Address: Room 1202, Building 2, Lane 650, Wuding Road, Jing'an District, Shanghai 200040

[74] Patent agency: Shanghai Xintian IP Law Firm 31213 Agent: Hongfang Hu

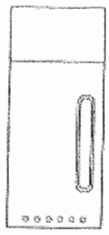
[57] Brief description:

1. Title of the design: Electronic Atomizer.
2. Use of the design: The design is used to help quit smoking or as an electronic atomizing device for converting liquid into gas.
3. Main design points of the design: The shape of the product.
4. Figure or photo that can mostly represent the main design points: The perspective view.
5. The back view is omitted because of being symmetrical with the front view. The right view is omitted because of being symmetrical with the left view. The bottom view is omitted because of being symmetrical with the top view.

[54] Title of Product using the Design: Electronic Atomizer

Note: 1. Part of the Bibliographic Data is not shown owing to limitations of space.

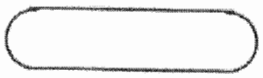
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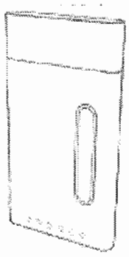
Front view



Left view



Top view



Perspective view

NJOY Exhibit 1002.852

Expand all sections | Collapse all sections

Design

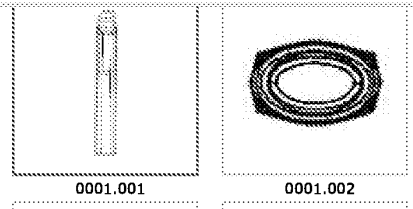
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	Design number	201130439624.0
(21)	**Application number**	201130439624.0
(25)	**Application language code**	
	Second language code	
(22)	**Application date**	25-11-2011
(43)/(44)	**Application published**	
	Application reference	
(11)	**Registration number**	301970169
(15)	**Registration date**	27-06-2012
	Publication date	27-06-2012
(57)	**Design description**	
(46)	**End of deferment**	
	Renewal current status code	
(18)	**Expiry date**	
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	Design current status code	Registered and fully published
	Design current status date	
	Comment	
(82)	**Statements contained in the application**	

Translation provided by Google translate

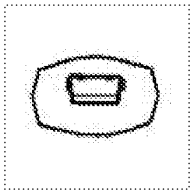
(55) Representation (views of design)

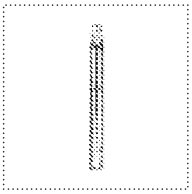
NJOY Exhibit 1002.853

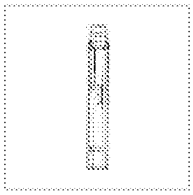
Expand all sections | Collapse all sections

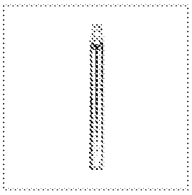

0001.001

0001.002

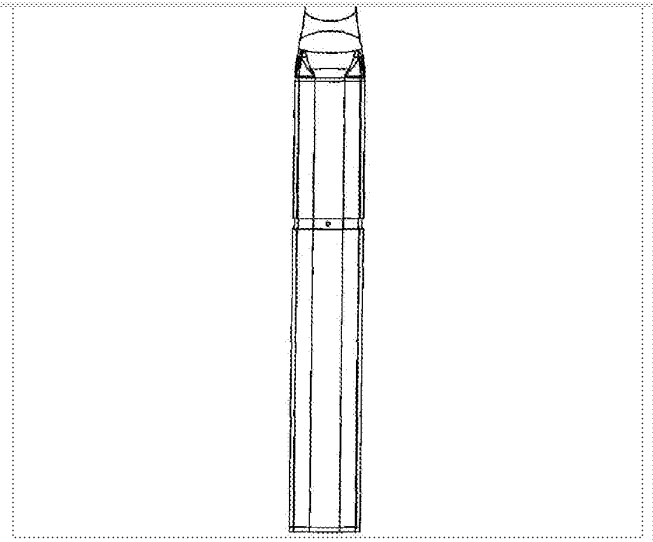

0001.003


0001.004


0001.005


0001.006

1 / 2



1 2

Indication of the product and classification

Language code	(54) Indication product
zh	电子香烟(内置雾化器)
en	Electronic cigarette (Inset atomizer)
-	-
(51) Locarno classification	27.99

Translation provided by Google translate

(71)/(73)/(78) Owner

Applicant Identifier CN702011030439624-0001-001

Name 周学武

(74) Representative

NJOY Exhibit 1002.854

Expand all sections | Collapse all sections

Representative identifier	CN702011030439624-0001-001
Name	付晓青
Representative identifier	CN702011030439624-0001-002
Name	杨玉荣

(72) Designer

Designer identifier	Designer name
	周学武

(750) Correspondence address

No entry for the design number CN702011030439624-0001

(23) Exhibition priority

No entry for the design number CN702011030439624-0001

(30) Priority

No entry for the design number CN702011030439624-0001

Publication

No entry for the design number CN702011030439624-0001

Recordals

No entry for the design number CN702011030439624-0001

Renewals

No entry for the design number CN702011030439624-0001

NJOY Exhibit 1002.855

Comparative Design 12:

[11] Grant Announcement No: CN302396126S [45] Date of Grant Announcement: April 10, 2013

[22] Filing date: October 30, 2012 [21] Filing No.: CN201230522540. 8 Classification No.: 27-99

[72] Designer(s):Xiaochun Zhu [30] Priority: Document No.: CN302396126S

[73] Patentee: Shenzhen Kanger Tech Co., Ltd. Address: Room 1110, 11th Floor, Huiying Business Mansion, Zhongxin Road, Shajing Street, Bao'an District, Shenzhen, Guangdong 518000

[74] Patent agency: Guangzhou Yuexiu Zheli IP& Tradeamark Agent Ltd. (General Partner) 44288 Agent: Yue Li

[57] Brief description:

1. Title of the design: Electronic Cigarette (ISmart).
2. Use of the design: The product is an electronic cigarette that atomizes a substance comprising a fragrant material with an electronic element.
3. Main design points: The shape of the product.
4. Figure or photo that can mostly represent the main design points: The perspective view.

[54] Title of Product using the Design: Electronic Cigarette (ISmart)

Note: 1. Part of the Bibliographic Data is not shown owing to limitations of space.
2. The views are not shown to scale for the sake of illustrative clarity.



Front view



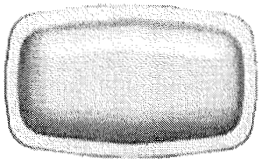
Back view



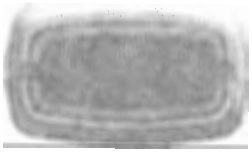
Left view



Right view



Top view



Bottom view



Perspective view

NJOY Exhibit 1002.856

Comparative Design 7:

[11] Grant Announcement No: CN302485056S [45] Date of Grant Announcement: June 26, 2013

[22] Filing date: January 16, 2013 [21] Filing No.: CN201330012302.7 Classification No.: 27-99

[72] Designer(s): Shuigen Liu [30] Priority: Document No.: CN302485056S

[73] Patentee: Shuigen Liu Address: Room 12, Floor 3, Building 1, Changyi Road, Chang'an Town, Dongguan, Guangdong 523000

[74] Patent agency: Shenzhen Standard Patent &Trademark Agent Ltd. Agent: Xiaohong Cai

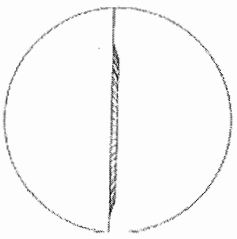
[57] Brief description:

1. Title of the design: Tobacco Vaporizer.
2. Use of the design: The electronic vaporizer is used for the generation of smoke upon heating the tobacco, herbs or medicament.
3. Main design points of the design: The shape of the product.
4. Figure or photo that can mostly represent the main design points: The perspective view 1 of design 1.
5. Design 1 is a main design, and design 2 is a similar design. The front view, the back view, the left view, the right view and the top view of design 2 are omitted because of being identical to that of the design 1 respectively.

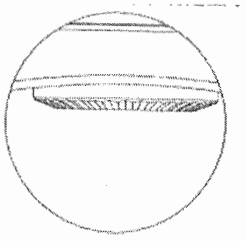
[54] Title of Product using the Design: Tobacco Vaporizer

Note: 1. Part of the Bibliographic Data is not shown owing to limitations of space.

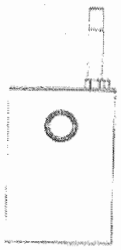
2. The views are not shown to scale for the sake of illustrative clarity.



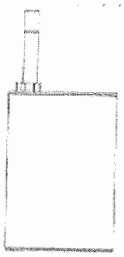
Amplified view of portion A



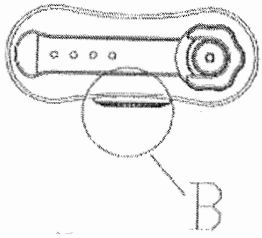
Amplified view of portion B



Front view of design 1



Back view of design 1



Top view of design 1



Bottom view of design 1



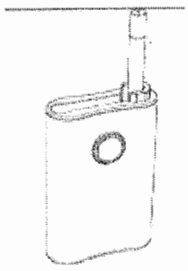
Left view of design 1



Right view of design 1

NJOY Exhibit 1002.857

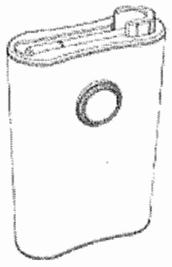
Comparative Design 7:



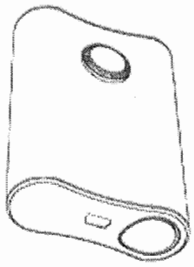
Perspective view of design 1



Perspective view of design 2



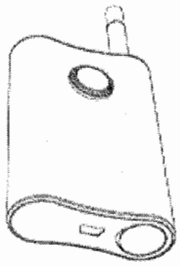
Reference Fig. 1 showing the state of design 1 in use



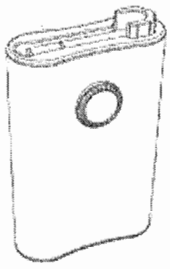
Reference Fig. 2 showing the state design 1 in use



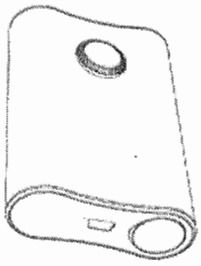
Bottom view of design 2



Perspective view of design 2



Reference Fig. 1 showing the state of design 2 in use



Reference Fig. 2 showing the state of design 2 in use

NJOY Exhibit 1002.858

Comparative Design 9:

[11] Grant Announcement No: CN302660481S [45] Date of Grant Announcement: November 27, 2013

[22] Filing date: July 9, 2013 [21] Filing No.: CN201330318288. 3 Classification No.: 13-02

[72] Designer(s): Juandi Wang [30] Priority: Document No.: CN302660481S

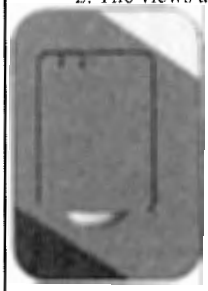
[73] Patentee: Lihong Electronics in Simen Town, Yuyao
Address: Xiaoluxiacun, Simen Town, Yuyao, Ningbo, Zhejing 315472

[74] Patent agency: Beijing DFHZ IP Law Firm (General Partner) 11296 Agent: Shuxian Zhang

[57] Brief description: 1. Title of the design: Cellphone Battery Charger (30).
2. Use of the design: The design is used for charging cellphone battery.
3. Main design points of the design: The shape of the product.
4. Figure or photo that can mostly represent the main design points: The perspective view.

[54] Title of Product using the Design: Cellphone Battery Charger (30)

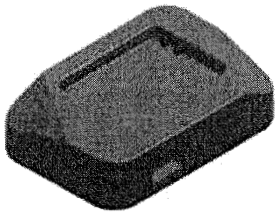
Note: 1. Part of the Bibliographic Data is not shown owing to limitations of space.
2. The views are not shown to scale for the sake of illustrative clarity.



Top view



Back view



Perspective view



Bottom view



Right view



Front view



Left view

NJOY Exhibit 1002.859

Comparative Design 5:

[11] Grant Announcement No: CN302680448S [45] Date of Grant Announcement: December 11, 2013

[22] Filing date: July 9, 2013 [21] Filing No.: CN201330318293. 4 Classification No.: 13-02

[72] Designer(s): Juandi Wang [30] Priority: Document No.: CN302680448S

[73] Patentee: Lihong Electronics in Simenzhen, Yuyao Address: Xiaoluxiacun, Simen town, Yuyao, Ningbo, Zhejing 315472

[74] Patent agency: Beijing DFHZ IP Law Firm (General Partner) 11296 Agent: Shuxian Zhang

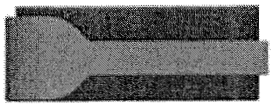
[57] Brief description:
1. Title of the design: Cellphone Battery Charger (23).
2. Use of the design: The design is used for charging cellphone battery.
3. Main design points of the design: The shape of the product.
4. Figure or photo that can mostly represent the main design points: The perspective view.

[54] Title of Product using the Design: Cellphone Battery Charger (23)

Note: 1. Part of the Bibliographic Data is not shown owing to limitations of space.
2. The views are not shown to scale for the sake of illustrative clarity.



Top view



Back view



Perspective view



Bottom view



Right view



Front view



Left view

NJOY Exhibit 1002.860

Comparative Design 7:

[11] Grant Announcement No: CN302799554S [45] Date of Grant Announcement: April 16, 2014

[22] Filing date: November 1, 2013 [21] Filing No.: CN201330521875. 2 Classification No.: 27-99

[72] Designer(s): Kanchao Lin [30] Priority: Document No.: CN302799554S

[73] Patentee: Dongguan Gengxin Electronics, Co., Ltd. Address: No. 1, Alley Five, Hengxing Street, Gangtou Village, Xin'an Community, Chang'an Town, Dongguan, Guangdong 523850

[74] Patent agency: Dongguan Zhongzheng IP Law Firm 44231 Agent: Ping Zhang

[57] Brief description:
1. Title of the design: Housing (atomizer).
2. Use of the design: The design is used as the atomizer housing.
3. Main design points of the design: The overall shape of the product.
4. Figure or photo that can mostly represent the main design points: The perspective view 1.
5. Omitted views: The top view and the bottom view are omitted because of having no main points of the design.

[54] Title of Product using the Design: Housing (atomizer)

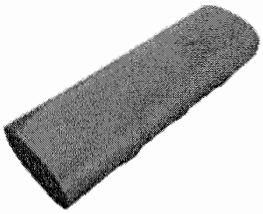
Note: 1. Part of the Bibliographic Data is not shown owing to limitations of space.
2. The views are not shown to scale for the sake of illustrative clarity.

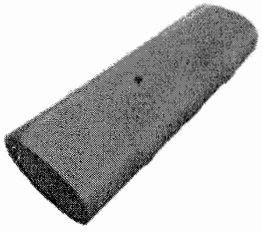

Left view


Front view


Right view


Back view


Perspective view 1


Perspective view 2

NJOY Exhibit 1002.861

Comparative Design 8:

[11] Grant Announcement No: CN302803209S [45] Date of Grant Announcement: April 23, 2014

[22] Filing date: October 29, 2013 [21] Filing No.: CN201330511513. 5 Classification No.: 13-02

[72] Designer(s): Weijun Zeng [30] Priority: Document No.: CN302803209S

[73] Patentee: Shenzhen Shenniu Photographic Equipment Co. Ltd.
Address: 4th Floor, Building A4, Huafa Industrial District, Fuyuanyilu, Xinhe Community, Fuyong Street, Bao'an District, Shenzhen, Guangdong 518000

[74] Patent agency: Shenzhen Qiming IP Law Firm (General Partner) 44270 Agent: Xinkuan Zhang

[57] Brief description:
1. Title of the design: Charger.
2. Use of the design: The design is used for charging electronics.
3. Main design points of the design: The shape of the product.
4. Figure or photo that can mostly represent the main design points: The perspective view.

[54] Title of Product using the Design: Charger

Note: 1. Part of the Bibliographic Data is not shown owing to limitations of space.
2. The views are not shown to scale for the sake of illustrative clarity.



Front view



Back view



Left view



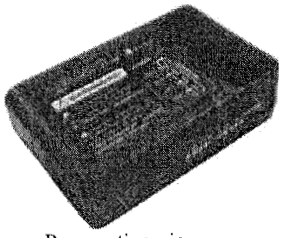
Right view



Top view



Bottom view



Perspective view

NJOY Exhibit 1002.862

Comparative Design 3:

[11] Grant Announcement No: CN302810246S [45] Date of Grant Announcement: April 30, 2014

[22] Filing date: November 21, 2013 [21] Filing No.: CN201330564719. 4 Classification No.: 27-99

[72] Designer(s): Xianghui Wang; [30] Priority: Document No.: CN302810246S

[73] Patentee: Shenzhen DOVPO Technology Co., Ltd Address: Zone a, Floor B3, Building 2, Binghaimingzhu Industrial Park, Loucun Community, Gongming Office, Guangming Dist, Shenzhen, Guangdong 518000

[74] Patent agency: Beijing PSCU Trademarks & Patent Law Office (General Partner) 11221 Agent: Weidong Wang

[57] Brief description:
1. Title of the design: Electronic cigarette (KYX019).
2. Use of the design: The design of the product is used as an electronic cigarette.
3. Main design points of the design: The shape of the product.
4. Figure or photo that can mostly represent the main design points: The front view.

[54] Title of Product using the Design: Electronic Cigarette (KYX019)

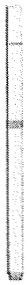
Note: 1. Part of the Bibliographic Data is not shown owing to limitations of space.
2. The views are not shown to scale for the sake of illustrative clarity.



Front view



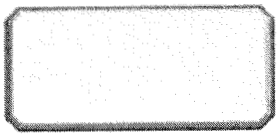
Back view



Left view



Right view



Top view



Bottom view

NJOY Exhibit 1002.863

Comparative Design 1:

[11] Grant Announcement No: CN302814868S [45] Date of Grant Announcement: May 7, 2014

[22] Filing date: January 2, 2014 [21] Filing No.: CN201430000578. 8 Classification No.: 13-02; 23-04

[72] Designer(s): Lehong Xiang; Qiang Chen; Haoyu Ye [30] Priority: Document No.: N302814868S

[73] Patentee: Ningbo Lijing Digital Technology Co., Ltd. Address: Qihang South Rd 588, Binhai Investment and Enterprising Centre, Yinzhou District, Ningbo, Zhejiang Province

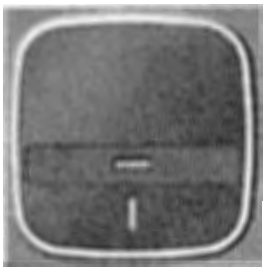
[74] Patent agency: Ningbo Yinzhou Yongzhi IP Law Firm (General Partner)

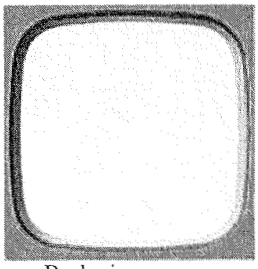
Agent: Zhongjiong Dai

[57] Brief description:
1. Title of the design: Charger Base (2) with Negative Ions Function.
2. Use of the design: The design is used for charging cellphone, tablet and sterilizing using negative ions.
3. Main design points of the design: The shape of the product.
4. Figure or photo that can mostly represent the main design points: The perspective view.

[54] Title of Product using the Design: Charger Base (2) with Negative Ions Function

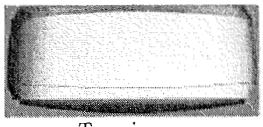
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2. The views are not shown to scale for the sake of illustrative clarity.

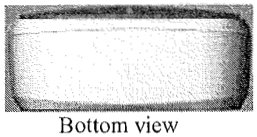

Front view


Back view


Left view


Right view


Top view


Bottom view


Perspective view

NJOY Exhibit 1002.864

Comparative Design 10:

[11] Grant Announcement No: CN302859209S [45] Date of Grant Announcement: June 25, 2014

[22] Filing date: December 24, 2013 [21] Filing No.: CN201330642415.5 Classification No.: 27-99

[72] Designer(s): Albanese Bret Mathew [30] Priority: Document No.: CN302859209S

[73] Patentee: Albanese Bret Mathew Address: L.A. CA, U.S.A.

[74] Patent agency: Beijing Semeny IP Law Firm (General Partner) 11378 Agent: Yonggang Yan

[57] Brief description:
1. Title of the design: Electronic Cigarette (Atomizer).
2. Use of the design: The design of the product is used for simulating a smoking device.
3. Main design points of the design: The shape of the product.
4. Figure or photo that can mostly represent the main design points: The perspective view.

[54] Title of Product using the Design: Electronic Cigarette (Atomizer)

Note: 1. Part of the Bibliographic Data is not shown owing to limitations of space.

2. The views are not shown to scale for the sake of illustrative clarity.

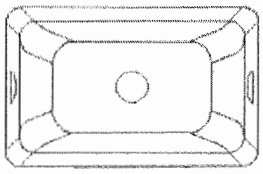


Front view

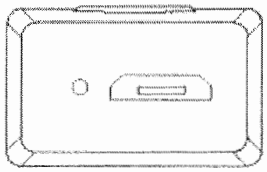


Left view

Right view



Top view



Bottom view

Back view



Perspective view

NJOY Exhibit 1002.865

Comparative Design 11:

[11] Grant Announcement No: CN302884434S [45] Date of Grant Announcement: July 16, 2014

[22] Filing date: December 12, 2013 [21] Filing No.: CN201330617315. 7 Classification No.: 27-99

[72] Designer(s):Yi Chen [30] Priority: Document No.: CN302884434S

[73] Patentee: Yi Chen Address: No. 34, Group 5, Jianshe Village, Hezhaung Town, Xiaoshan District, Hangzhou, Zhejiang

[74] Patent agency: Shenzhen Zhonglian Intellectual Property 44274 Agent: Jun Li

[57] Brief description:

1. Title of the design: Electronic Cigarette (PAX).
2. Use of the design: The design is used as a substitute for cigarettes, i.e., electronic cigarette.
3. Main design points of the design: The shape, pattern and the combination thereof of the product.
4. Figure or photo that can mostly represent the main design points: The perspective view.

[54] Title of Product using the Design: Electronic Cigarette (PAX)

Note: 1. Part of the Bibliographic Data is not shown owing to limitations of space.
2. The views are not shown to scale for the sake of illustrative clarity.



Front view



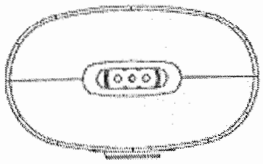
Back view



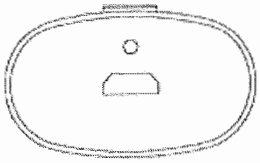
Left view



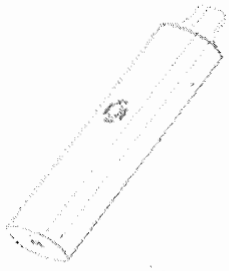
Right view



Top view



Bottom view



Perspective view

NJOY Exhibit 1002.866

Comparative Design 9:

[11] Grant Announcement No: CN302926289S [45] Date of Grant Announcement: August 27, 2014

[22] Filing date: April 21, 2014 [21] Filing No.: CN201430097023. X Classification No.: 27-99

[72] Designer(s): Guangrong Lin [30] Priority: Document No.: CN302926289S

[73] Patentee: Guangrong Lin Address: 3rd Floor, Building 3A, Sha'er Lantian S/T Parks, Ditang Road, Shajing Town, Bao'an District, Shenzhen, Guangdong 518104

[74] Patent agency: Shenzhen HB IP Law Firm 44271 Agent: Qun Man

[57] Brief description:
1. Title of the design: Electronic Cigarette Atomizer (HVM5-C).
2. Use of the design: The design is used for atomizing the smoke liquid of an electronic cigarette.
3. Main design points of the design: The overall shape of the product. The external tube and the liquid holder of the atomizer in design 2 are made from transparent materials such that a user could conveniently observe the use state of smoke liquid.
4. Figure or photo that can mostly represent the main design points: The perspective view 1 of design 1.
5. Design 1 is the main design.

[54] Title of Product using the Design: Electronic Cigarette Atomizer (HVM5-C)

Note: 1. Part of the Bibliographic Data is not shown owing to limitations of space.
2. The views are not shown to scale for the sake of illustrative clarity.



Front view of design 1



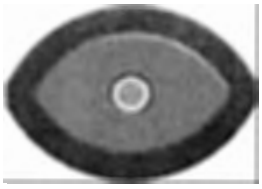
Back view of design 1



Left view of design 1



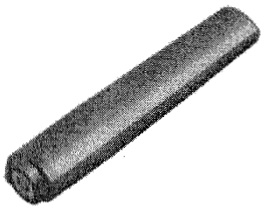
Right view of design 1



Top view of design 1



Bottom view of design 1



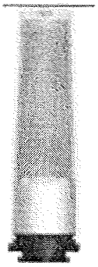
Perspective view of design 1

NJOY Exhibit 1002.867

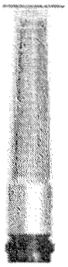
Comparative Design 9:



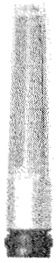
Front view of design 2



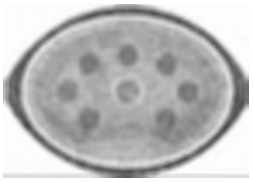
Back view of design 2



Left view of design 2



Right view of design 2



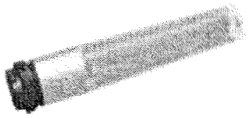
Top view of design 2



Bottom view of design 2



Perspective view 1 of design 2



Perspective view 2 of design 2

NJOY Exhibit 1002.868

Comparative Design 4:

[11] Grant Announcement No: CN302950830S [45] Date of Grant Announcement: September 24, 2014

[22] Filing date: February 21, 2014 [21] Filing No.: CN201430031639. 7 Classification No.: 27-99

[72] Designer(s): Shibo Shi [30] Priority: Document No.: CN302950830S

[73] Patentee: Shibo Shi; Huashan Li Address: No.329, Mayin Group, Xiufeng Village, Jichang Town, Dushan County, Miao Nationality Autonomous Prefecture, Bouyei Nationality, Qian'nan,Guizhou 558200

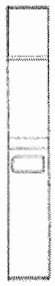
[74] Patent agency: Shenzhen Zhonglian IP Law Firm 44274 Agent: Jun Li

[57] Brief description:

1. Title of the design: Electronic cigarette (W1).
2. Use of the design: The design of the product is used as a cigarette substitute, i.e, electronic cigarette.
3. Main design points of the design: The shape, pattern and combination thereof of the product.
4. Figure or photo that can mostly represent the main design points: The perspective view.

[54] Title of Product using the Design: Electronic Cigarette (W1)

Note: 1. Part of the Bibliographic Data is not shown owing to limitations of space.
2. The views are not shown to scale for the sake of illustrative clarity.



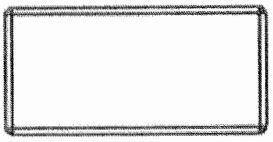
Front view



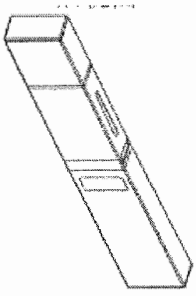
Back view



Left view



Top view



perspective view

NJOY Exhibit 1002.869

Comparative Design 5:

[11] Grant Announcement No: CN303044212S [45] Date of Grant Announcement: December 17, 2014

[22] Filing date: July 24, 2014 [21] Filing No.: CN201430254482.4 Classification No.: 27-99

[72] Designer(s): Hualin Zeng [30] Priority: Document No.: CN303044212S

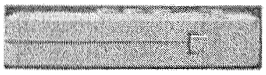
[73] Patentee: Wenzhou Starbuss Industry and Trade Co., Ltd. Address: No. 14, Fuju Road, Sanxi Industrial Park, Ouhai District, Wenzhou, Zhejing 325000

[74] Patent agency: Wenzhou Ouyue IP Law Firm 33211 Agent: Youfu Li

[57] Brief description:
1. Title of the design: Electronic Cigarette Tobacco Vaporizer (POP-6808).
2. Use of the design: The product is used for an electronic cigarette for smoking.
3. Main design points of the design: The overall appearance and shape of the product, especially the shape design of the button and the arrangement and the layout of the button in the top view.
4. Figure or photo that can mostly represent the main design points: The perspective view.

[54] Title of Product using the Design: Electronic Cigarette Tobacco Vaporizer (POP-6808)

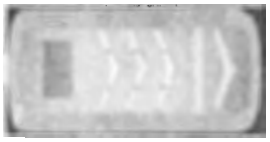
Note: 1. Part of the Bibliographic Data is not shown owing to limitations of space.
2. The views are not shown to scale for the sake of illustrative clarity.

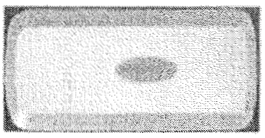

Front view


Back view


Left view


Right view


Top view


Bottom view

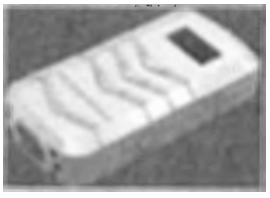

Perspective view


Fig. 1 showing the state in use


Fig. 2 showing the state in use

NJOY Exhibit 1002.870

The following Specification comes from the corresponding U.S. Design Application No. 29/499,025.

CHARGING DEVICE FOR ELECTRONIC VAPORIZATION DEVICE

PREAMBLE

We, Adam Bowen, James Monsees and Steven Christensen, have invented a design for a charging device for electronic vaporization device, as shown and described herein.

DESCRIPTION OF THE FIGURES OF THE DRAWING

FIG. 1 is a perspective view of a charging device for electronic vaporization device, showing our new design;

FIG. 2 is a top plan view thereof;

FIG. 3 is a left side elevation view thereof;

FIG. 4 is a rear elevation view thereof;

FIG. 5 is a right side elevation view thereof;

FIG. 6 is a front elevation view thereof; and

FIG. 7 is a bottom plan view thereof.

CLAIM

What is claimed is:

The ornamental design for a charging device for electronic vaporization device, as shown and described.

NJOY Exhibit 1002.872

(19)中华人民共和国国家知识产权局

(12)外观设计专利

(10)授权公告号 CN 303089422 S
(45)授权公告日 2015.01.28

(21)申请号 201430281766.2

(22)申请日 2014.08.11

(73)专利权人 普洛姆公司
地址 美国加利福尼亚州

(72)设计人 A·鲍恩 J·蒙西斯
史蒂文·克里斯滕森

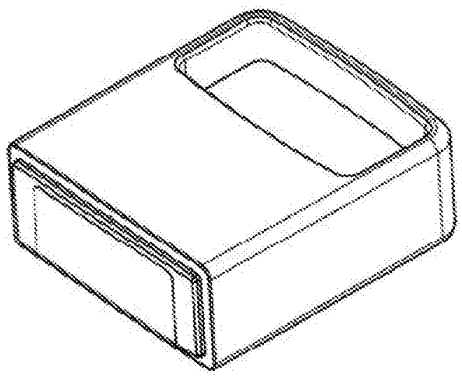
(74)专利代理机构 北京安信方达知识产权代理有限公司 11262
代理人 刘红梅 郑霞

(51)LOC(9)Cl.
13-02

图片或照片7幅 简要说明1页

(54)使用外观设计的产品名称

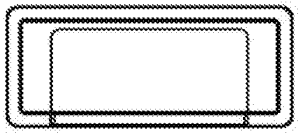
电子蒸发装置的充电装置



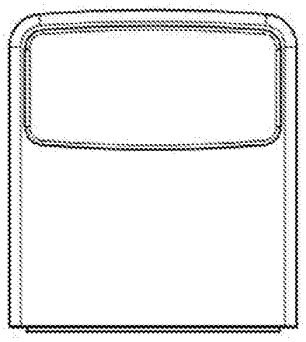
立体图

CN 303089422 S

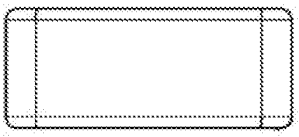
NJOY Exhibit 1002.873



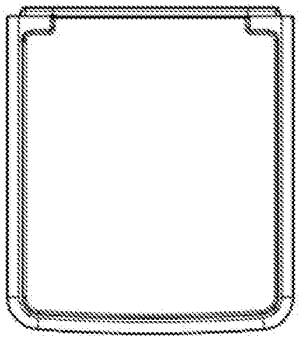
主视图



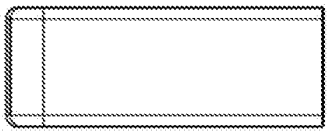
俯视图



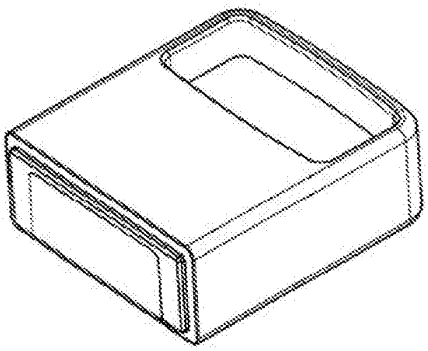
后视图



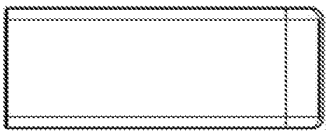
仰视图



左视图



立体图



右视图

NJOY Exhibit 1002.874

1．本外观设计产品的名称：电子蒸发装置的充电装置。

2．本外观设计产品的用途：本外观设计产品用于给电子蒸发装置充电。

3．本外观设计产品的设计要点：该充电装置的形状。

4．最能表明本外观设计设计要点的图片或照片：立体图。

NJOY Exhibit 1002.875

The following Specification comes from the corresponding unpublished U.S. Design Application No. 29/499,021.

CARTRIDGE FOR ELECTRONIC VAPORIZATION DEVICE

PREAMBLE

We, Adam Bowen, James Monsees and Steven Christensen, have invented a design for a cartridge for electronic vaporization device, as shown and described herein.

DESCRIPTION OF THE FIGURES OF THE DRAWING

FIG. 1 is a perspective view of a cartridge for electronic vaporization device, showing our new design;

FIG. 2 is a front elevation view thereof;

FIG. 3 is a left side elevation view thereof;

FIG. 4 is a top plan view thereof;

FIG. 5 is a right side elevation view thereof;

FIG. 6 is a bottom plan view thereof; and

FIG. 7 is a front elevation view thereof.

CLAIM

What is claimed is:

The ornamental design for a cartridge for electronic vaporization device, as shown and described.

NJOY Exhibit 1002.877

(19)中华人民共和国国家知识产权局

(12)外观设计专利

(10)授权公告号 CN 303103389 S
(45)授权公告日 2015.02.11

(21)申请号 201430281676.3

(22)申请日 2014.08.11

(73)专利权人 普洛姆公司
地址 美国加利福尼亚州

(72)设计人 A·鲍恩 J·蒙西斯
史蒂文·克里斯滕森

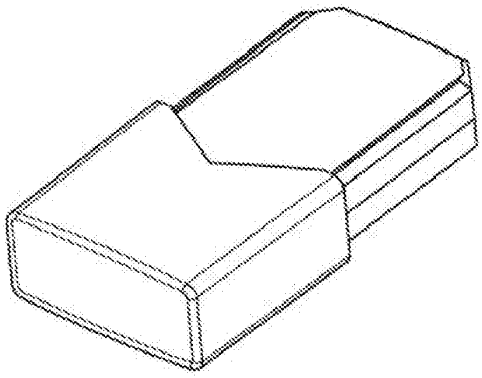
(74)专利代理机构 北京安信方达知识产权代理有限公司 11262
代理人 刘红梅 郑霞

(51)LOC(9)Cl.
27-99

图片或照片7幅 简要说明1页

(54)使用外观设计的产品名称

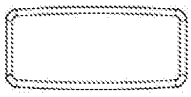
电子蒸发装置的夹头



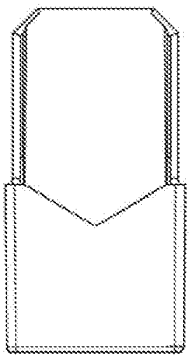
立体图

CN 303103389 S

NJOY Exhibit 1002.878



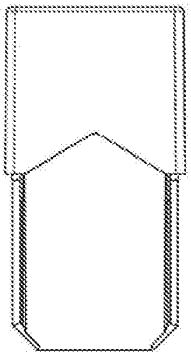
主视图



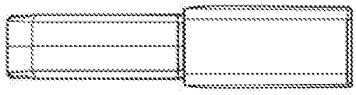
俯视图



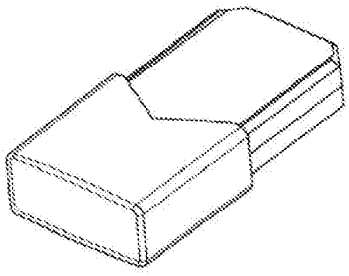
后视图



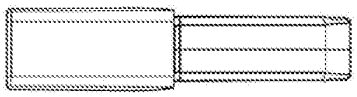
仰视图



左视图



立体图



右视图

NJOY Exhibit 1002.879

1．本外观设计产品的名称：电子蒸发装置的夹头。

2．本外观设计产品的用途：本外观设计产品是电子烟的部件，其中承装有可汽化材料（例如含尼古丁的物质）。

3．本外观设计产品的设计要点：该夹头的形状。

4．最能表明本外观设计设计要点的图片或照片：立体图。

NJOY Exhibit 1002.880

Comparative Design 1:

[11] Grant Announcement No: CN303103390S [45] Date of Grant Announcement: February 11, 2015

[22] Filing date: August 11, 2014 [21] Filing No.: CN201430281767. 7 Classification No.: 27-99

[72] Designer(s): Adam Bowen; James Monsees Steven Christensen [30] Priority: Document No.: CN303103390S

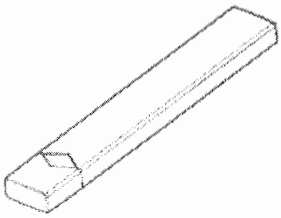
[73] Patentee: Ploom Inc. Address: CA, U.S.A.

[74] Patent agency: Beijing AFD China Intellectual Property 11262 Agent: Hongmei Liu; Xia Zheng

[57] Brief description: 1. Title of the design: Electronic vaporization plant with chuck.
2. Use of the design: The design is used for vaporizing objects, and the plant is an electronic cigarette.
3. Main design points of the design: The shape of the plant.
4. Figure or photo that can mostly represent the main design points: The perspective view.

[54] Title of Product using the Design: Electronic Vaporization Plant with Chuck

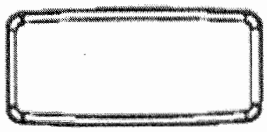
Note: 1. Part of the Bibliographic Data is not shown owing to limitations of space.
2. The views are not shown to scale for the sake of illustrative clarity.



Perspective view



Front view



Back view



Top view



Left view



Right view



Bottom view

NJOY Exhibit 1002.881

Comparative Design 9:

[11] Grant Announcement No: CN303103391S [45] Date of Grant Announcement: February 11, 2015

[22] Filing date: August 13, 2014 [21] Filing No.: CN201430285836.1 Classification No.: 27-99

[72] Designer(s): Shuigen Liu [30] Priority: Document No.: CN303103391S

[73] Patentee: Shuigen Liu Address: Room 12, Floor 3, Building 1, Changyi Road, Chang'an Town, Dongguan, Guangdong 523000

[74] Patent agency: Shenzhen Standard Patent &Trademark Agent Ltd. 44217 Agent: Xiaohong Cai

[57] Brief description:

1. Title of the design: Tobacco Vaporizer (W125).
2. Use of the design: The electronic vaporizer is used for the generation of smoke upon heating the smoke sheets or tobacco leaves.
3. Main design points of the design: The shape of the product, particularly the contour of the product, and the design of a round indicator light in the front view.
4. Main design: Design 1.
5. Figure that can mostly represent the main design points: The perspective view 1 of design 1.

[54] Title of Product using the Design: Tobacco Vaporizer (W125)

Note: 1. Part of the Bibliographic Data is not shown owing to limitations of space.
2. The views are not shown to scale for the sake of illustrative clarity.



Front view of design 1



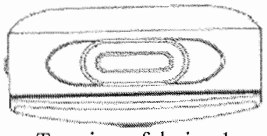
Back view of design 1



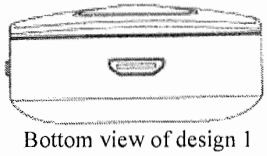
Left view of design 1



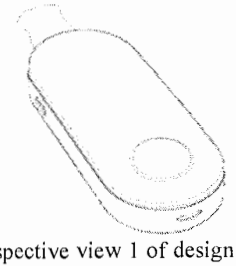
Right view of design 1



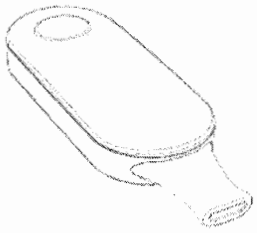
Top view of design 1



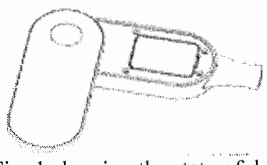
Bottom view of design 1



Perspective view 1 of design 1



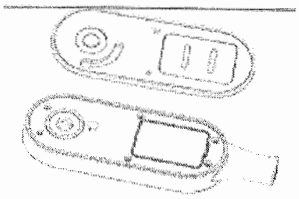
Perspective view 2 of design 1



Reference Fig. 1 showing the state of design 1 in use

NJOY Exhibit 1002.882

Comparative Design 9:



Reference Fig. 2 showing the state of design 1 in use



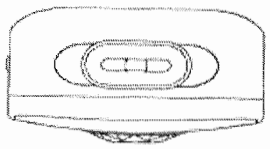
Front view of design 2



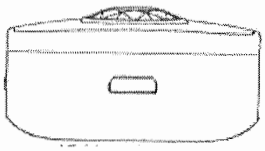
Left view of design 2



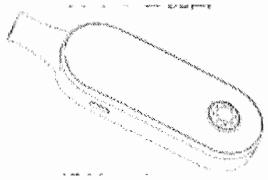
Right view of design 2



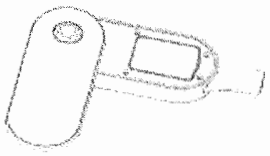
Top view of design 2



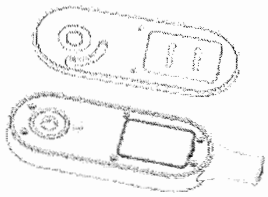
Bottom view of design 2



Perspective view of design 2



Reference Fig. 1 showing the state of design 2 in use



Reference Fig. 2 showing the state of design 2 in use



Back view of design 2

NJOY Exhibit 1002.883

Comparative Design 2:

[11] Grant Announcement No: CN303210086S [45] Date of Grant Announcement: May 13, 2015

[22] Filing date: August 11, 2014 [21] Filing No.: CN201430281833. 0 Classification No.: 27-99

[72] Designer(s): Adam Bowen; James Monsees Steven Christensen [30] Priority: Document No.: CN303210086S

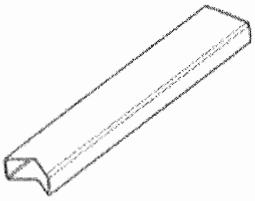
[73] Patentee: PAX Labs, Inc. Address: CA, U.S.A.

[74] Patent agency: Beijing AFD China Intellectual Property 11262 Agent: Hongmei Liu; Xia Zheng

[57] Brief description:
1. Title of the design: Electronic Vaporization Plant.
2. Use of the design: The design of the product is used as a part of an electronic cigarette for object vaporization, comprising a power supply of an electronic cigarette and other parts.
3. Main design points of the design: The shape of the plant.
4. Figure or photo that can mostly represent the main design points: The perspective view.

[54] Title of Product using the Design: Electronic Vaporization Plant

Note: 1. Part of the Bibliographic Data is not shown owing to limitations of space.
2. The views are not shown to scale for the sake of illustrative clarity.


Perspective view


Front view


Back view


Top view


Left view


Right view


Bottom view

NJOY Exhibit 1002.884

Comparative Design 4:

[11] Grant Announcement No: CN303332720S [45] Date of Grant Announcement: August 12, 2015

[22] Filing date: March 19, 2015 [21] Filing No.: CN201530066498.7 Classification No.: 27-99

[72] Designer(s): Tuanfang Liu; [30] Priority: Document No.: CN303332720S

[73] Patentee: Tuanfang Liu Address: No. 2, Xia'an, Zhongzhou Town, Zhouhu Town, Anfu County, Ji'an, Jiangxi 343000

[74] Patent agency: Agent: Dongfeng Tang

[57] Brief description:
1. Title of the design: Atomizer with Airflow-Adjustable Cigarette Holder.
2. Use of the design: The design is used in the field of parts of an electronic cigarette which can regulate the airflow.
3. Main design points of the design: The front view.
4. Figure or photo that can mostly represent the main design points: The perspective view.

[54] Title of Product using the Design: Atomizer with Airflow-Adjustable Cigarette Holder

Note: 1. Part of the Bibliographic Data is not shown owing to limitations of space.
2. The views are not shown to scale for the sake of illustrative clarity.

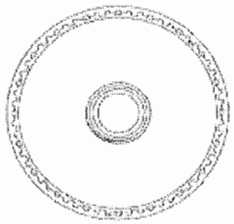

Front view

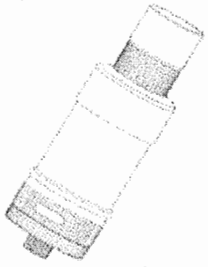

Back view


Left view


Right view


Top view


Bottom view


Perspective view

NJOY Exhibit 1002.885

Comparative Design 4:

[11] Grant Announcement No: CN303457556S [45] Date of Grant Announcement: November 18, 2015

[22] Filing date: July 8, 2015 [21] Filing No.: CN201530242212. 6 Classification No.: 27-99

[72] Designer(s): Sheng Jiang; [30] Priority: Document No.: CN303457556S

[73] Patentee: Sheng Jiang Address: No. 1, Group 6, Jiangjiagou Village, Shuanggui Town, Jialing District, Nanchong, Si'chuan 637995

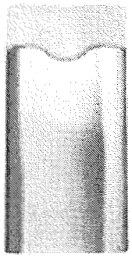
[74] Patent agency: Beijing Keyi IP Law Firm (General Partner) 11350 Agent: Dongfeng Tang

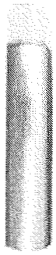
[57] Brief description:
1. Title of the design: Electronic cigarette case (JX-059).
2. Use of the design: The design is used for installing the electronic cigarette.
3. Main design points of the design: The overall shape of the product.
4. Figure or photo that can mostly represent the main design points: The perspective view.

[54] Title of Product using the Design: Electronic Cigarette Case (JX-059)

Note: 1. Part of the Bibliographic Data is not shown owing to limitations of space.
2. The views are not shown to scale for the sake of illustrative clarity.

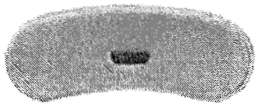

Front view

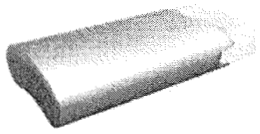

Back view


Left view


Right view


Top view


Bottom view


Perspective view

NJOY Exhibit 1002.886

Comparative Design 8:

[11] Grant Announcement No: CN303568163S [45] Date of Grant Announcement: January 20, 2016

[22] Filing date: August 6, 2015 [21] Filing No.: CN201530293039. 2 Classification No.: 27-99

[72] Designer(s): Dan Wang; Yanming Nie [30] Priority: Document No.: CN303568163S

[73] Patentee: Shanghai Green Vaper Technology Co., Ltd. Address: Room 3101, 3rd Floor, No. 458, Fute North Road, Pilot Free Trade Zone, New Pudong District, Shanghai 200131

[74] Patent agency: Shanghai Hanxin IP Law Firm (General Partner) 31270 Agent: Weidong Zhang

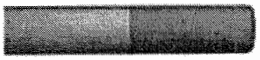
[57] Brief description:
1. Title of the design: Electronic Cigarette.
2. Use of the design: The design is used as an electronic cigarette.
3. Main design points of the design lies in the shape of the electronic cigarette.
4. Figure or photo that can mostly represent the main design points: The perspective view.

[54] Title of Product using the Design: Electronic Cigarette

Note: 1. Part of the Bibliographic Data is not shown owing to limitations of space.
2. The views are not shown to scale for the sake of illustrative clarity.



Front view



Back view



Left view



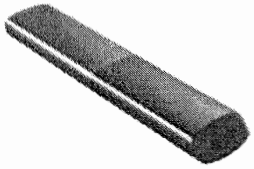
Right view



Top view



Bottom view



Perspective view

NJOY Exhibit 1002.887

Electronic Acknowledgement Receipt	
EFS ID:	36944317
Application Number:	16032009
International Application Number:	
Confirmation Number:	7691
Title of Invention:	VAPORIZER APPARATUS
First Named Inventor/Applicant Name:	James Monsees
Customer Number:	148514
Filer:	Nicholas Paul Mouton/Shae Jackson
Filer Authorized By:	Nicholas Paul Mouton
Attorney Docket Number:	52210-508C18US/716.US18
Receipt Date:	21-AUG-2019
Filing Date:	10-JUL-2018
Time Stamp:	22:44:16
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

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(12) 按照专利合作条约所公布的国际申请

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(81) 指定国 (除另有指明，要求每一种可提供的国家保护): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW。

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本国际公布:

— 包括国际检索报告(条约第 21 条(3))。

(54) **Title**: BATTERY ASSEMBLY, ELECTRONIC CIGARETTE, AND ELECTRONIC CIGARETTE CHARGING DEVICE

(54) **发明名称** : 电池组件、电子烟以及电子烟充电装置

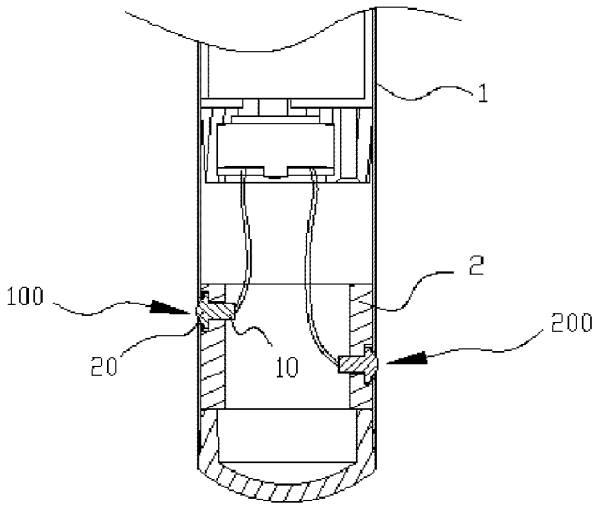


图 1 **/Fig.1**

(57) **Abstract**: The present invention discloses a battery assembly, an electronic cigarette, and an electronic cigarette charging device; the battery assembly comprises a casing and a battery disposed axially along the casing (1); the side wall of the casing (1) is provided with a first charging jack (101) and a second charging jack (201) offset from each other on the projected position of the central axis of the casing (1); the positions of the first charging jack (101) and the second charging jack (201) are respectively provided with a first electrode connection member (100) and a second electrode connection member (200), which are electrically connected to battery electrodes; the electronic cigarette charging device is provided with a charging socket matching the electronic cigarette; the side wall of the charging socket is provided with two charging electrodes; during charging, the charging electrodes of the electronic cigarette charging device are electrically connected to the first electrode connection member (100) and the second electrode connection member (200) and charge the battery. This manner of charging overcomes the deficiencies of a threaded connection not rotating into place and the excessive rotation of the threaded connection, and fully prevents the situation present in symmetrically disposed electrodes where the positive and negative electrodes are incorrectly connected.

(57) **摘要**:

[见续页]

WO 2015/054862 A1

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本发明公开了一种电池组件、电子烟以及电子烟充电装置，电池组件包括套管和沿套管（1）轴向设置的电池，套管（1）侧壁上设置有在套管（1）的中轴线上的投影位置相互错开的第一充电插孔（101）及第二充电插孔（201），第一充电插孔（101）及第二充电插孔（201）的对应位置处设置有分别电连接至电池电极的第一电极连接件（100）和第二电极连接件（200）；电子烟充电装置设置有与电子烟相匹配的充电插槽，充电插槽的侧壁设置有两个充电电极，充电时电子烟充电装置的充电电极与第一电极连接件（100）和第二电极连接件（200）电连接为电池充电。该充电方式克服了螺纹连接旋转不到位和旋转过度的缺陷，且完全避免电极对称设置存在的正负极误接的情况。

NJOY Exhibit 1002.899

说明书

发明名称: 电池组件、电子烟以及电子烟充电装置

技术领域

[1] 本发明涉及日用电子产品领域，尤其涉及一种电池组件、电子烟以及电子烟充电装置。

背景技术

[2] 电子烟包括电池组件和雾化组件，对于可充电的电子烟，其电池组件内的电池是可以充电的，其充电电极设置在电池组件与雾化组件的螺纹连接处，在给电池充电时，将雾化组件从电池组件中拆卸下来以露出两个电极连接件，电子烟充电装置的充电座上设置有与两个电极连接件分别对应的充电电极，利用电子烟充电装置对电池组件进行充电时，将两个充电电极分别与对应的电极连接件电连接。

[3] 由于两个电极连接件是互相套设设置的，对应的两个充电电极也是互相套设设置，且充电电极与电极连接件通过螺纹连接实现电连接，因此用电子烟充电装置对电子烟进行充电时，将电子烟充电装置的充电座上设置有螺纹的一端沿着电极连接件内侧壁上的螺纹旋转到电子烟的电池组件内，使电子烟电池组件和电子烟充电装置电连接。

[4] 采用上述充电技术，首先需要旋转数圈拆卸下雾化组件，再将电池组件与电子烟充电装置旋转多圈才能实现牢固固定，因此操作繁琐，再者，在旋转电子烟的过程中，如若电子烟旋转不到位，可能存在因连接不牢固而导致充电不稳定的情况发生；如若电子烟旋转过度，又可能对电子烟造成损坏。

[5] 申请人之前提交有在申请中但未公开的设置对称充电电极实现充电的专利申请文件，但是设置对称充电电极具有以下不足：必须借助其他标识区分两个电极连接件，增加了制造的工序，且如果标识磨损或者出厂设置时意外标反了，可能导致正负极反接。

[6] 因此，现有技术存在缺陷，需要改进。

发明内容

NJOY Exhibit 1002.900

[7] 本发明要解决的技术问题在于，针对现有技术的上述电子烟充电操作繁琐，且可能造成充电不稳定的缺陷，提供一种电池组件、电子烟以及电子烟充电装置。

[8] 本发明解决其技术问题所采用的技术方案是：构造一种电池组件，用于与雾化组件组合形成电子烟，包括套管和沿所述套管轴向设置的电池，所述套管侧壁上设置有在所述套管的中轴线上的投影位置相互错开的第一充电插孔及第二充电插孔，所述第一充电插孔及第二充电插孔的对应位置处设置有分别电连接至所述电池电极的第一电极连接件和第二电极连接件；充电时电子烟充电装置的充电电极与所述第一电极连接件和第二电极连接件电连接，实现为所述电池充电。

[9] 在本发明所述的电池组件中，所述第一电极连接件和/或第二电极连接件的用于与所述电子烟充电装置的充电电极相互抵接的抵接面为曲面。

[10] 在本发明所述的电池组件中，所述曲面为凸面或凹面。

[11] 在本发明所述的电池组件中，所述第一电极连接件和/或第二电极连接件由弹性导电材料制成。

[12] 在本发明所述的电池组件中，所述第一电极连接件和/或第二电极连接件包括与所述电池电连接的连接部以及与对应的所述电子烟充电装置的充电电极的端面相抵接的抵接端部，所述抵接端部的截面为月牙形、半球形、球形中的任一种，所述抵接端部的外表面形成所述曲面；

[13] 所述电池组件还包括套设于所述套管内的固定件，所述固定件的外壁上设置有两个分别与所述第一充电插孔和第二充电插孔正对的且与所述抵接端部相适配的安装槽，所述安装槽的底部沿所述套管径向贯穿设置有与所述连接部相适配的安装孔。

[14] 在本发明所述的电池组件中，所述第一电极连接件和/或第二电极连接件包括端部相互抵接的弹性连接件与第一活动件，所述弹性连接件远离所述第一活动件的端部与所述控制器电连接，所述第一活动件远离所述弹性连接件的端部与所述电子烟充电装置的充电电极相互抵接，所述第一活动件的截面为月牙形、半球形、球形中的任一种，所述第一活动件的外表面形成所述曲面；

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[15] 所述电池组件还包括套设于所述套管内的固定件，所述固定件的外壁上设置有两个分别与所述第一充电插孔和第二充电插孔正对的用于放置所述第一活动件的第一安装槽，所述第一安装槽的底部沿所述套管径向设置有用于安置所述弹性连接件的第二安装槽。

[16] 在本发明所述的电池组件中，所述第一电极连接件和/或第二电极连接件为折型弹片，所述电池组件还包括设置在所述套管轴向的支撑件；所述折型弹片的远离对应的所述第一充电插孔或第二充电插孔的端部固定在所述支撑件上且与所述电池电连接，所述折型弹片的靠近对应的所述第一充电插孔或第二充电插孔的端部弯折形成弯折曲面，且所述弯折曲面部分伸出所述第一充电插孔或第二充电插孔。

[17] 在本发明所述的电池组件中，所述第一充电插孔及第二充电插孔在所述套管的横截面上的投影位置相对于所述套管的中轴线对称。

[18] 在本发明所述的电池组件中，所述套管外壁还设置有用于引导所述电池组件插入所述电子烟充电装置的导向凸起。

[19] 本发明还提供一种电子烟，包括相互电连接的电池组件和雾化组件，所述电池组件包括套管和沿所述套管轴向设置的电池，所述套管侧壁上设置有在所述套管的中轴线上的投影位置相互错开的第一充电插孔及第二充电插孔，所述第一充电插孔及第二充电插孔的对应位置处设置有分别电连接至所述电池电极的第一电极连接件和第二电极连接件；充电时电子烟充电装置的充电电极与所述第一电极连接件和第二电极连接件电连接，实现为所述电池充电。

[20] 在本发明所述的电子烟中，所述第一电极连接件和/或第二电极连接件的用于与所述电子烟充电装置的充电电极相互抵接的抵接面为曲面。

[21] 在本发明所述的电子烟中，所述第一电极连接件和/或第二电极连接件包括与所述电池电连接的连接部以及与对应的所述电子烟充电装置的充电电极的端面相抵接的抵接端部，所述抵接端部的截面为月牙形、半球形、球形中的任一种，所述抵接端部的外表面形成所述曲面；

[22] 所述电池组件还包括套设于所述套管内的固定件，所述固定件的外壁上设置有两个分别与所述第一充电插孔和第二充电插孔正对的且与所述抵接端部相适配

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的安装槽，所述安装槽的底部沿所述套管径向贯穿设置有与所述连接部相适配的安装孔。

[23] 在本发明所述的电子烟中，所述第一电极连接件和/或第二电极连接件为折型弹片，所述电池组件还包括设置在所述套管轴向的支撑件；所述折型弹片的远离对应的所述第一充电插孔或第二充电插孔的端部固定在所述支撑件上且与所述电池电连接，所述折型弹片的靠近对应的所述第一充电插孔或第二充电插孔的端部弯折形成弯折曲面，且所述弯折曲面部分伸出所述第一充电插孔或第二充电插孔。

[24] 在本发明所述的电子烟中，在所述套管的横截面上的投影位置相对于所述套管的中轴线对称。

[25] 本发明还提供一种电子烟充电装置，用于给电子烟的电池组件充电，所述电池组件的套管的周向侧壁上分别设置有两个充电插孔，每个所述充电插孔内设置有电极连接件，所述电子烟充电装置设置有与所述电子烟相匹配的充电插槽，所述充电插槽的侧壁设置有在所述充电插槽的中轴线上的投影位置相互错开的第一充电电极和第二充电电极，所述第一充电电极和第二充电电极均包括与对应的所述电极连接件相互抵接的伸缩件。

[26] 在本发明所述的烟充电装置中，所述伸缩件与所述电极连接件相互抵接的端面均为与对应的所述电极连接件的端面相适配的曲面。

[27] 在本发明所述的烟充电装置中，所述充电插槽底部的槽壁设置有用于固定所述电子烟的夹持件。

[28] 在本发明所述的烟充电装置中，所述充电插槽的侧壁沿所述充电插槽的轴向贯穿开设有与电池组件的导向凸起相适配的导向槽。

[29] 在本发明所述的烟充电装置中，所述伸缩件包括端部相互抵接的第二活动件和弹性件，所述第二活动件与所述电极连接件相抵接的端面为光滑凹面或凸面。

[30] 在本发明所述的烟充电装置中，所述第二活动件为表面由导电材料制成的圆珠或为金属材料制成的圆珠。

[31] 实施本发明的电池组件、电子烟以及电子烟充电装置，具有以下有益效果：本发明通过在电池组件的套管外壁设置第一电极连接件和第二电极连接件，第一

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电极连接件和第二电极连接件相对于电子烟的套管的中轴线投影位置相对错开，且在电子烟充电装置的充电插槽内设置对应的第一充电电极和第二充电电极，充电时，不用拆卸电池组件和雾化组件，可以直接将电池组件插入电子烟充电装置的充电插槽，使第一电极连接件和第一充电电极连接，第二电极连接件和第二充电电极连接即可，这种充电方式克服了螺纹连接结构中旋转不到位和旋转过度的缺陷的同时，且无需区分正负极的同时又避免电极对称设置所存在的插置到充电装置时正负极误接的情况；此外，所述充电器的充电电极可伸入所述充电插孔内，因而充电时可很好的防止因振动等原因造成充电器与电池组件产生相对位移而使电连接不可靠的情况。

附图说明

[32] 下面将结合附图及实施例对本发明作进一步说明，附图中：

[33] 图1是本发明电池组件的第一实施例的局部结构示意图；

[34] 图2是本发明电池组件的第二实施例的局部结构示意图；

[35] 图3是本发明电池组件的第三实施例的局部结构示意图；

[36] 图4是本发明电子烟的结构示意图；

[37] 图5是本发明电子烟充电装置的较佳实施例的结构示意图；

[38] 图6是图5中A区域的放大图；

[39] 图7是本发明电子烟插入电子烟充电装置充电时的结构示意图。

具体实施方式

[40] 为了对本发明的技术特征、目的和效果有更加清楚的理解，现对照附图详细说明本发明的具体实施方式。

[41] 参考图1是本发明电池组件的第一实施例的局部结构示意图；图2是本发明电池组件的第二实施例的局部结构示意图；图3是本发明电池组件的第三实施例的局部结构示意图；

[42] 本发明的电池组件，包括套管1和沿所述套管1轴向设置的电池，参见图4，套管1侧壁上设置有在套管1的中轴线上的投影位置相互错开的第一充电插孔101及第二充电插孔201，所述第一充电插孔101及第二充电插孔201的对应位置处设置有分别电连接至所述电池电极的第一电极连接件100和第二电极连接件200；充

NJOY Exhibit 1002.904

电时电子烟充电装置的充电电极与第一电极连接件100和第二电极连接件200电连接，实现为所述电池充电。

[43] 将电极设置在套管外壁，充电时，不用拆卸电池组件和雾化组件，可以直接将电池组件插入电子烟充电装置的充电插槽，且第一充电插孔101及第二充电插孔201的位置错开设置，这种充电方式克服了螺纹连接结构中旋转不到位和旋转过度的缺陷的同时，且无需区分正负极，同时可以完全避免电极对称设置所存在的插置到充电装置时正负极误接的情况。

[44] 第一电极连接件100和/或第二电极连接件200的用于与所述电子烟充电装置的充电电极相互抵接的抵接面为曲面，所述曲面可为凸面或凹面。设计曲面接触，一方面可以使得充电的接触面积增加且不易移位，接触比较稳定，充电时的微小的挪位不会影响电极连接件与充电电极之间的电连接，另一方面自然状态时电极连接件可能突出套管1外表面，将其设计为曲面便于将电子烟插入电子烟充电装置。

[45] 其中，为使连接更加稳固，所述第一电极连接件100和第二电极连接件200由弹性导电材料制成。

[46] 在错开设置两个电极连接件的同时考虑到插入电子烟后的稳定性，第一电极连接件100和第二电极连接件200相对于所述套管1的中轴线的投影位置的错开距离为所述套管1的外径的0.2-1倍。

[47] 参考图4，套管的外壁1设置有用于引导电池组件插入所述电子烟充电装置的导向凸起11，导向凸起11位于朝向充电时插入电子烟充电装置的方向的端部与第一电极连接件100或第二电极连接件200之间，且凸起11、第一电极连接件100以及第二电极连接件200在套管1的横截面上的投影中的任何两个投影都不重合，导向凸起11一方面可以方便将电子烟准确插入充电装置，另一方面还可以稳固电子，使其不易晃动。

[48] 作为本发明的第一实施例，参考图1，为了增加充电器对电池组件夹持的稳固性，优选的，第一充电插孔101及第二充电插孔201在套管1的横截面上的投影位置相对于套管1的中轴线对称，即第一充电插孔101及第二充电插孔201设置在所述套管1的位置相对的两侧。第一电极连接件100和第二电极连接件200均包括与

NJOY Exhibit 1002.905

电池电连接的连接部10以及与所述充电电极的端面相抵接的抵接端部20，抵接端部20的截面可以为月牙形、半球形、球形中的任一种，本实施例中优选为半球形，所述抵接端部20的外表面形成所述曲面；

[49] 电池组件还包括套设于套管1内的固定件2，固定件2的外壁上设置有两个分别与所述第一充电插孔101和第二充电插孔201正对的且与抵接端部20相适配的安装槽，安装槽的底部沿套管1径向贯穿设置有与连接部10相适配的安装孔，连接部10固定在安装孔内且其端部与电池电连接，固定件2为弹性材料制成的固定套管，如此可以加强电极连接件的稳固性。

[50] 进一步的，为了使得充电时连接更加稳固，充电时电子烟充电装置的充电电极分别插入对应的充电插孔内，或者电极连接件插入电子烟充电装置的充电电极所在的通孔内，优选的将充电电极部分插入并卡接在第一充电插孔101和第二充电插孔201内，即抵接端部20与电子烟充电装置的充电电极抵接时，抵接端部20被充电电极压入充电插孔内，因而充电时可很好的防止因振动等原因造成充电器与电池组件产生相对位移而使电连接不可靠的情况。

[51] 参考图2，第二实施例中，所述第一电极连接件100和第二电极连接件200包括端部相互抵接的弹性连接件30和第一活动件40，弹性连接件30可沿所述套管径向伸缩，弹性连接件30远离第一活动件40的端部与电池电极电连接的，第一活动件40远离弹性连接件30的端部与充电电极的端面相抵接的，第一活动件40的截面为月牙形、半球形、球形中的任一种，第一活动件40的外表面形成所述曲面。本实施中弹性连接件30优选的弹簧，第一活动件40优选的球形钢珠。

[52] 本发明的电池组件还包括套设于套管1内的固定件2，固定件2的外壁上设置有两个分别与所述第一充电插孔101和第二充电插孔201正对的用于放置第一活动件40的第一安装槽，第一安装槽的底部沿套管1径向设置有用于安置弹性连接件30的第二安装槽，为了使充电电极与电极连接件之间的抵接更加稳固，第二安装槽的内径略大于球形钢珠的外径，自然状态时球形钢珠位于第一安装槽内，将电子烟插入充电装置后，充电电极在与球形钢珠匹配抵接后，推动球形钢珠滑入第二安装槽。

[53] 参考图3，第三实施例中，第一电极连接件100与第二电极连接件200为折型弹

NJOY Exhibit 1002.906

片，电池组件还包括设置在套管1轴向的支撑件3；折型弹片的远离对应的第一充电插孔101或第二充电插孔201的端部固定在支撑件3上且与电池电连接，折型弹片的靠近对应的所述第一充电插孔101或第二充电插孔201的端部弯折形成弯折曲面，且弯折曲面部分伸出第一充电插孔101或第二充电插孔201。

[54] 本发明还提供一种电子烟，包括相互电连接的上述电池组件和雾化组件，其中，所述雾化组件为现有技术，在此不再赘述。

[55] 对应于本发明的电池组件和电子烟，本发明还提供一种电子烟充电装置，图5是本发明电子烟充电装置的较佳实施例的结构示意图；图6是图5中A区域的放大图；图7是本发明电子烟插入电子烟充电装置充电时的结构示意图。

[56] 电子烟充电装置用于给电子烟的电池组件充电，结合图1-图7，电子烟的套管1的周向侧壁上分别设置有两个充电插孔，每个充电插孔内设置有电极连接件，电子烟充电装置设置有与电子烟或电池组件相匹配的充电插槽，充电插槽的侧壁设置有在充电插槽的中轴线上的投影位置相互错开的第一充电电极和第二充电电极，对应的，优选第一充电电极和第二充电电极在所述充电插槽的横截面上的投影位置相对于所述充电插槽的中轴线对称。第一充电电极和第二充电电极均包括与对应的电极连接件相互抵接的伸缩件5。

[57] 伸缩件5与电极连接件相互抵接的端面均为与对应的电极连接件的端面相适配的曲面，对应的，曲面可以为凹面或者凸面。

[58] 充电插槽底部的槽壁设置有用于固定电子烟的夹持件7，夹持件7为弹性材料制成的弹性圆环，充电时可以进一步稳固电子烟。

[59] 对应的，充电插槽的侧壁沿充电插槽的轴向贯穿开设有与电池组件的导向凸起11相适配的导向槽6。

[60] 具体的，充电插槽的侧壁设置有与电极连接件数量相等的通孔，伸缩件5一一对应且可伸缩地安装在通孔中。伸缩件5包括端部相互抵接的第二活动件51和弹性件52，第二活动件51与电极连接件相抵接的端面为光滑凹面或凸面。例如所述第二活动件51为表面由导电材料制成的圆珠或为金属材料制成的圆珠，较佳实施例中，弹性件52优选的弹簧，所述第二活动件51为金属材料制成的圆珠。圆珠的设计，一方面移动时的阻力小，另一方面与具有凹面的电极连接件抵接

NJOY Exhibit 1002.907

时，不易错位且接触面积大，电连接更加稳定；此外，由于所述圆珠的表面为球面，因而利于从所述充电插孔内滑出，进而利于将电子烟从所述充电器内取出。

[61] 综上所述，本发明通过的电池组件的套管外壁设置第一电极连接件和第二电极连接件，第一电极连接件和第二电极连接件相对于电子烟的套管的中轴线投影位置相对错开，且在电子烟充电装置的充电插槽内设置对应的第一充电电极和第二充电电极，充电时，不用拆卸电池组件和雾化组件，可以直接将电池组件插入电子烟充电装置的充电插槽，使第一电极连接件和第一充电电极连接，第二电极连接件和第二充电电极连接即可，这种充电方式克服了螺纹连接结构中旋转不到位和旋转过度的缺陷的同时，且可以完全避免电极对称设置所存在的插置到充电装置时正负极误接的情况；此外，所述充电器的充电电极可伸入所述充电插孔内，因而充电时可很好的防止因振动等原因造成充电器与电池组件产生相对位移而使电连接不可靠的情况。

[62] 上面结合附图对本发明的实施例进行了描述，但是本发明并不局限于上述的具体实施方式，上述的具体实施方式仅仅是示意性的，而不是限制性的，本领域的普通技术人员在本发明的启示下，在不脱离本发明宗旨和权利要求所保护的范围情况下，还可做出很多形式，这些均属于本发明的保护之内。

NJOY Exhibit 1002.908

权利要求书

[权利要求 1] 一种电池组件，用于与雾化组件组合形成电子烟，包括套管（1）和沿所述套管（1）轴向设置的电池，其特征在于，所述套管（1）侧壁上设置有在所述套管（1）的中轴线上的投影位置相互错开的第一充电插孔（101）及第二充电插孔（201），所述第一充电插孔（101）及第二充电插孔（201）的对应位置处设置有分别电连接至所述电池电极的第一电极连接件（100）和第二电极连接件（200）；充电时电子烟充电装置的充电电极与所述第一电极连接件（100）和第二电极连接件（200）电连接，实现为所述电池充电。

[权利要求 2] 根据权利要求1所述的电池组件，其特征在于，所述第一电极连接件（100）和/或第二电极连接件（200）的用于与所述电子烟充电装置的充电电极相互抵接的抵接面为曲面。

[权利要求 3] 根据权利要求2所述的电池组件，其特征在于，所述曲面为凸面或凹面。

[权利要求 4] 根据权利要求1所述的电池组件，其特征在于，所述第一电极连接件（100）和/或第二电极连接件（200）由弹性导电材料制成。

[权利要求 5] 根据权利要求2所述的电池组件，其特征在于，所述第一电极连接件（100）和/或第二电极连接件（200）包括与所述电池电连接的连接部（10）以及与对应的所述电子烟充电装置的充电电极的端面相抵接的抵接端部（20），所述抵接端部（20）的截面为月牙形、半球形、球形中的任一种，所述抵接端部（20）的外表面形成所述曲面；

所述电池组件还包括套设于所述套管（1）内的固定件（2），所述固定件（2）的外壁上设置有两个分别与所述第一充电插孔（101）和第二充电插孔（201）正对的且与所述抵接端部（20）相适配的安装槽，所述安装槽的底部沿所述套管（1）径向贯穿设置有与所述连接部（10）相适配的安装孔。

NJOY Exhibit 1002.909

[权利要求 6] 根据权利要求2所述的电池组件，其特征在于，所述第一电极连接件（100）和/或第二电极连接件（200）包括端部相互抵接的弹性连接件（30）与第一活动件（40），所述弹性连接件（30）远离所述第一活动件（40）的端部与所述控制器（2）电连接，所述第一活动件（40）远离所述弹性连接件（30）的端部与所述电子烟充电装置的充电电极相互抵接，所述第一活动件（40）的截面为月牙形、半球形、球形中的任一种，所述第一活动件（40）的外表面形成所述曲面；

所述电池组件还包括套设于所述套管（1）内的固定件（2），所述固定件（2）的外壁上设置有两个分别与所述第一充电插孔（101）和第二充电插孔（201）正对的用于放置所述第一活动件（40）的第一安装槽，所述第一安装槽的底部沿所述套管（1）径向设置有用于安置所述弹性连接件（30）的第二安装槽。

[权利要求 7] 根据权利要求2所述的电池组件，其特征在于，所述第一电极连接件（100）和/或第二电极连接件（200）为折型弹片，所述电池组件还包括设置在所述套管（1）轴向的支撑件（3）；所述折型弹片的远离对应的所述第一充电插孔（101）或第二充电插孔（201）的端部固定在所述支撑件（3）上且与所述电池电连接，所述折型弹片的靠近对应的所述第一充电插孔（101）或第二充电插孔（201）的端部弯折形成弯折曲面，且所述弯折曲面部分伸出所述第一充电插孔（101）或第二充电插孔（201）。

[权利要求 8] 根据权利要求1所述的电池组件，其特征在于，所述第一充电插孔（101）及第二充电插孔（201）在所述套管（1）的横截面上的投影位置相对于所述套管（1）的中轴线对称。

[权利要求 9] 根据权利要求1所述的电池组件，其特征在于，所述套管（1）外壁还设置有用于引导所述电池组件插入所述电子烟充电装置的导向凸起（11）。

[权利要求 10] 一种电子烟，包括相互电连接的电池组件和雾化组件，所述电池

NJOY Exhibit 1002.910

组件包括套管（1）和沿所述套管（1）轴向设置的电池，其特征在于，所述套管（1）侧壁上设置有在所述套管（1）的中轴线上的投影位置相互错开的第一充电插孔（101）及第二充电插孔（201），所述第一充电插孔（101）及第二充电插孔（201）的对应位置处设置有分别电连接至所述电池电极的第一电极连接件（100）和第二电极连接件（200）；充电时电子烟充电装置的充电电极与所述第一电极连接件（100）和第二电极连接件（200）电连接，实现为所述电池充电。

[权利要求 11] 根据权利要求10所述的电子烟，其特征在于，所述第一电极连接件（100）和/或第二电极连接件（200）的用于与所述电子烟充电装置的充电电极相互抵接的抵接面为曲面。

[权利要求 12] 根据权利要求11所述的电子烟，其特征在于，所述第一电极连接件（100）和/或第二电极连接件（200）包括与所述电池电连接的连接部（10）以及与对应的所述电子烟充电装置的充电电极的端面相抵接的抵接端部（20），所述抵接端部（20）的截面为月牙形、半球形、球形中的任一种，所述抵接端部（20）的外表面形成所述曲面；

所述电池组件还包括套设于所述套管（1）内的固定件（2），所述固定件（2）的外壁上设置有两个分别与所述第一充电插孔（101）和第二充电插孔（201）正对的且与所述抵接端部（20）相适配的安装槽，所述安装槽的底部沿所述套管（1）径向贯穿设置有与所述连接部（10）相适配的安装孔。

[权利要求 13] 根据权利要求11所述的电子烟，其特征在于，所述第一电极连接件（100）和/或第二电极连接件（200）为折型弹片，所述电池组件还包括设置在所述套管（1）轴向的支撑件（3）；所述折型弹片的远离对应的所述第一充电插孔（101）或第二充电插孔（201）的端部固定在所述支撑件（3）上且与所述电池电连接，所述折型弹片的靠近对应的所述第一充电插孔（101）或第二充电插孔（

NJOY Exhibit 1002.911

201）的端部弯折形成弯折曲面，且所述弯折曲面部分伸出所述第一充电插孔（101）或第二充电插孔（201）。

[权利要求 14] 根据权利要求10所述的电子烟，其特征在于，在所述套管（1）的横截面上的投影位置相对于所述套管（1）的中轴线对称。

[权利要求 15] 一种电子烟充电装置，用于给电子烟的电池组件充电，所述电池组件的套管（1）的周向侧壁上分别设置有两个充电插孔，每个所述充电插孔内设置有电极连接件，其特征在于，所述电子烟充电装置设置有与所述电子烟相匹配的充电插槽，所述充电插槽的侧壁设置有在所述充电插槽的中轴线上的投影位置相互错开的第一充电电极和第二充电电极，所述第一充电电极和第二充电电极均包括与对应的所述电极连接件相互抵接的伸缩件（5）。

[权利要求 16] 根据权利要求15所述的电子烟充电装置，其特征在于，所述伸缩件（5）与所述电极连接件相互抵接的端面均为与对应的所述电极连接件的端面相适配的曲面。

[权利要求 17] 根据权利要求15所述的电子烟充电装置，其特征在于，所述充电插槽底部的槽壁设置有用于固定所述电子烟的夹持件（7）。

[权利要求 18] 根据权利要求15所述的电子烟充电装置，其特征在于，所述充电插槽的侧壁沿所述充电插槽的轴向贯穿开设有与电池组件的导向凸起（11）相适配的导向槽（6）。

[权利要求 19] 根据权利要求15所述的电子烟充电装置，其特征在于，所述伸缩件（5）包括端部相互抵接的第二活动件（51）和弹性件（52），所述第二活动件（51）与所述电极连接件相抵接的端面为光滑凹面或凸面。

[权利要求 20] 根据权利要求19所述的电子烟充电装置，其特征在于，所述第二活动件（51）为表面由导电材料制成的圆珠或为金属材料制成的圆珠。

NJOY Exhibit 1002.912

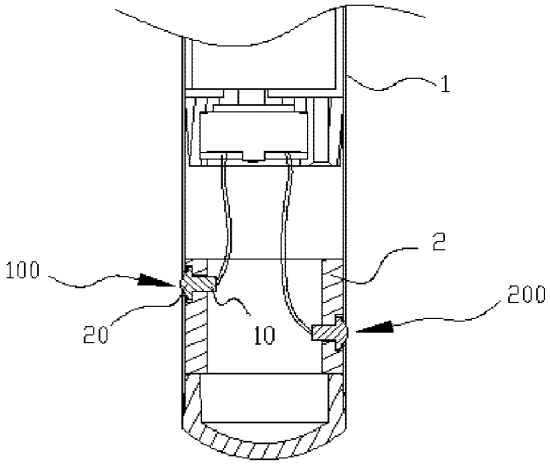


图 1

NJOY Exhibit 1002.913

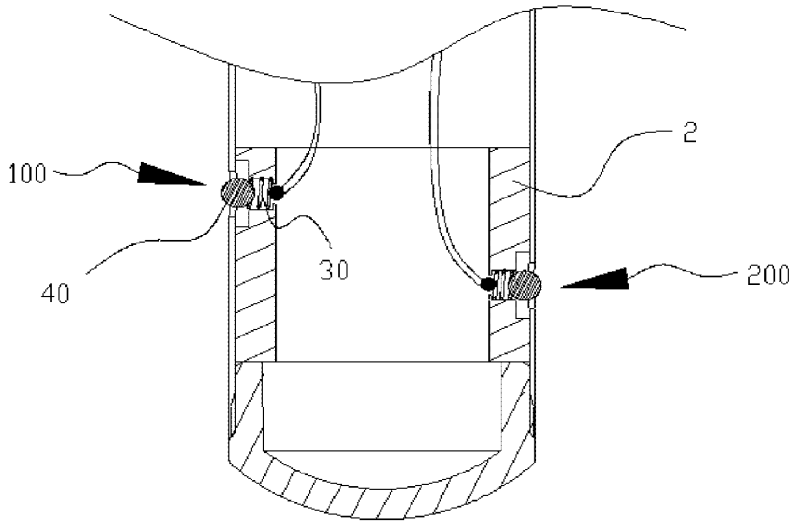


图 2

NJOY Exhibit 1002.914

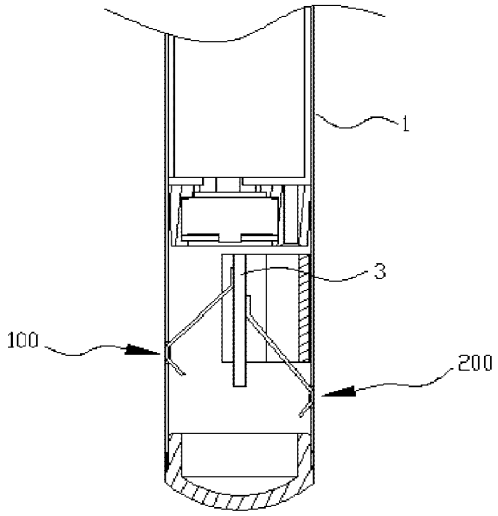


图 3

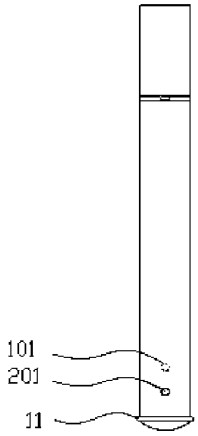


图 4

NJOY Exhibit 1002.915

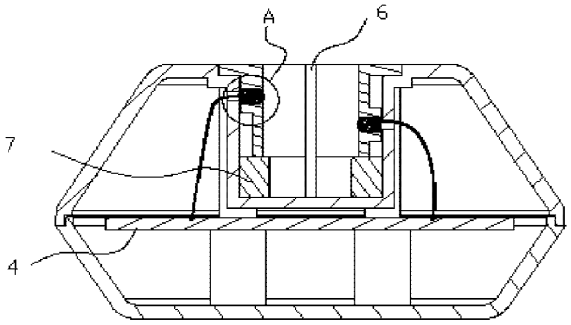


图 5

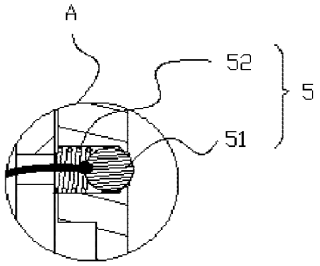


图 6

NJOY Exhibit 1002.916

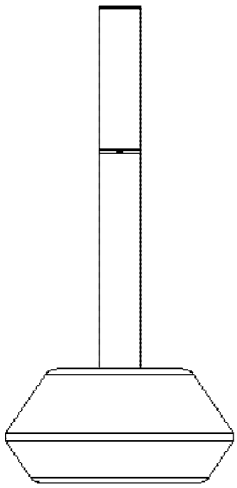


图 7

NJOY Exhibit 1002.917

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2013/085381

A. CLASSIFICATION OF SUBJECT MATTER

A24F 47/00 (2006.01) i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A24F; H01R

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNABS: VEN, google: source, electric+, cigarette, cell, battery, charg+, connect+, contact+, terminal?, pin?, lateral, side, wall, face, bore, hole, aperture

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	CN 201076006 Y (BEIJING GW TECHNOLOGIES CO., LTD) 25 June 2008 (25.06.2008) description, page 4, line 8 to page 5, line 24, and figures 1-4	1-14
Y	CN 101371721 A (BEIJING GW TECHNOLOGIES CO., LTD) 25 February 2009 (25.02.2009) description, page 3, lines 23 to 27, and figure 1	15-20
Y	CN 202145575 U (DONGGUAN JINTANG HARDWARE ELECTRIC APPLIANCE CO.,LTD) 15 February 2012 (15.0.2012) description, paragraphs [0018]-[0023], and figures 1-4	1-20
Y	CN 203205671 U (JIANG, Zucheng) 18 September 2013 (18.09.2013) description, paragraphs [0014]-[0017], and figures 1 and 2	7, 8, 13, 14

☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
02 July 2014	29 July 2014
Name and mailing address of the ISA State Intellectual Property Office of the P. R. China No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088, China Facsimile No. (86-10) 62019451	Authorized officer WANG, Zhenyu Telephone No. (86-10) 62414216

Form PCT/ISA/210 (second sheet) (July 2009)

NJOY Exhibit 1002.918

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2013/085381

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
E	CN 203607468 U (LIU, Qiuming) 21 May 2014 (21.05.2014) the whole document	1-20
A	CN 2745237 Y (ZHUANG, Shuihong)07 December 2005 (07.12.2005) the whole document	1-20
A	US 2012260926 A1 (TU MARTIN et al.) 18 October 2012 (18.10.2012) the whole document	1-20

Form PCT/ISA /210 (continuation of second sheet) (July 2009)

NJOY Exhibit 1002.919

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2013/085381

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
CN 201076006 Y	25 June 2008	None	
CN 101371721 A	25 February 2009	CN 101371721 B	20 July 2011
CN 202145575 U	15 February 2012	None	
CN 203205671 U	18 September 2013	None	
CN 203607468 U	21 May 2014	None	
CN 2745237 Y	07 December 2005	None	
US 2012260926 A1	18 October 2012	None	

NJOY Exhibit 1002.920

国际检索报告

国际申请号
PCT/CN2013/085381

A. 主题的分类

A24F 47/00(2006.01)i

按照国际专利分类(IPC)或者同时按照国家分类和IPC两种分类

B. 检索领域

检索的最低限度文献(标明分类系统和分类号)

A24F; H01R

包含在检索领域中的除最低限度文献以外的检索文献

在国际检索时查阅的电子数据库(数据库的名称，和使用的检索词（如使用）)

CNABS;VEN,google:电子烟，电子香烟，电池，电源，充电，连接，接触，端子，触点，侧壁，侧面，孔，electric+, cigarette, cell, battery, charg+, connect+, contact+, terminal?, pin?, lateral, side, wall, face, bore, hole, aperture

C. 相关文件

类 型*	引用文件，必要时，指明相关段落	相关的权利要求
Y	CN 201076006Y（北京格林世界科技发展有限公司）2008年 6月 25日（2008 - 06 - 25） 说明书第4页第8行至第5页第24行、附图1-4	1-14
Y	CN 101371721A（北京格林世界科技发展有限公司）2009年 2月 25日（2009 - 02 - 25） 说明书第3页第23行至第27行、附图1	15-20
Y	CN 202145575U（东莞金唐五金电器制造有限公司）2012年 2月 15日（2012 - 02 - 15） 说明书第0018段至第0023段、附图1-4	1-20
Y	CN 203205671U（蒋祖承）2013年 9月 18日（2013 - 09 - 18） 说明书第0014段至第0017段、附图1-2	7-8，13-14
E	CN 203607468U（刘秋明）2014年 5月 21日（2014 - 05 - 21） 全文	1-20
A	CN 2745237Y（庄水洪）2005年 12月 07日（2005 - 12 - 07） 全文	1-20

☑ 其余文件在C栏的续页中列出。　　☑ 见同族专利附件。

* 引用文件的具体类型：

“A” 认为不特别相关的表示了现有技术一般状态的文件

“E” 在国际申请日的当天或之后公布的在先申请或专利

“L” 可能对优先权要求构成怀疑的文件，或为确定另一篇引用文件的公布日而引用的或者因其他特殊理由而引用的文件（如具体说明的）

“O” 涉及口头公开、使用、展览或其他方式公开的文件

“P” 公布日先于国际申请日但迟于所要求的优先权日的文件

“T” 在申请日或优先权日之后公布，与申请不相抵触，但为了理解发明之理论或原理的在后文件

“X” 特别相关的文件，单独考虑该文件，认定要求保护的发明不是新颖的或不具有创造性

“Y” 特别相关的文件，当该文件与另一篇或者多篇该类文件结合并且这种结合对于本领域技术人员为显而易见时，要求保护的发明不具有创造性

“&” 同族专利的文件

国际检索实际完成的日期	国际检索报告邮寄日期
2014年 7月 02日	2014年 7月 29日
ISA/CN的名称和邮寄地址 中华人民共和国国家知识产权局(ISA/CN) 北京市海淀区蓟门桥西土城路6号 100088 中国 传真号 (86-10)62019451	受权官员 王振宇 电话号码 (86-10)62414216

表 PCT/ISA/210（第2页）（2009年7月）

NJOY Exhibit 1002.921

国际检索报告

国际申请号
PCT/CN2013/085381

C. 相关文件

类 型*	引用文件，必要时，指明相关段落	相关的权利要求
A	US 2012260926A1 (TU MARTIN 等) 2012年 10月 18日 (2012 - 10 - 18) 全文	1-20

表 PCT/ISA/210（第2页）(2009年7月)

NJOY Exhibit 1002.922

国际检索报告
关于同族专利的信息

国际申请号
PCT/CN2013/085381

检索报告引用的专利文件		公布日（年/月/日）	同族专利		公布日（年/月/日）
CN	201076006Y	2008年 6月 25日		无	
CN	101371721A	2009年 2月 25日	CN	101371721B	2011年 7月 20日
CN	202145575U	2012年 2月 15日		无	
CN	203205671U	2013年 9月 18日		无	
CN	203607468U	2014年 5月 21日		无	
CN	2745237Y	2005年 12月 07日		无	
US	2012260926A1	2012年 10月 18日		无	

表 PCT/ISA/210（同族专利附件）（2009年7月）

NJOY Exhibit 1002.923

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(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
28 May 2015 (28.05.2015)

WIPO | PCT

(10) International Publication Number
WO 2015/077645 A1

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A24F 1/28 (2006.01) *A61M 15/06* (2006.01)
A24F 47/00 (2006.01)

(21) International Application Number:
PCT/US2014/066949

(22) International Filing Date:
21 November 2014 (21.11.2014)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/906,928 21 November 2013 (21.11.2013) US
62/067,762 23 October 2014 (23.10.2014) US

(71) Applicant: **CORR-TECH ASSOCIATES, INC.** [US/US]; 1751 W Grand Avenue, Chicago, Illinois 60622 (US).

(72) Inventors: **KING, Charles William**; 1751 W Grand Avenue, Chicago, Illinois 60622 (US). **CORRY, Charles Dominic**; 1751 W Grand Avenue, Chicago, Illinois 60622 (US). **MINGILINO, Christopher**; 1751 W Grand Avenue, Chicago, Illinois 60622 (US). **TUTT, Timothy**; 1751 W Grand Avenue, Chicago, Illinois 60622 (US).

(74) Agents: **GURDA, Szymon** et al.; Suite 400, 123 W Madison St, Chicago, Illinois 60602 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report (Art. 21(3))*

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(54) Title: IMPROVED VAPORIZATION AND DOSAGE CONTROL FOR ELECTRONIC VAPORIZING INHALER

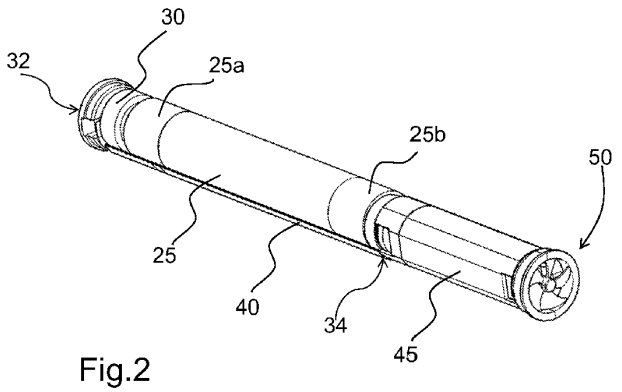


Fig.2

(57) Abstract: The present invention provides an electronic vaporizing inhaler with an electrical storage device; a liquid reservoir for vaping liquid; a vaporizer with a substrate defined by a plurality of capillary apertures that provide fluid communication between the vaporizer and the liquid reservoir; a sponge; a wick; and a heating element; a microprocessor in electrical communication with the electrical storage device that directs current from the electrical storage device to the heating element in the vaporizer; a sensor configured to detect when a user draws on the electronic cigarette that activates the microprocessor when it detects that a user has drawn on the electronic cigarette; a housing having designed to contain the electrical storage device, vaporizer, microprocessor, sensor, and liquid reservoir and having a mouthpiece from which a user can inhale vapor from the vaporizer. The invention also provides a dosage control embodiment using a heat or diaphragm pump.

WO 2015/077645 A1

NJOY Exhibit 1002.924

INVENTORS: Charles William KING
Charlie CORRY
Christopher MINGILINO

TITLE: IMPROVED VAPORIZATION AND DOSAGE CONTROL FOR ELECTRONIC VAPORIZING INHALER

CROSS-REFERENCE TO RELATED APPLICATIONS

[01] This application claims the benefit of priority to U.S. Provisional Patent Application No. 61/906,928, filed on November 21, 2013, and to U.S. Provisional Patent Application No. 62/067,762, filed on October 23, 2014.

BACKGROUND OF THE INVENTION

1. Field of the invention

[02] This invention is directed to an electronic cigarette that provides consistent dosage and that is better able to withstand drops and other mechanical shocks during assembly and use.

2. Background of the Invention

[03] Electronic cigarettes are becoming popular among smokers who wish to satisfy a nicotine craving but who also want to avoid the tar and other harsh chemicals associated with traditional cigarettes. Electronic cigarettes contain liquid nicotine, which is typically a mixture of nicotine oil, a solvent (such as propylene glycol, vegetable glycerin, or a combination of both), water, and sometimes flavoring. When the user draws, or inhales, on the electronic cigarette, the liquid nicotine is drawn into a vaporizer where it is heated into a vapor. As the user draws on the electronic cigarette, he or she inhales the vapor containing the nicotine.

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[04] Electronic cigarettes and other vapor inhalers typically have similar designs. Most feature a liquid nicotine reservoir with an interior membrane, such as a sponge, fabric wadding (typically cotton), or other fibrous material, that holds the liquid nicotine so as to prevent leaking from the reservoir. Nevertheless, these cigarettes are still prone to leaking because there is no impediment to prevent the liquid from flowing out of the membrane and into the mouthpiece. A leaking electronic cigarette is problematic for several reasons. First, the liquid can leak into the electronic componentry, which can cause impaired performance of the device. Second, leaks waste the liquid nicotine mixture. Finally, the liquid can leak into the electronic cigarette mouthpiece, and the user may inhale the unvaporized liquid, which provides an unsatisfying vaping experience.

[05] Electronic cigarettes are also known to provide inconsistent doses between draws. The aforementioned leaking is one cause of inconsistent doses because the membrane may be oversaturated or undersaturated near the vaporizer. If the membrane is oversaturated, then the user may experience a stronger than desired dose of vapor, and if the membrane is undersaturated, then the user may experience a weaker than desired dose of vapor. Additionally, small changes in the strength of the user's draw may provide stronger or weaker doses. Inconsistent dosing, along with leaking, can lead to faster consumption of the vaping liquid.

[06] Additionally, conventional electronic cigarettes are often unreliable in that the electronic components fail when the electronic cigarette is dropped or subjected to other mechanical shock. Conventional electronic cigarettes have multiple wires that run between various components and that are held in electrical communication with solder joints. The solder joints are prone to break, which can prevent the electronic cigarette from functioning to its full capacity if any function is even possible. Typically, electronic cigarettes are assembled by hand

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which increases the possibility for poor soldering. Moreover, when the electronic cigarette is assembled, the wires are stuffed into the housing in any way that they will fit. This can cause stress on the solder joints, leading to breaks.

[07] Conventional electronic cigarettes also predominantly use nichrome heating elements. Nichrome is an alloy primarily consisting nickel and chromium, and it is used in many electric heater applications. However, nichrome can reach temperatures as high as 900°C very quickly, which presents several issues for a consumer product. First, some of the chromium may leach out of the heating element and be inhaled by the user. Second, the high temperature of the heating element is dangerous to the user. Third, the heating element can burn the vaping fluid, which not only causes a poor taste but also can degrade certain chemicals in the vaping liquid. Finally, by operating at such a high temperature, the electronic cigarette will consume more energy, resulting in shorter battery life.

[08] Thus a need exists in the art for an electronic cigarette that is better able to withstand leaks and occasional drops or other mishandling and that provides consistent dosing.

SUMMARY OF THE INVENTION

[09] An object of the present invention is to improve upon the deficiencies of conventional electronic cigarettes and other electronic vaporizing inhalers.

[10] Another object of the present invention is to provide an electronic vaporizing inhaler that has improved resistance to leaks. A feature of the present invention is that the liquid to be vaporized is distributed through a series of capillaries that are able to contain the vaping liquid based on the surface tension of the liquid and that allows flow of the vaping liquid in response to small changes in pressure. An advantage of the present invention is that the liquid to be vaporized only flows through the capillary when the user draws on the electronic cigarette.

NJOY Exhibit 1002.927

[11] Another object of the present invention is to provide an electronic vaporizing inhaler in which the dose of vaporized liquid is consistent. A feature of the present invention is that the liquid reservoir dispenses the vaping liquid using capillary action. An additional feature of the present invention is that the microprocessor has a timer that shuts off the heating element after a preprogrammed time in order to avoid a large dose of vaping liquid. An advantage of the present invention is that the user receives a consistent dose of vaporized liquid with each and every draw.

[12] A further object of the present invention is to provide an electronic vaporizing inhaler with reliable parts. A feature of the present invention is that the components of the cigarette are joined using solder-less connections and electrical communication between components is made using foils instead of wires. An advantage of the present invention is that the electronic cigarette is better able to withstand drops and other accidents.

[13] Yet another object of the present invention is to provide an electronic vaporizing inhaler that has customizable dosing. A feature of one embodiment of the present invention is that customizable doses can be provided using a microprocessor that controls a heat pump. A feature of another embodiment of the present invention is that customizable doses are delivered using a microprocessor that controls a diaphragm pump. An advantage of the present invention is that the user can select the user can adjust the dose of vaping liquid delivered in a single puff or over the course of a day.

[14] The present invention provides An electronic vaporizing inhaler, said electronic vaporizing inhaler comprising: an electrical storage device; a liquid reservoir adapted to receive vaping liquid; a vaporizer, comprising: a substrate defined by a plurality of capillary apertures, wherein the capillary apertures provide fluid communication between the vaporizer and the

NJOY Exhibit 1002.928

liquid reservoir; a sponge in physical contact with the substrate; a wick in physical contact with the sponge; and a heating element proximal to the wick; a microprocessor in electrical communication with the electrical storage device, wherein the microprocessor is configured to direct current from the electrical storage device to the heating element in the vaporizer; a sensor configured to detect when a user draws on the electronic cigarette, wherein the sensor is in electrical communication with the microprocessor and wherein the sensor activates the microprocessor when it detects that a user has drawn on the electronic cigarette; a housing having a first end and a second end, wherein the housing is designed to contain the electrical storage device, vaporizer, microprocessor, sensor, and liquid reservoir and wherein the second end of the housing is a mouthpiece from which a user can inhale vapor from the vaporizer.

[15] The present invention also provides an electronic vaporizing inhaler, said electronic vaporizing inhaler comprising: an electrical storage device; a liquid reservoir adapted to receive vaping liquid; a vaporizer, comprising: a heating chamber, comprising: a substrate having a plurality of apertures, wherein the plurality of apertures provide fluid communication between the vaporizer and the liquid reservoir; a first heating element, wherein the first heating element heats the vaping liquid to a temperature sufficient to create and burst a vapor bubble; a superior end having a plurality of nozzles, wherein the nozzle ejects the vaping liquid when the vapor bubble bursts; a second heating element proximal to the nozzle; a microprocessor in electrical communication with the electrical storage device, wherein the microprocessor is configured to direct current from the electrical storage device to the first and second heating elements in the vaporizer; a sensor configured to detect when a user draws on the electronic cigarette, wherein the sensor is in electrical communication with the microprocessor and wherein the sensor activates the microprocessor when it detects that a user has drawn on the electronic

NJOY Exhibit 1002.929

cigarette; a housing having a first end and a second end, wherein the housing is designed to contain the electrical storage device, vaporizer, microprocessor, sensor, and liquid reservoir and wherein the second end of the housing is a mouthpiece from which a user can inhale vapor from the vaporizer.

[16] Additionally, the present invention provides an electronic vaporizing inhaler, said electronic vaporizing inhaler comprising: an electrical storage device; a liquid reservoir adapted to receive vaping liquid; a vaporizer, comprising: a primer chamber, comprising: an inferior end having a plurality of apertures, wherein the plurality of apertures provide fluid communication between the vaporizer and the liquid reservoir; a substrate embedded with a plurality of diaphragm pumps, each diaphragm pump comprising a diaphragm and a piezoelectric transducer, wherein the each diaphragm flexes inwardly and outwardly in response to its corresponding piezoelectric transducer; and a superior end having a plurality of nozzles, wherein each nozzle ejects the vaping liquid when its corresponding diaphragm flexes inwardly; a heating element proximal to the nozzle; a microprocessor in electrical communication with the electrical storage device, wherein the microprocessor is configured to direct current from the electrical storage device to the heating element in the vaporizer and to the piezoelectric transducer; a sensor configured to detect when a user draws on the electronic cigarette, wherein the sensor is in electrical communication with the microprocessor and wherein the sensor activates the microprocessor when it detects that a user has drawn on the electronic cigarette; a housing having a first end and a second end, wherein the housing is designed to contain the electrical storage device, vaporizer, microprocessor, sensor, and liquid reservoir and wherein the second end of the housing is a mouthpiece from which a user can inhale vapor from the vaporizer.

BRIEF DESCRIPTION OF THE DRAWINGS

NJOY Exhibit 1002.930

[17] The invention together with the above and other objects and advantages will be best understood from the following detailed description of the preferred embodiment of the invention shown in the accompanying drawings, wherein:

[18] FIG. 1 is a perspective view of an electronic cigarette embodiment of the present invention;

[19] FIG. 2 is a perspective view of the components of the electronic cigarette embodiment absent the housing;

[20] FIGS. 3A-C depict various views of the flexible circuit;

[21] FIG. 4 depicts the microprocessor of the invented electronic cigarette;

[22] FIG. 5 depicts the vaporizer and liquid reservoir of the invented electronic cigarette;

[23] FIG. 6 depicts a perspective view of the reservoir cap;

[24] FIG. 7A depicts a perspective view of the vaporizer of the invented electronic cigarette;

[25] FIG. 7B depicts a sectional view of the vaporizer depicted in FIG. 7A taken along line 7B-7B;

[26] FIG. 8 depicts a reusable embodiment of the presently invented electronic cigarette;

[27] FIG. 9 depicts a sectional view of the reversible joint of the reusable embodiment;

[28] FIG. 10 depicts an exploded view of the components providing electrical communication between the two portions of the reusable embodiment;

[29] FIG. 11 depicts the cap region of the dosage control embodiment;

[30] FIG. 12 depicts the heat pump variety of the dosage control embodiment; and

NJOY Exhibit 1002.931

[31] FIG. 13A-B depicts the diaphragm pump variety of the dosage control embodiment.

DETAILED DESCRIPTION OF THE INVENTION

[32] The foregoing summary, as well as the following detailed description of certain embodiments of the present invention, will be better understood when read in conjunction with the appended drawings.

[33] As used herein, an element recited in the singular and preceded with the word "a" or "an" should be understood as not excluding plural of said elements, unless such exclusion is explicitly stated. Furthermore, the references to "one embodiment" of the present invention are not intended to be interpreted as excluding the existence of additional embodiments that also incorporate the recited features. Moreover, unless explicitly stated to the contrary, embodiments "comprising" or "having" an element or a plurality of elements having a particular property may include additional such elements not having that property.

[34] The present invention is directed to an electronic vaporizing inhaler. One specific embodiment of the electronic vaporizing inhaler is an electronic cigarette. The description of the invention and accompanying figures will be directed to the electronic cigarette embodiment; however, other embodiments are envisioned, such as a vaporizer for hookah, flavored liquids, medicine, and herbal supplements. Additionally, the device can be packaged to look like an object other than a cigarette. For instance, the device could resemble another smoking instrument, such as a pipe, water pipe, or slide, or the device could resemble another non-smoking related object.

Mesh Membrane Embodiment

NJOY Exhibit 1002.932

[35] Electronic cigarettes are either disposable or reusable. The term "reusable" as used herein implies that the energy storage device is rechargeable or replaceable or that the vaping liquid is able to be replenished either through refilling or through replacement of the vaping liquid cartridge. Alternatively, in some embodiments reusable electronic device is both rechargeable and the liquid can be replenished. A disposable embodiment will be described first, followed by a description of a reusable embodiment.

[36] FIG. 1 depicts a disposable electronic cigarette embodiment 10 of the invented electronic vaporizing inhaler. As can be seen in FIG. 1, the electronic cigarette 10 has a cylindrical body with a relatively long length "L" as compared to the diameter "D." In terms of shape and appearance, the electronic cigarette 10 is designed to mimic the look of a typical cigarette. For instance, the electronic cigarette can feature a first portion 15 that primarily simulates the tobacco rod portion of a cigarette and a second portion 20 that primarily simulates a filter. In the disposable embodiment of the invented device, the first portion and second portion are regions of a single, non-separable device. The designation of a first portion and a second portion is used to conveniently differentiate the components that are primarily contained in each portion.

[37] As can be seen in FIG. 2, the first portion 15 contains the power and control components. An electrical storage device 25 powers the electronic cigarette 10. The electrical storage device 25 can be a battery, including but not limited to a lithium-ion, alkaline, zinc-carbon, nickel-metal hydride, or nickel-cadmium battery; a super capacitor; or a combination thereof. In the disposable embodiment, the electrical storage device 25 is not rechargeable, but, in the reusable embodiment, the electrical storage device 25 would be selected for its ability to recharge. In the disposable embodiment, the electrical storage device 25 is primarily selected to

NJOY Exhibit 1002.933

deliver a constant voltage over the life of the device. Otherwise, the performance of the electronic cigarette would degrade over time. Preferred electrical storage devices that are able to provide a consistent voltage output over the life of the device include lithium-ion and lithium polymer batteries.

[38] The electrical storage device 25 is in electrical communication with a flexible circuit board 40. Electrical communication between the various components of the electronic cigarette 10 is preferably made using a flexible circuit boards 40 or through direct electrical contact. Using flexible circuits 40 instead of soldered wire connections improves the reliability of the device. Soldered connections are known to break when the device containing them is subject to mechanical shock, such as from a drop. When the soldered connection breaks, operation of the device will be impaired if it operates at all. Flexible circuits 40 provide reliable connections that are better able to withstand mechanical shocks, and the flexible circuits 40 are able to provide a more compact design.

[39] The manufacturing of the embodiment 10 is also easier using the flexible circuit 40 as compared with soldering individual wires which require manual manipulation and several soldering tasks.

[40] The electrical storage device 25 has a first end 25a that generally corresponds to a positive terminal and a second end 25b that generally corresponds to a negative terminal. As can be seen in FIG. 3A, the flexible circuit board 40 has a proximal end 40p and a distal end 40d. The positive terminal at the first end 25a of the electrical storage device 25 is in electrical communication with a positive lead 42 near the distal end 40d of the flexible circuit board 40. The negative terminal at the second end 25b of the electrical storage device 25 is in electrical communication with a negative lead 44 near the proximal end 40p of the flexible circuit board

NJOY Exhibit 1002.934

40. The distal end 40d of the flexible circuit board 40 is in electrical communication with a microprocessor 30. As shown in FIG. 4, the microprocessor 30 is a commercially available unit that has a sensor and LED light 32 incorporated into its design; however, the sensor and light 32 can be separate components. The microprocessor 30 is configured to process data from the pressure sensor, to control the light 32 (if included) on the first portion 15, to direct current flow to a vaporizer 34 in the second portion 20, and to terminate current flow after a preprogrammed amount of time.

[41] The sensor detects when the electronic cigarette 10 is in use (i.e., when the user draws on the embodiment) and, in response, activates the microprocessor 30. The sensor can be selected to detect changes in pressure, air flow, or vibration. In a preferred embodiment, the sensor is a mechanical pressure sensor. In this embodiment, the pressure sensor is a switch that allows current flow to the microprocessor in response to a change in pressure when the user draws on the electronic cigarette 10. In another preferred embodiment, the sensor is a digital pressure sensor such that gradations of pressure can be sensed. In this embodiment, the digital pressure sensor would pulse off and on to measure any change in pressure. In the digital embodiment, the sensor takes continuous readings which in turn requires the digital sensor to continuously draw current, but the amount is small and overall battery life would be negligibly affected. The digital sensor allows for a direct measurement of the change in the pressure.

[42] In embodiments featuring a light 32, the microprocessor 30 is in electrical communication with the light 32. The light 32 serves as an indicator that the electronic cigarette 10 is in use, i.e., the light will glow when the user inhales. The intensity of the glow can be tailored to the strength of the user's inhale, meaning that a relatively stronger inhale will cause the light 32 to glow brighter, while a relatively weaker inhale will cause the light to glow

NJOY Exhibit 1002.935

dimmer. The color of light emitted from the light 32 can be any color. For instance, the color could be orange or red to simulate the glowing ember of a burning cigarette. In other instances, the color is selected specifically to avoid the appearance of a traditional cigarette so as to assuage the concerns of onlookers about harmful secondhand smoke.

[43] Additionally, the microprocessor 30 includes a timer. Once the microprocessor 30 is activated by the senor, the timer initiates. After a preprogrammed amount of time, the timer will shut off the microprocessor 30, which terminates current flow to the vaporizer 34. In this way, the dose of vaping liquid is consistent between draws and limited. In a preferred embodiment, the timer will deactivate the microprocessor after five seconds; however, longer or shorter times could also be used. Because the microprocessor 30 operates on a timer, the microprocessor 30 eliminates the requirement to regulate the temperature of the vaporizer 34 which also eliminates the need to measure the temperature of the vaporizer 34.

[44] Returning to FIG. 2, the second portion 20 of the electronic cigarette 10 is generally comprised of a vaporizer 34, a liquid reservoir 45, and a mouthpiece 50.

[45] In the embodiment shown in FIG. 5, the vaporizer 34 and liquid reservoir 45 are part of a single cartridge wherein the vaporizer 34 is incorporated in a cap 55 for the liquid reservoir 45.

[46] As shown in FIG. 6, the cap 55 is comprised of an intermediate partition 60, having a first surface 60a and a second surface 60b (shown in FIG. 7B). The intermediate partition 60 defines a plurality of transversely extending apertures 65. The apertures 65 create capillaries from the second surface 60b through the thickness of the intermediate partition 60 to the first surface 60a. The apertures 65 can vary in diameter from approximately 1 mm to approximately 4 mm (the diameter of the capillary aperture will be dictated to a large extent by

NJOY Exhibit 1002.936

the viscosity of the fluid—a more viscous fluid can have a larger diameter capillary without leaking, while a less viscous fluid will require a smaller diameter capillary). In an embodiment of the present invention, the partition 60 is 1 mm thick and has a first outer ring of apertures 65 that are 1.3 mm wide and a central aperture 65 that is 1.5 mm wide.

[47] Generally speaking, the diameters of the capillaries are sufficient to facilitate passage of the not yet vaporized fluid. Suitable viscosities of the fluid are below approximately 100 centipoises (cP), preferably between 30 and 90 cP and most preferably between 45 and 75 cP. An embodiment of the invention utilizes a viscosity of approximately 60 cP.

[48] A myriad of means exists to maintain the viscosity of the vaping liquid at the desired below 100 cP point. Inasmuch as the mixture is volatilized at relatively low temperatures compared to the light off temperatures of state of the art e-cigarette configurations, vapor pressures of the mixture should be kept to a minimum. As such, thinning agents, having both polar and nonpolar qualities are suitable, and such agents include alcohols, carboxylic acids, and similar water miscible compounds containing hydroxyl, carboxyl or carbonyl moieties.

[49] In an embodiment of the invention, ethanol is utilized to maintain the viscosity of the mixture at about 60 cP. The mixture fluid is preheated to approximately 60 °C and diluted approximately 10 to 60 percent with ethanol, preferably between approximately 15 and 30 percent, ethanol and most preferably about 15-18 percent ethanol. In an embodiment of the invention, 17 percent ethanol dilution was utilized.

[50] The apertures 65 can be circular or any other of a variety of geometric shapes. As depicted in FIG. 6, the apertures 65 are elliptical or bent ellipses. The fluid passageway provided by the aperture establishes fluid communication between the liquid reservoir 45 and the cap 55.

[51] Extending from the first surface 60a of the partition 60 is a perimeter wall 70.

NJOY Exhibit 1002.937

The perimeter wall 70 has tall regions 75 and short regions 80. In the tall regions 75, the height of the perimeter wall 70 is higher than the height of the short regions 80. Protruding from the medially facing surface of the tall regions 75 of the perimeter wall 70 is a plurality of ridges 85.

[52] Extending from the second surface 60b of the partition 60 is a plug 90. The plug 90 is defined by a ring wall that is indented from the periphery of the second surface 60b. The plug 90 is inserted into the liquid reservoir 45. Preferably, when the plug 90 is inserted in the liquid reservoir 45, the perimeter wall 70 forms a smooth and continuous surface with the exterior of the liquid reservoir 45.

[53] The perimeter wall 70 and intermediate partition 60 define a cavity. As depicted in FIG. 7B, inserted into the cavity and in contact with the intermediate partition 60 is a sponge 95. The sponge 95 absorbs vaping liquid from the liquid reservoir 45 through the apertures 65. The sponge 95 is overlaid with a wick 100. The wick 100 transports vaping liquid to the vaporizer 34 via capillary action. Preferably the wick 100 is a fiberglass wick; however, cotton, paper, or other fiber strands could be used for a wick material. In one embodiment of the electronic cigarette, the liquid reservoir 45 contains a flexible bladder that maintains pressure on the vaping liquid in the liquid reservoir. This pressure is balanced against the surface tension of the liquid at the aperture 65 of the capillaries in the partition 60 such that a small change in pressure allows flow but the capillaries do not leak otherwise.

[54] As can be seen in FIG. 7A, a heating element 105 is placed directly above the wick 100. As depicted in FIG. 7A, the heating element 105 is a coil, but other heating elements can also be used, such as thin films and thick films. In a preferred embodiment, the heating element has a positive temperature coefficient ("PTC"), i.e., the electrical resistance of the heating element 105 increases as the temperature increases. In this way, the maximum

NJOY Exhibit 1002.938

temperature of the heating element cannot exceed a material-specific amount because current flow will be cut off by the increased electrical resistance. Accordingly, the material used for the heating element 105 can be selected to ensure that the electronic cigarette 10 operates within a desired temperature range. A desirable temperature range for vaping liquid is typically between 100°C and 300°C at atmospheric pressure, and an even more desirable temperature range at which the heating element operates is between 150°C and 250°C at atmospheric pressure.

[55] A variety of PTC materials can also be used for the heating element 105. Suitable heating elements for the coil heater include wire nickel-iron alloys on a mica former. Suitable heating elements for the thin film and thick film heaters could be constructed of a carrier of alumina, zirconium oxide, calcium oxide, silicon dioxide, potassium oxide, magnesium oxide, boron carbide, sodium oxide, and combinations thereof. In embodiment of the invention, alumina was the chosen carrier.

[56] Conductor coatings are electrically conductive substrates comprised of metals, such as those selected from the group consisting of silver, palladium, gold, copper, aluminum, tungsten, zinc, or alloys thereof; films of nickel, platinum, molybdenum, iron, steel, and alloys thereof; a glaze, such as DuPont overglaze ink; and self-leveling printed epoxy covercoats. The thick film heaters differ from the thin film heaters in two respects: thickness and deposition technique. The thick film heaters can be deposited in more ways, such as through printed resistive inks, while the thin films can be sputter coated on a substrate.

[57] When the user draws on the electronic cigarette 10, the vaping liquid is drawn from the reservoir 45, through the plurality of apertures 65, and into the sponge 95 and wick 100. The wick 100 brings the vaping liquid into contact with the heating element 105 of the vaporizer 34. The user's draw also causes the sensor to activate the microprocessor 30, which directs

NJOY Exhibit 1002.939

current to the heating element 105. Thus, when the user draws on the mouthpiece 50 of the electronic cigarette 10, two actions happen simultaneously. First, the sensor activates the microprocessor 30, which triggers the heating element 105 to begin heating. Second, the draw reduces the pressure outside the reservoir 45 such that flow of the vaping liquid through the apertures 65 begins, which saturates the sponge 95. The wick 100 transports the vaping liquid to the heating element 105, which vaporizes the liquid. Typically, the heating element 105 will achieve a temperature of approximately 230°C and the vaping liquid will be vaporized by the heating element 105 within 0.5 seconds of the user's first draw.

[58] The heating element 105 is in electrical communication with electrical contacts 106a, 106b. Returning to FIG. 3C, the proximal end 40p of the flexible circuit board 40 has an outer electrode 107 and an inner electrode 109. The inner electrode 109 contacts the first electrical contact 106a, and the outer electrode 107 contacts the second electrical contact 106b. Via the flexible circuit board 40, the first electrical contact 106a is in electrical communication with the positive terminal of the electrical storage device 25 by way of the microprocessor 30, while the second electrical contact 106b is in electrical communication with the negative terminal of the electrical storage device 25.

[59] The electrical contacts 106a, 106b are embedded in a disc 111. The disc 111 is designed to be received inside the perimeter wall 70 of the cap 55. The disc 111 rests on the ridges 85, thereby creating a vaporizing chamber. The disc 111 can be made using a variety of thermoplastic materials. Additionally, the disc 111 can be made of FR4, which is commonly used to make printed circuit boards.

[60] Because the perimeter wall 70 is comprised of tall regions 75 and short regions 80, the combination of the cap 55 and disc 111 creates windows 115 in the perimeter wall 70.

NJOY Exhibit 1002.940

These windows 115 allow the vapor to escape from the vaporizer 34. The vapor flows out the windows 115, around the exterior of the liquid reservoir 45, and to the mouthpiece 50. In a preferred embodiment, the mouthpiece 50 is comprised of a diffuser (not shown) and a vortex outlet 119. The diffuser is a disc with a central aperture that concentrates the vapor into the vortex outlet 119. The combination of the diffuser and vortex outlet 119 control the pressure drop of the electronic cigarette 10 and prevent the whistling noise associated with the mouthpiece of some conventional electronic cigarettes.

Reusable Embodiment

[61] Turning to the reusable embodiment depicted in FIG. 8, the first portion 15 and second portion 20 are separate components that can be reversibly joined together.

[62] In the reusable embodiment, the components are substantially the same. The differences in the reusable embodiment vis-à-vis the disposable embodiment are the accommodations made to reversibly attach the first portion 15 and second portion 20 (often with reusable electronic cigarettes the second portion 20 is referred to as a "cartomizer" because it contains the liquid cartridge and vaporizer). The first portion 15 has a distal end 15d and a proximal end 15p, and the second portion 20 has a distal end 20d and a proximal end 20p. In the reusable embodiment, the first portion 15 and second portion 20 are reversibly attachable, such that the proximal end 15p of the first portion 15 is attached to the distal end 20d of the second portion 20. A variety of suitable connections can join the first portion 15 to the second portion 20, including magnetic joints, snap lock joints, and pin and groove joints, among others. In a preferred embodiment, which is described in the following, the first portion 15 and second portion 25 are joined using a threaded connection.

NJOY Exhibit 1002.941

[63] Because the electrical storage device 25 is located in the first portion 15 and the vaporizer 34 is located in the second portion 15, the joint needs to provide electrical communication between those components. In the present invention, electrical communication is established using electrodes that are compressed together when the first portion 15is tightened into the second portion 20. As depicted in FIG. 8, the first portion 15 has a male threaded end 125 that is adapted to be received by a female threaded end 127 on the second portion 20. The male threaded end 125 and the female threaded end 127 have interior cavities that are adapted to receive the components that provide electrical communication between the first portion 15 and the second portion 20.

[64] Electrical communication is established by compressing electrodes in the first portion 15 to electrodes in the second portion 20. As can be seen in FIG. 9, the first portion 15 contains a central pin electrode 130a, second portion 20 contains a central pin 130b. The central pins each have broad, flat heads 132a, 132b that contact each other. The shafts 134a of the central pin 130a of the first portion 15 contacts the inner electrode 109 on the proximal end 40p of the flexible circuit 40. The shaft 134b of the central pin 130b of the second portion 20 contacts the first electrical contact 106a connected to the heating element 105. FIG. 10 shows an exploded view of the electrode assemblies. Referring to FIG. 10, surrounding the central pins 130a, 130b are insulating sheaths 136a, 136b. The sheaths 136a, 136b are inserted into washers 138a, 138b. The washer 138a is in electrical communication with the outer electrode 107 on the proximal end 40p of the flexible circuit 40, while the washer 138b is in electrical communication with the second electrical contact 106b that is connected to the heating element 105. The sheaths 136a, 136b prevent the central pins 130a, 130b from contacting the washers 138a, 138b and shorting out the connections. The washers 138a, 138b are in electrical communication with the

NJOY Exhibit 1002.942

threads of the male threaded end 125 and the female threaded end 127, respectively, such that, when the first portion 15 and second portion 20 are joined, electrical communication is established between the first portion 15 and the second portion 20.

[65] In order for this embodiment to be reusable, the electrical storage device 25 is rechargeable. In a preferred embodiment, the electrical storage device is a rechargeable 3.7V lithium-ion battery. In order to charge the electrical storage device 25, a variety of charging options exist, including charging cables and inductive charging. In a preferred embodiment, the electrical storage device is charged by inserted the first portion 15 into a charging case. The charging case contains a charging receptacle that features a reversible joint complementary to that of the first portion. The case is connected via cable to a power source. In one embodiment, the case is charged using a USB cable that can be plugged into a wall adapter. In another embodiment, the USB cable is plugged into a computer port.

[66] Besides the reversible joint between the first portion 15 and the second portion 20 and the recharging capability, operation of the reusable embodiment is similar to the disposable embodiment. One benefit of the reusable embodiment is that the second portion 20, or cartomizer, is replaceable, so the user can change vaping liquids.

Dosage Control Embodiment

[67] In another embodiment of the presently invented electronic cigarette 10, the dose of vaping liquid is controlled by the microprocessor, such that a user-programmable dose of vaping liquid is administered in each draw.

[68] In this second embodiment, the electronic cigarette 210 contains many similar features as in the previous embodiment, including an electrical storage device 225, a

NJOY Exhibit 1002.943

microprocessor 230, an optional light 232, a vaporizer 234, a liquid reservoir 245, and a mouthpiece 250.

[69] As in the previous embodiment and as shown in FIG. 11, the vaporizer 234 is contained in a cap 255. The cap 255 has an intermediate partition 260 that defines a first aperture 265. Extending from a first surface 260a of the partition 260 is a perimeter wall 270, having tall regions 275 and short regions 280. Extending from a second surface 260b of the partition 260 is a plug 281 that allows the cap 255 to be inserted into the liquid reservoir 245. The plug 281 is defined by a ring wall that is indented from the periphery of the second surface 260b. When the cap 255 is inserted into the liquid reservoir 245, the perimeter wall 270 preferably creates a smooth and continuous surface with the exterior of the liquid reservoir 245. Protruding from the medially facing surface of the perimeter wall 270 are ridges 285. The ridges 285 support a disc 287, containing electrical contacts 289a, 289b. The combination of the disc 287 and the short regions 280 of perimeter wall 270 define windows 292 in the cap 255. Disposed between and in electrical communication with the electrical contacts 289a, 298b is a heating element 290. The heating element 290 can be selected from a variety of suitable heating element types, including coils, thin films, and thick films. The heating element material is preferably selected from the heating element materials mentioned in the previous embodiments.

[70] The dosage control embodiment operates in one of two ways. The first dosage control embodiment uses a heat pump to dispense vaping liquid from the reservoir. The second dosage control embodiment uses a diaphragm pump to dispense vaping liquid. Both embodiments use the same cap 255 discussed above; however, the components formed or inserted into the cap will vary.

[71] In the heat pump embodiment depicted in FIG. 12, the first surface 260a of the

NJOY Exhibit 1002.944

partition is overlaid with a substrate 295. A film 300 is placed over or deposited on the substrate 295. The film 300 is a second heating element and the materials for the film can be selected from the same materials as the heating element 290. The substrate 295 is preferably a silicon wafer with tracers embedded in it to carry current from the battery to the film 300. Formed through the thickness of the film 300 and substrate 295 is a second aperture 305 that lies in registration with the first aperture 265 in the intermediate partition 260. An inverted cup 310, having sidewalls 315 and a flat superior end 320, is placed over the film 300. The sidewalls 315 and flat superior end 320 define a heating region 325. The flat superior end 320 features a nozzle 330 having a depending capillary channel 331 that creates a fluid passageway from the heating region 325 (and thus, the liquid reservoir 245 by way of the first and second apertures 265, 305) and the exterior of the inverted cup 310.

[72] When the user draws on the electronic cigarette 210, the microprocessor directs current to the heating element 290 and the film 300. The heat from film 300 causes a vapor bubble 332 to form in the capillary channel 331. As the vaping liquid continues to be heated, the vapor bubble 332 will pop, which ejects vaping fluid out of the nozzle 330 and onto the heating element 290 where it is vaporized. The vaporized liquid then exits from the vaporizer 234 through the windows 292. In the embodiment shown in FIG. 12, the cap 255 has a single aperture 265, heating region 325, and a single nozzle 330 with a single capillary channel 331, but the cap 255 could contain a plurality of heat pumps defined by those elements. Preferably, the cap 255 contains five or six heat pumps; although, more or less heat pumps could be included.

[73] The heating region 325 is replenished with vaping liquid after the vapor bubble 332 bursts. Upon bursting, a vacuum is left behind in the region formerly occupied by the vapor bubble. The difference in pressure causes vaping liquid to flow into the heater region 325 so that

NJOY Exhibit 1002.945

a new vapor bubble 332 can form.

[74] The film 300 is not heated to the same temperature as the heating element 290. Generally, the film 300 is heated to a maximum temperature of approximately 150°C. The heating element 290 will be heated to a maximum temperature of 300°C.

[75] In the diaphragm pump embodiment shown in FIGS. 13A-B, the inverted cup 310 is placed over the substrate 295, creating a primer region 334. Embedded in the substrate 295 is a region defining a diaphragm 335. A piezoelectric transducer 340 is placed over the diaphragm 335. When current is supplied to the piezoelectric transducer 340, the piezoelectric transducer 340 will reversibly deform, causing the diaphragm 335 to deflect inwardly and outwardly. When the diaphragm 335 deflects inwardly as shown in FIG. 13A, the volume of the primer region 334 is decreased, which causes vaping liquid to be forced into the capillary channel 331 and ejected out of the nozzle 330 onto the heating element 290. When the diaphragm 335 deflects outwardly as shown in FIG. 13B, it draws more vaping liquid into the primer region 334. As in previous embodiments, when the vaping liquid contacts the heating element 290, it vaporizes and exits the vaporizer through the windows 292. Like in the heat pump embodiment, the diaphragm embodiment can contain a multitude of diaphragm pumps within the cap 255. Preferably, the cap 255 will contain 5 or 6 diaphragm pumps; although, more or less pumps can be included.

[76] In both the heat and diaphragm pump embodiments, the vapor travels outside the reservoir 245 to the mouthpiece 250. As in the previous embodiments, the mouthpiece can contain a diffuser and a vortex outlet 350 as described in the previous embodiment.

[77] In the dosage control embodiment, the microprocessor 230 performs many of the same functions as the microprocessor 30 of the previous embodiment, including, controlling the light 232, processing data from the sensor, and controlling current to the vaporizer 234. In this

NJOY Exhibit 1002.946

embodiment, though, the microprocessor 230 uses pulse width modulation to deliver pulses of current to the film 300 and the piezoelectric transducer 340 and to the heating element 290. Using pulsed current provides better temperature control of the film 300 and heating element 290 and allows finer tuning of the dosing of the piezoelectric transducer 340. The microprocessor 230 also runs on a timer, as in the previous embodiments, but, besides controlling current to the heating element 290, the timer also controls the amount of vaping fluid delivered by the heat or diaphragm pump and the maximum draw length (as selected by the user). Additionally, in some embodiments, the microprocessor 230 can communicate with outside equipment, such as applications or computers.

[78] In the dosage control embodiment, the dosage of liquid delivered can be strictly controlled by the microprocessor 230 because the amount of liquid delivered can be precisely tuned using the heat or diaphragm pump. In this way, the user can set the dosage for each pump and the maximum dosage for a given period of time. The dosage can be set in a variety of suitable ways, including dials or buttons on the exterior of the electronic cigarette 210. If dials are used, the user would rotate or swivel a component of the electronic cigarette to select the dose from a continuous range of doses. If buttons are used, then the user would depress the button associated with the preselected dosage amounts. In a preferred embodiment, the dose is controlled wirelessly using, for instance, an application in communication with the electronic cigarette over Bluetooth or Wi-Fi.

[79] This embodiment has particular applicability for those who use electronic cigarettes as a means to quit smoking and reduce their nicotine dependency. The electronic cigarette 210 provides a way to gradually taper the dose of nicotine, not only in each draw but also the daily amount.

NJOY Exhibit 1002.947

[80] Other embodiments of the invented electronic vaporization inhaler are easily envisioned, including medicinal delivery devices and atomizers.

[81] It is to be understood that the above description is intended to be illustrative, and not restrictive. For example, the above-described embodiments (and/or aspects thereof) may be used in combination with each other. In addition, many modifications may be made to adapt a particular situation or material to the teachings of the invention without departing from its scope. While the dimensions and types of materials described herein are intended to define the parameters of the invention, they are by no means limiting, but are instead exemplary embodiments. Many other embodiments will be apparent to those of skill in the art upon reviewing the above description. The scope of the invention should, therefore, be determined with reference to the appended claims, along with the full scope of equivalents to which such claims are entitled. In the appended claims, the terms "including" and "in which" are used as the plain-English equivalents of the terms "comprising" and "wherein." Moreover, in the following claims, the terms "first," "second," and "third," are used merely as labels, and are not intended to impose numerical requirements on their objects. Further, the limitations of the following claims are not written in means-plus-function format and are not intended to be interpreted based on 35 U.S.C. § 112(f) unless and until such claim limitations expressly use the phrase "means for" followed by a statement of function void of further structure.

[82] As will be understood by one skilled in the art, for any and all purposes, particularly in terms of providing a written description, all ranges disclosed herein also encompass any and all possible subranges and combinations of subranges thereof. Any listed range can be easily recognized as sufficiently describing and enabling the same range being broken down into at least equal halves, thirds, quarters, fifths, tenths, etc. As a non-limiting

NJOY Exhibit 1002.948

example, each range discussed herein can be readily broken down into a lower third, middle third and upper third, etc. As will also be understood by one skilled in the art all language such as "up to," "at least," "greater than," "less than," "more than" and the like include the number recited and refer to ranges which can be subsequently broken down into subranges as discussed above. In the same manner, all ratios disclosed herein also include all subratios falling within the broader ratio.

[83] One skilled in the art will also readily recognize that where members are grouped together in a common manner, such as in a Markush group, the present invention encompasses not only the entire group listed as a whole, but each member of the group individually and all possible subgroups of the main group. Accordingly, for all purposes, the present invention encompasses not only the main group, but also the main group absent one or more of the group members. The present invention also envisages the explicit exclusion of one or more of any of the group members in the claimed invention.

NJOY Exhibit 1002.949

CLAIMS

An exclusive right or privilege is claimed in the invention as defined in the following set of claims:

1. An electronic vaporizing inhaler, said electronic vaporizing inhaler comprising:

an electrical storage device;

a liquid reservoir adapted to receive vaping liquid;

a vaporizer, comprising:

a substrate defined by a plurality of capillary apertures, wherein the capillary apertures provide fluid communication between the vaporizer and the liquid reservoir;

a sponge in physical contact with the substrate;

a wick in physical contact with the sponge; and

a heating element proximal to the wick;

a microprocessor in electrical communication with the electrical storage device, wherein the microprocessor is configured to direct current from the electrical storage device to the heating element in the vaporizer;

a sensor configured to detect when a user draws on the electronic cigarette, wherein the sensor is in electrical communication with the microprocessor and wherein the sensor activates the microprocessor when it detects that a user has drawn on the electronic cigarette;

a housing having a first end and a second end, wherein the housing is designed to contain the electrical storage device, vaporizer, microprocessor, sensor, and liquid reservoir and wherein

NJOY Exhibit 1002.950

the second end of the housing is a mouthpiece from which a user can inhale vapor from the vaporizer.

2. The electronic vaporizing inhaler of claim 1, wherein the housing is a single piece and the electronic vaporizing inhaler is disposable.

3. The electronic vaporizing inhaler of claim 1, wherein the housing is two separable pieces, wherein the electrical storage device, microprocessor, and sensor are contained in a first piece and the vaporizer, liquid reservoir, and mouthpiece are contained in a second piece, and wherein the electronic storage device is rechargeable.

4. The electronic vaporizing inhaler of claim 2, wherein the electrical storage device is a lithium-ion or lithium-polymer battery.

5. The electronic vaporizing inhaler of claim 1, wherein the heating element is selected from the group consisting of coils, thick films, thin films, and combinations thereof.

6. The electronic vaporizing inhaler of claim 1, wherein the heating element is of a type selected from the group consisting of coils, thin films, thick films, and combinations thereof.

7. The electronic vaporizing inhaler of claim 1, wherein the sensor is a mechanical pressure sensor.

NJOY Exhibit 1002.951

8. The electronic vaporizing inhaler of claim 1, wherein the sensor is a digital pressure sensor.

9. The electronic vaporizing inhaler of claim 1, wherein the liquid reservoir has a flexible interior bladder.

10. An electronic vaporizing inhaler, said electronic vaporizing inhaler comprising:

an electrical storage device;

a liquid reservoir adapted to receive vaping liquid;

a vaporizer, comprising:

a heating chamber, comprising:

a substrate having a plurality of apertures, wherein the plurality of apertures provide fluid communication between the vaporizer and the liquid reservoir;

a first heating element, wherein the first heating element heats the vaping liquid to a temperature sufficient to create and burst a vapor bubble;

a superior end having a plurality of nozzles, wherein the nozzle ejects the vaping liquid when the vapor bubble bursts;

a second heating element proximal to the nozzle;

a microprocessor in electrical communication with the electrical storage device, wherein the microprocessor is configured to direct current from the electrical storage device to the first and second heating elements in the vaporizer;

a sensor configured to detect when a user draws on the electronic cigarette, wherein the sensor is in electrical communication with the microprocessor and wherein the sensor activates the microprocessor when it detects that a user has drawn on the electronic cigarette;

NJOY Exhibit 1002.952

a housing having a first end and a second end, wherein the housing is designed to contain the electrical storage device, vaporizer, microprocessor, sensor, and liquid reservoir and wherein the second end of the housing is a mouthpiece from which a user can inhale vapor from the vaporizer.

11. The electronic vaporizing inhaler of claim 10, wherein the first heating element is heated to a maximum temperature that is lower than the maximum temperature of the second heating element.

12. The electronic vaporizing inhaler of claim 11, wherein the first heating element is heated to a maximum temperature of 150°C and the second heating element is heated to a maximum temperature of 300°C.

13. The electronic vaporizing inhaler of claim 10, wherein the microprocessor sends pulses of currents to the first and second heating elements.

14. The electronic vaporizing inhaler of claim 10, wherein the sensor is a digital pressure sensor.

15. The electronic vaporizing inhaler of claim 10, wherein the microprocessor is configured to receive input from the user concerning the dosage of vaping liquid per draw.

16. An electronic vaporizing inhaler, said electronic vaporizing inhaler comprising:

an electrical storage device;

NJOY Exhibit 1002.953

a liquid reservoir adapted to receive vaping liquid;

a vaporizer, comprising:

a primer chamber, comprising:

an inferior end having a plurality of apertures, wherein the plurality of apertures provide fluid communication between the vaporizer and the liquid reservoir;

a substrate embedded with a plurality of diaphragm pumps, each diaphragm pump comprising a diaphragm and a piezoelectric transducer, wherein the each diaphragm flexes inwardly and outwardly in response to its corresponding piezoelectric transducer; and

a superior end having a plurality of nozzles, wherein each nozzle ejects the vaping liquid when its corresponding diaphragm flexes inwardly;

a heating element proximal to the nozzle;

a microprocessor in electrical communication with the electrical storage device, wherein the microprocessor is configured to direct current from the electrical storage device to the heating element in the vaporizer and to the piezoelectric transducer;

a sensor configured to detect when a user draws on the electronic cigarette, wherein the sensor is in electrical communication with the microprocessor and wherein the sensor activates the microprocessor when it detects that a user has drawn on the electronic cigarette;

a housing having a first end and a second end, wherein the housing is designed to contain the electrical storage device, vaporizer, microprocessor, sensor, and liquid reservoir and wherein the second end of the housing is a mouthpiece from which a user can inhale vapor from the vaporizer.

NJOY Exhibit 1002.954

17. The electronic vaporizing inhaler of claim 16, wherein the microprocessor sends pulses of currents to the heating element and to the piezoelectric transducer.

18. The electronic vaporizing inhaler of claim 16, wherein the sensor is a digital pressure sensor.

19. The electronic vaporizing inhaler of claim 16, wherein the microprocessor is configured to receive input from the user concerning the dosage of vaping liquid per draw.

20. The electronic vaporizing inhaler of claim 16, wherein the primer chamber has 5 or 6 diaphragm pumps.

NJOY Exhibit 1002.955

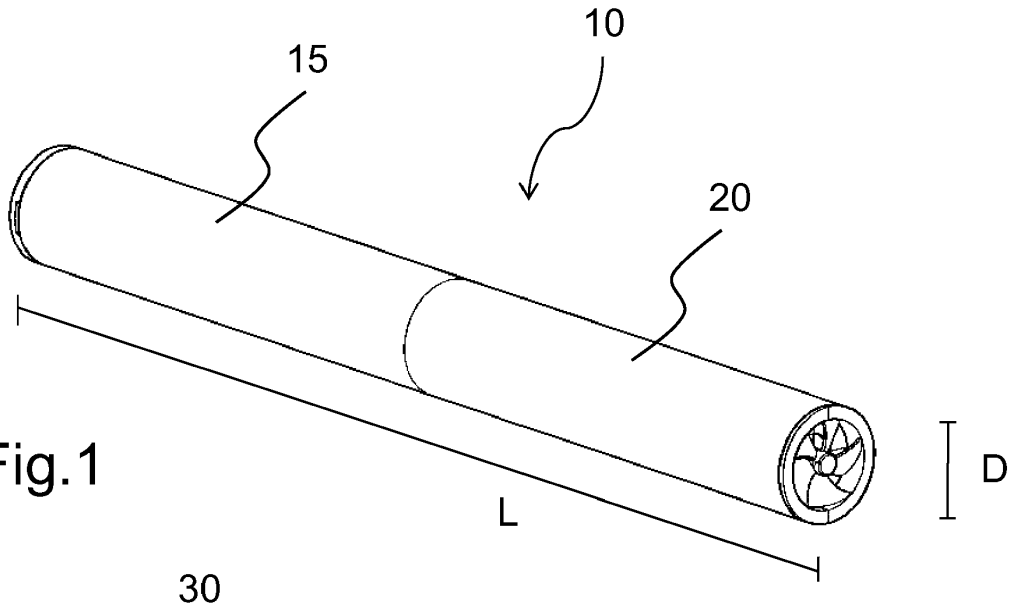


Fig.1

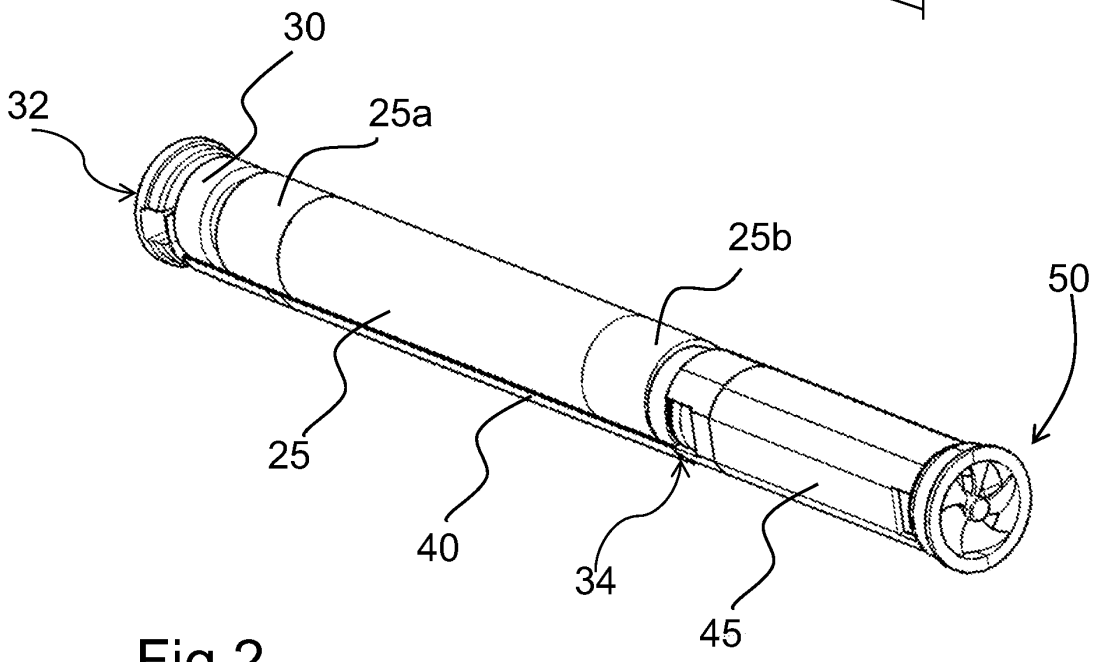


Fig.2

NJOY Exhibit 1002.956

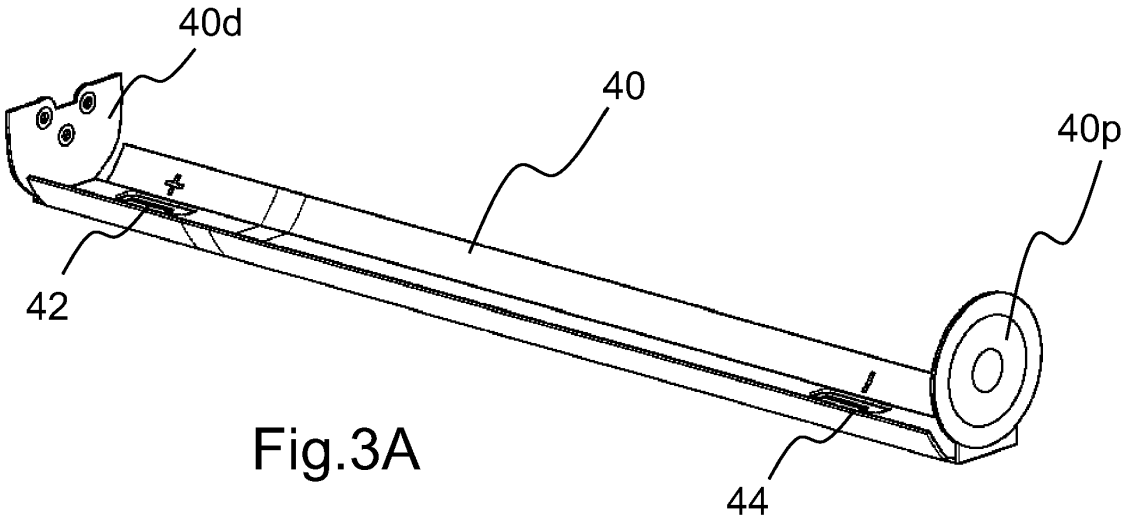


Fig.3A

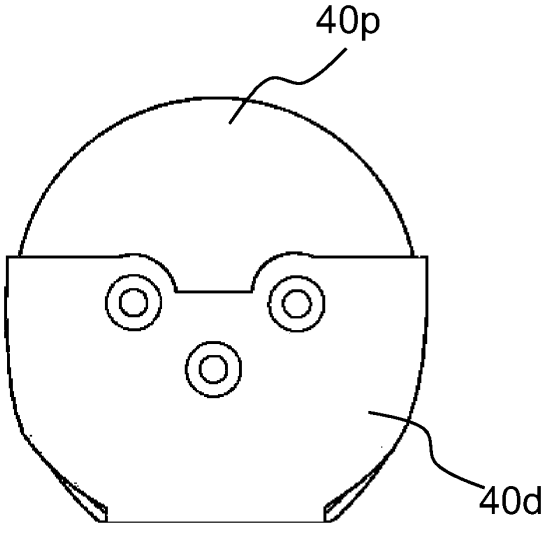


Fig.3B

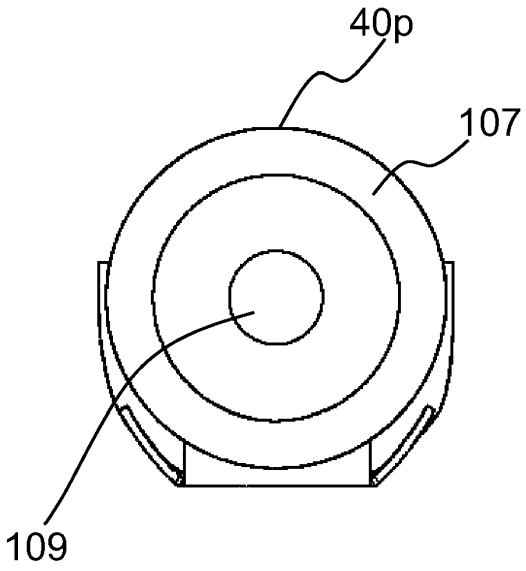


Fig.3C

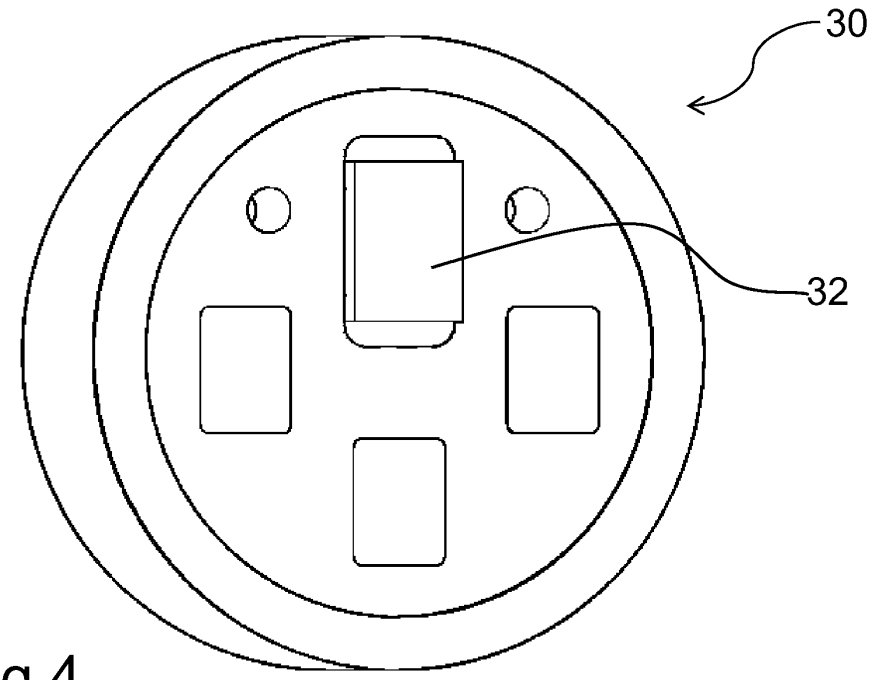


Fig.4

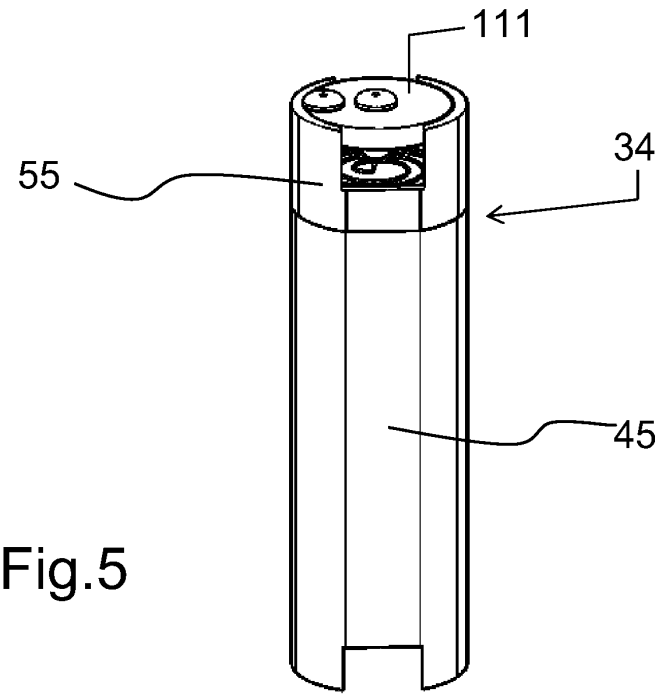


Fig.5

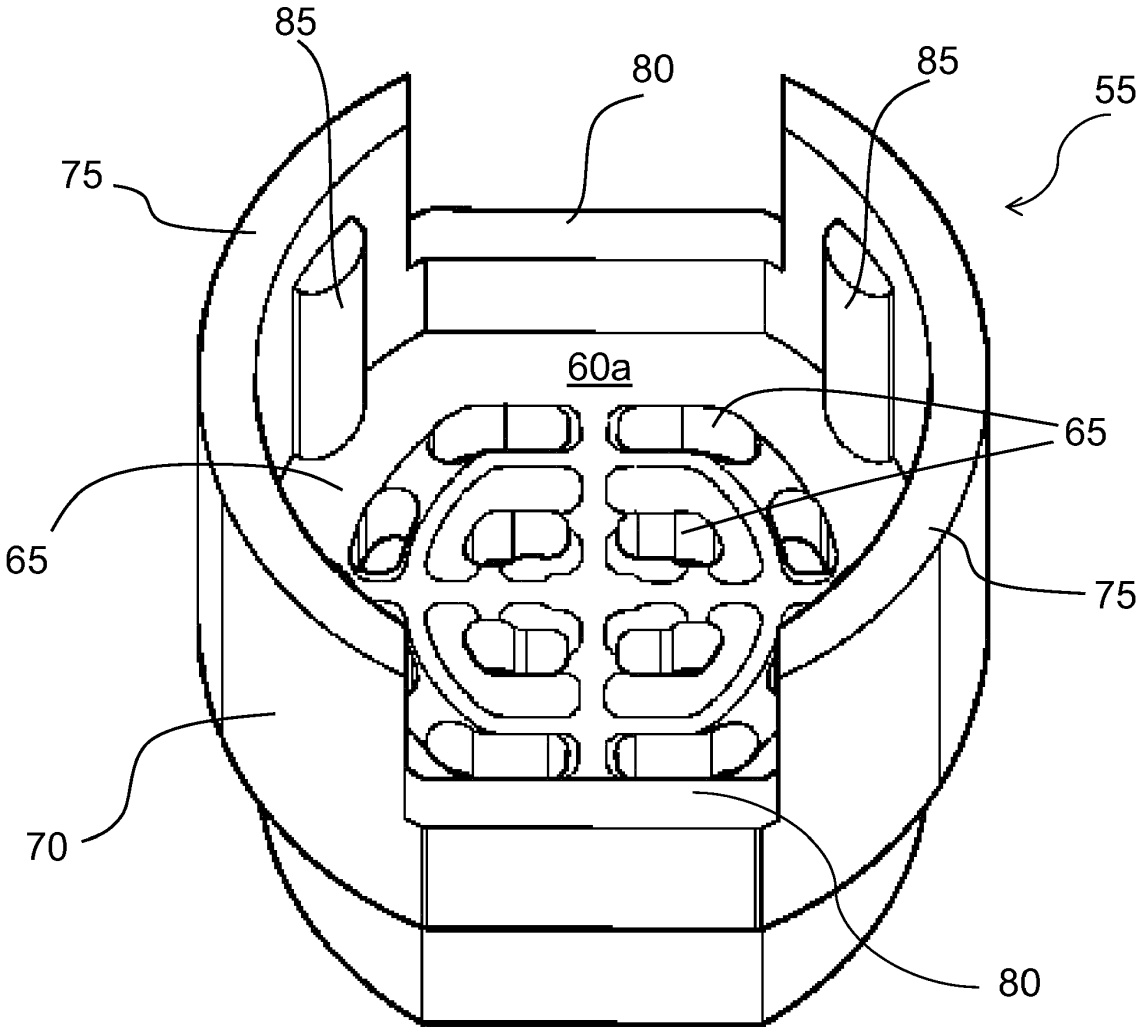


Fig.6

NJOY Exhibit 1002.959

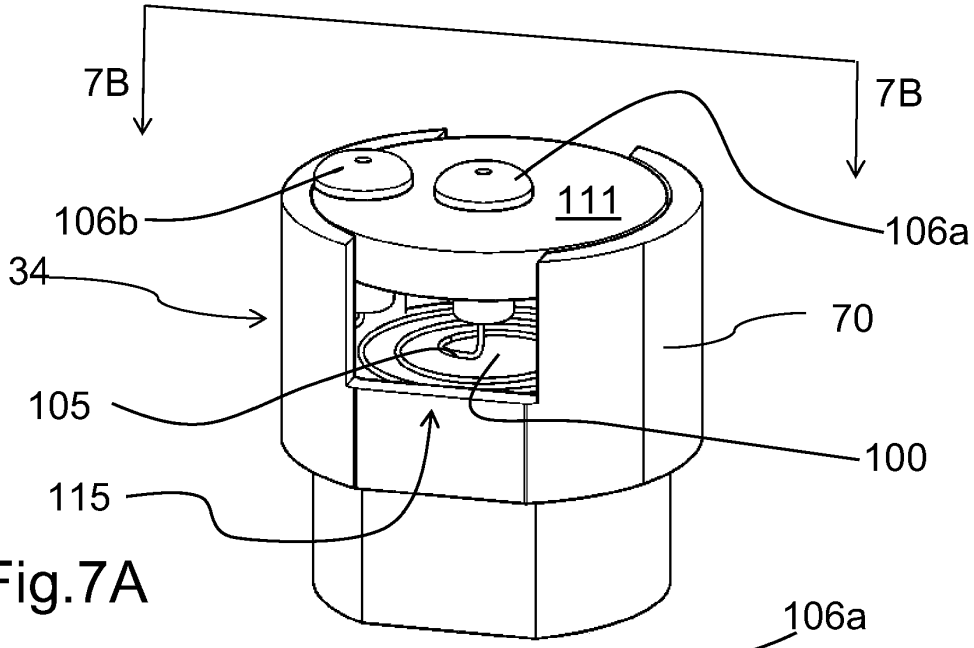

7B
7B
106b
111
106a
34
70
105
100
115

Fig.7A

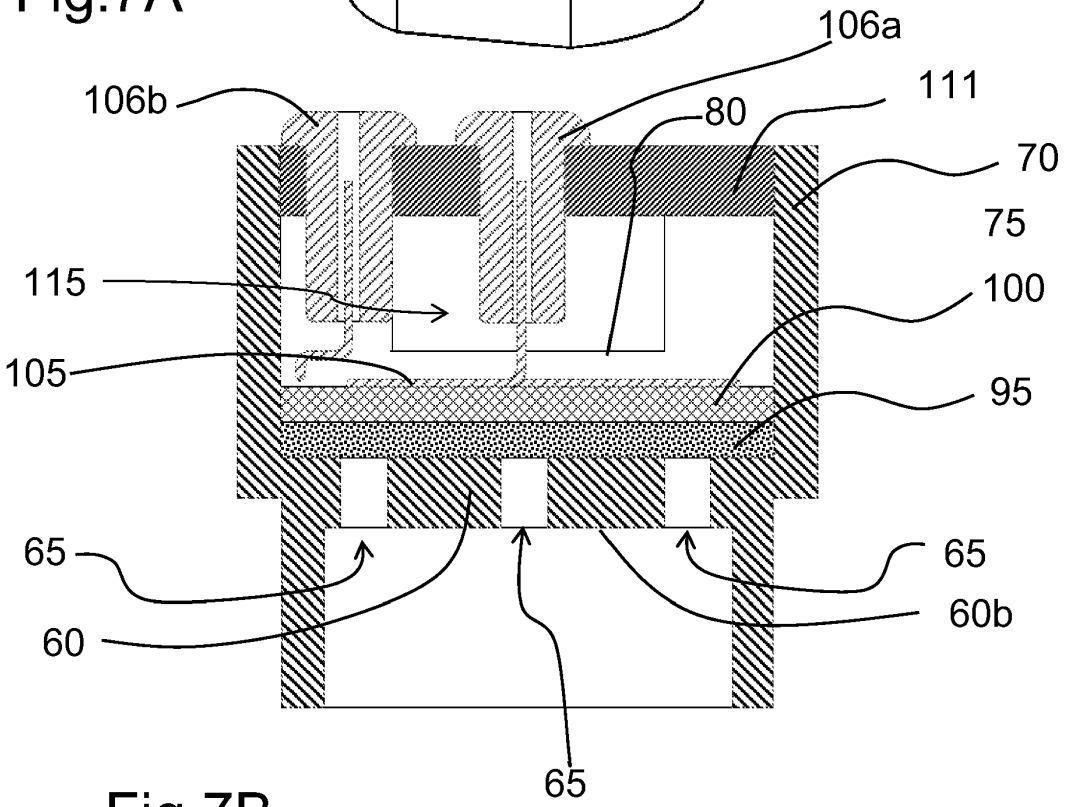

106a
106b
111
80
70
75
115
100
105
95
65
65
60
60b
65

Fig.7B

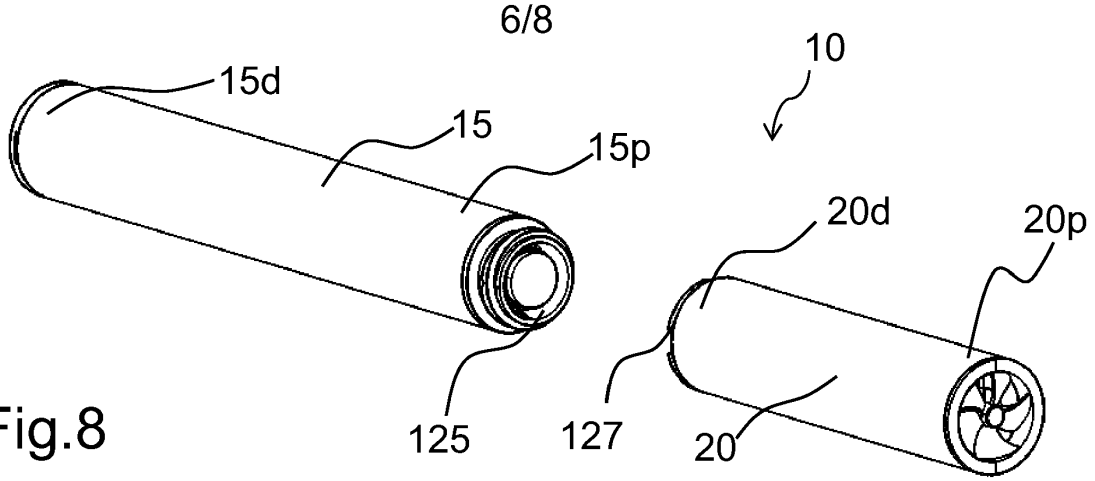


Fig.8

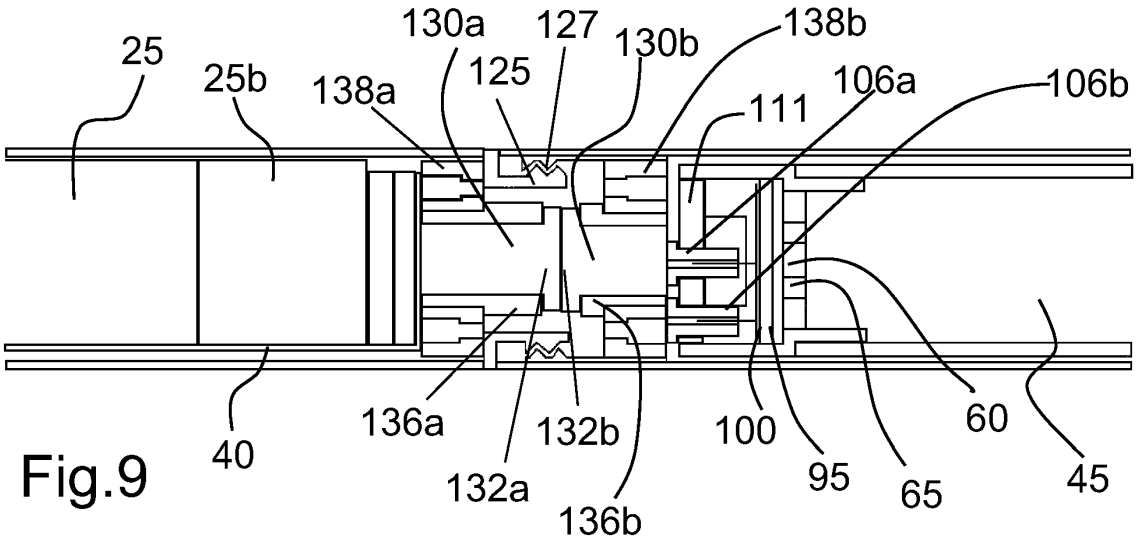


Fig.9

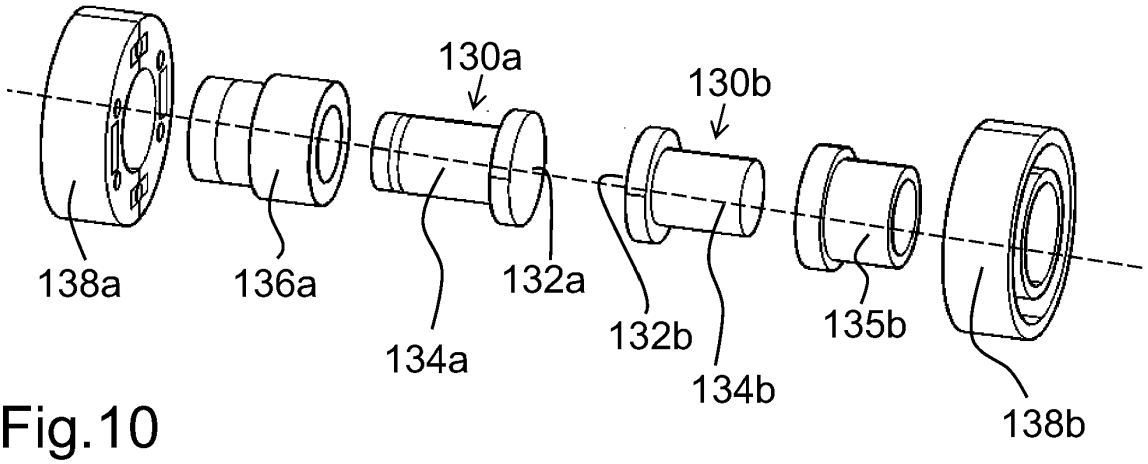


Fig.10

NJOY Exhibit 1002.961

Fig.11

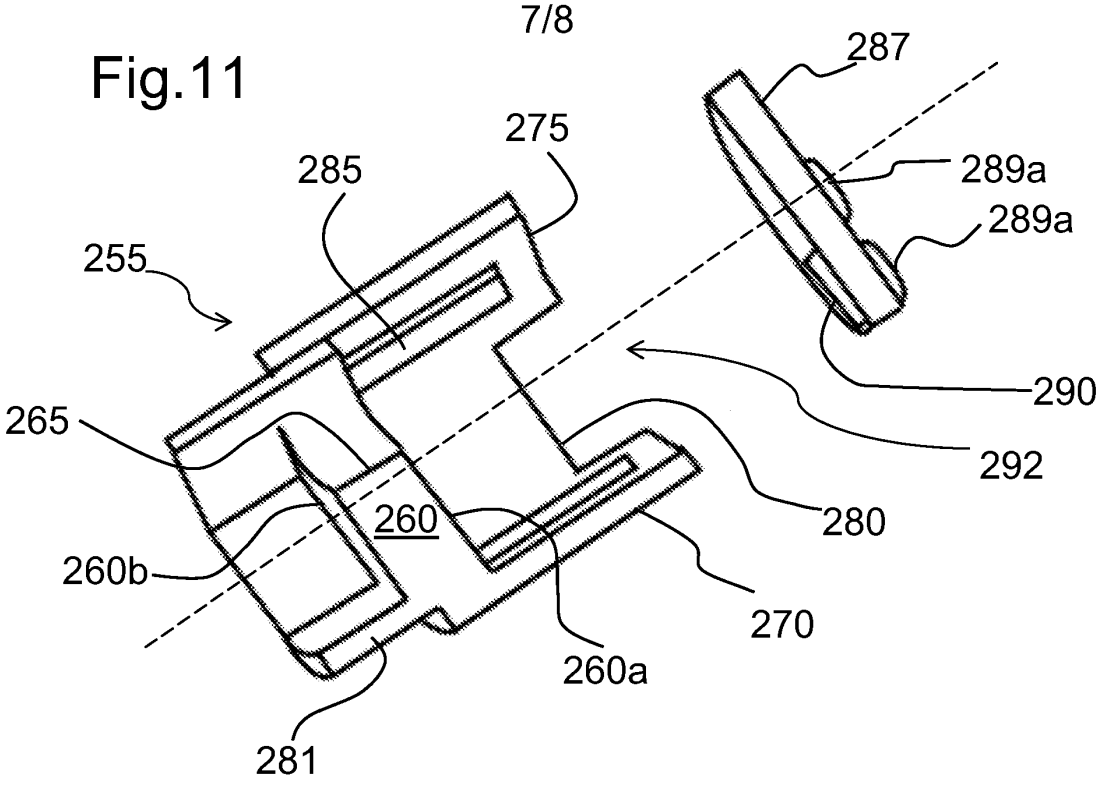
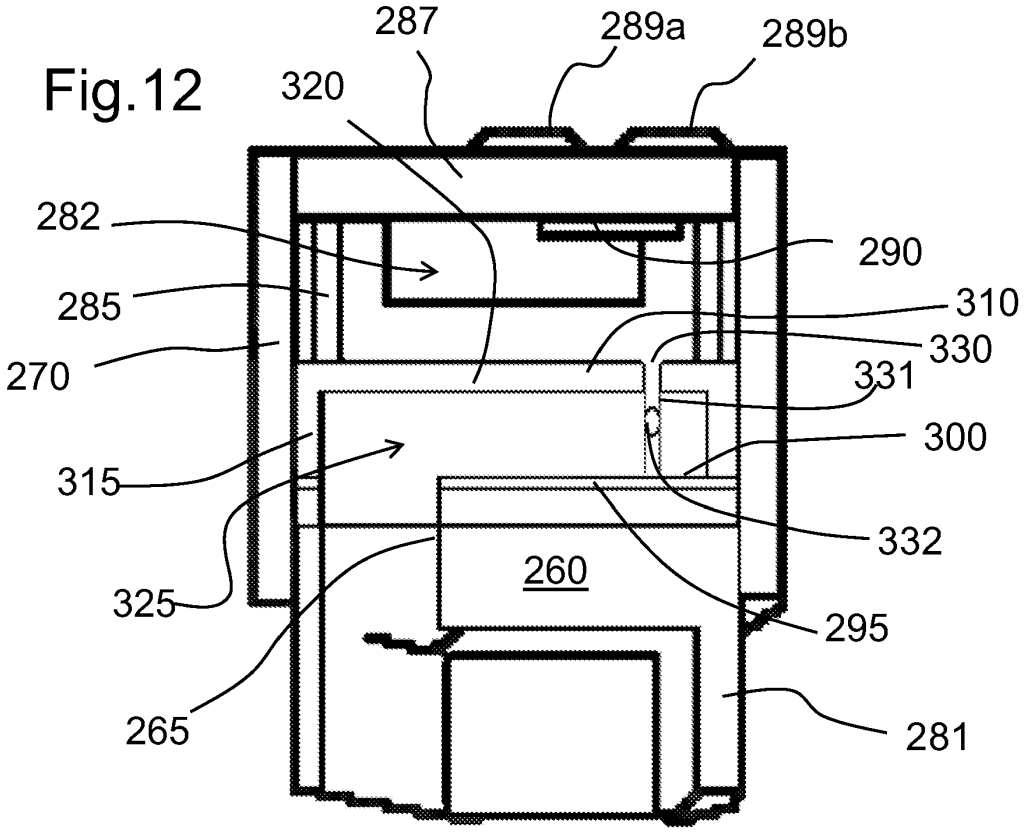


Fig.12



NJOY Exhibit 1002.962

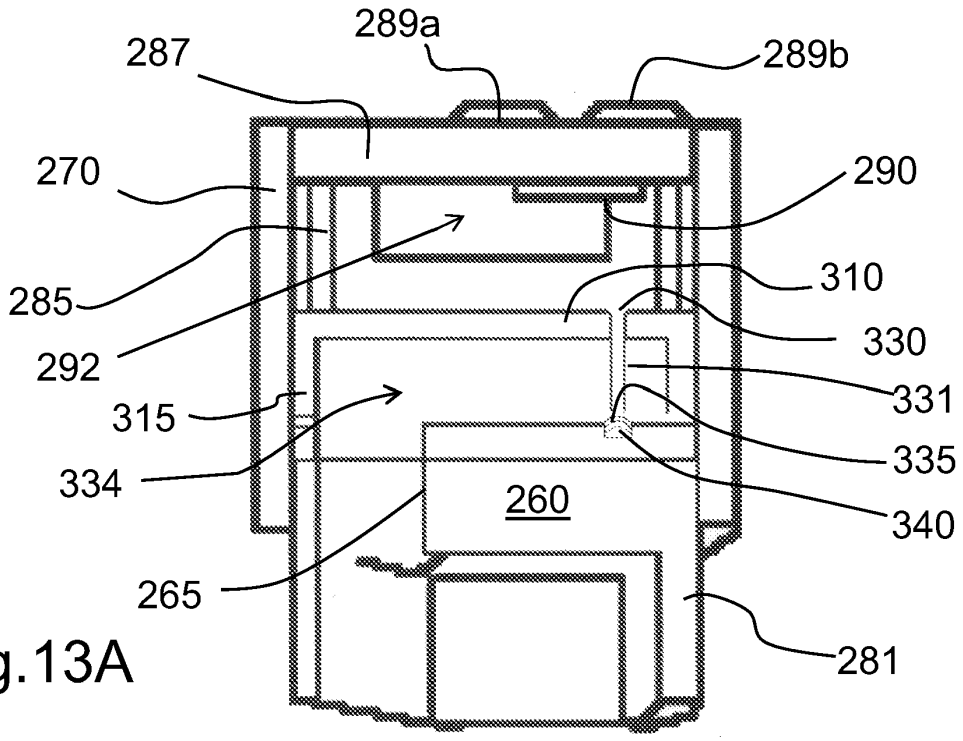


Fig.13A

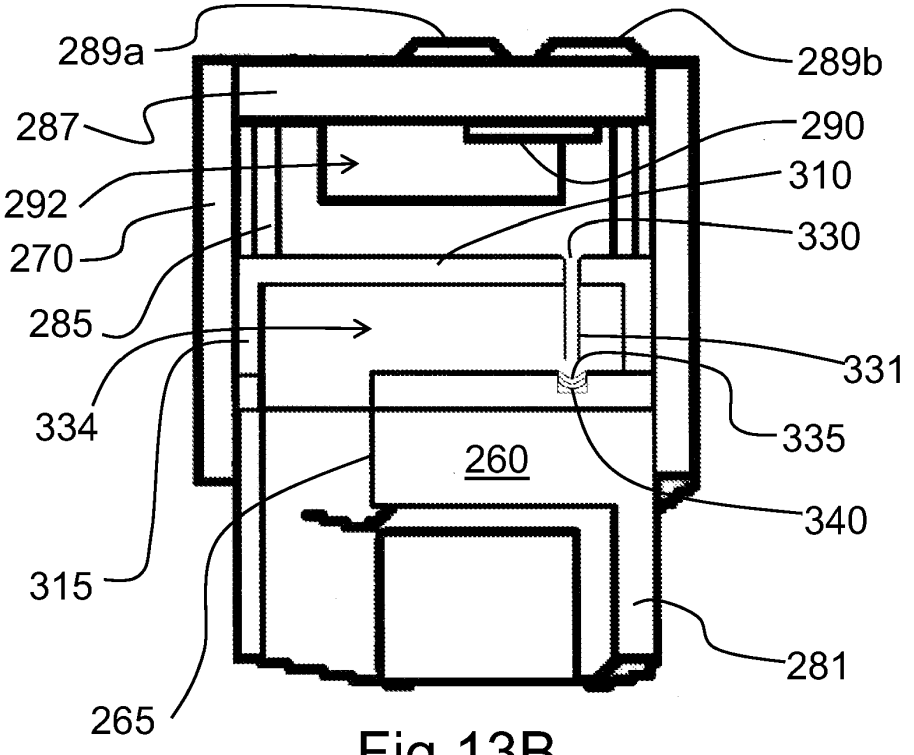


Fig.13B

NJOY Exhibit 1002.963

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US14/66949

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - A24F1/28, 47/00; A61M15/06 (2015.01)
CPC - A24F47/002, 47/008; A61M15/06
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC(8): A24F1/28, 47/00; A61M15/06 (2015.01); CPC: A24F1/28, 47/002, 47/008; A61M15/06; USPC: 128/200.23, 202.21; 131/191, 328, 329, 330, 359

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PatSeer (US, EP, WO, JP, DE, GB, CN, FR, KR, ES, AU, IN, CA, INPADOC Data); absorbent, aerosol, atomize, battery, capillary, cartridge, chamber, controller, E-cigarette, electronic cigarette, fluid, inhaler, liquid, microcontroller, microprocessor, nicotine, porous, power, reservoir, smoke, sponge, storage, supply, wick

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 7,832,410 B2 (HON, L) 16 November 2010; figures 1, 2, 6, 8; column 3, lines 49-57; column 4, lines 15-25; column 4, lines 39-55; column 5, lines 1-25;	1-8 --- 9
Y	US 2013/0213418 A1 (ALTRIA CLIENT SERVICES, INC.) 22 August 2013; figure 14; paragraphs [0012], [0015]	9
A	US 2013/0284194 A1 (NEWTON, KD) 31 October 2013; figures 3, 5; paragraphs [0031]-[0034]	1-9
A	WO 2012/152053 A1 (CHEN, Z) 15 November 2012; entire document	1-9
A	WO 2013/083634 A1 (PHILIP MORRIS PRODUCTS S.A.) 13 June 2013; page 15, line 20—page 17, line 6; figure 5	1-9
A	US 2013/0220315 A1 (CONLEY, GD et al.) 29 August 2013; entire document	1-9

☐ Further documents are listed in the continuation of Box C. ☐

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
31 March 2015 (31.03.2015)	15 APR 2015

Name and mailing address of the ISA/US	Authorized officer:
Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Shane Thomas PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (July 2009)

NJOY Exhibit 1002.964

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US14/66949

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
-***-Please See Supplemental Page-***-

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1-9

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

NJOY Exhibit 1002.965

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US14/66949

-***-Continued from Box No. III: Observations where unity of invention is lacking-***-

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I: claims 1-9 are directed toward a, electronic vaporizing inhaler, comprising a sponge in physical contact with the substrate.

Group II: claims 10-15 are directed toward an electronic vaporizing inhaler, comprising two heating elements.

Group III: claims 16-20 are directed toward an electronic vaporizing inhaler comprising a substrate embedded with a plurality of diaphragm pumps.

The inventions listed as Groups I-III do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons.

The special technical features of Group I include a substrate defined by a plurality of capillary apertures, wherein the capillary apertures provide fluid communication between the vaporizer and the liquid reservoir; a sponge in physical contact with the substrate; a wick in physical contact with the sponge; and a heating element proximal to the wick (which is not present in Groups II, III).

The special technical features of Group II include a heating chamber (which is not present in Group I); a first heating element, wherein the first heating element heats the vaping liquid to a temperature sufficient to create and burst a vapor bubble (which is not present in Groups I, III); a superior end having a plurality of nozzles, wherein the nozzle ejects the vaping liquid (which is not present in Group I) when the vapor bubble bursts (which is not present in Groups I, III); a second heating element proximal to the nozzle (which is not present in Group I).

The special technical features of Group III include a primer chamber (which is not present in Group I); a substrate embedded with a plurality of diaphragm pumps, each diaphragm pump comprising a diaphragm and a piezoelectric transducer, wherein the each diaphragm flexes inwardly and outwardly in response to its corresponding piezoelectric transducer (which is not present in Groups I, II); and a superior end having a plurality of nozzles, wherein each nozzle ejects the vaping liquid (which is not present in Group I) when its corresponding diaphragm flexes inwardly; a heating element proximal to the nozzle; wherein the microprocessor is configured to direct current from the electrical storage device to the heating element in the vaporizer and to the piezoelectric transducer (which is not present in Groups I, II).

The common technical features of Groups I-III include an electronic vaporizing inhaler, said electronic vaporizing inhaler comprising: an electrical storage device; a liquid reservoir adapted to receive vaping liquid; a vaporizer, comprising: a heating chamber, comprising: a substrate defined by a plurality of apertures, wherein the apertures provide fluid communication between the vaporizer and the liquid reservoir; a superior end having a plurality of nozzles, wherein the nozzle ejects the vaping liquid; and a heating element proximal to the nozzle; a microprocessor in electrical communication with the electrical storage device, wherein the microprocessor is configured to direct current from the electrical storage device to the heating element in the vaporizer; a sensor configured to detect when a user draws on the electronic cigarette, wherein the sensor is in electrical communication with the microprocessor and wherein the sensor activates the microprocessor when it detects that a user has drawn on the electronic cigarette; a housing having a first end and a second end, wherein the housing is designed to contain the electrical storage device, vaporizer, microprocessor, sensor, and liquid reservoir and wherein the second end of the housing is a mouthpiece from which a user can inhale vapor from the vaporizer.

These common technical features are disclosed by US 7,832,410 B2 (HON): an electronic vaporizing inhaler, said electronic vaporizing inhaler comprising: an electrical storage device (2; figure 1); a liquid reservoir (11) adapted to receive vaping liquid (nicotine solution; column 5, lines 5-10); a vaporizer (9), comprising: a heating chamber (10), comprising: a substrate (the first layer (substrate) of a column/stack of laminated layers in porous body 28, composed of fibers shaped by foaming; column 4, lines 15-25) defined by a plurality of apertures (i.e., porous; column 4, lines 15-20), wherein the apertures provide fluid communication (infiltration liquid-supplying; column 5, lines 1-5) between the vaporizer (9) and the liquid reservoir (11); a superior end having a plurality of nozzles, wherein the nozzle ejects the vaping liquid (ejection hole 24 can be provided with a single or multiple holes (nozzles); column 4, lines 1-10); a heating element (26) proximal to the nozzle (24); wherein the microprocessor is configured to direct current from the electrical storage device to the heating element in the vaporizer (power is supplied to liquid molecules, i.e., via atomizer 9; column 4, lines 50-55); a sensor (6) configured to detect when a user draws on the electronic cigarette (air pressure difference causes sensor 6 to output a signal; column 4, lines 40-45), wherein the sensor is in electrical communication with the microprocessor (circuit board 3 is connected therewith; column 4, lines 40-45) and wherein the sensor activates the microprocessor when it detects that a user has drawn on the electronic cigarette (circuit board 3 goes into operation; column 4, lines 40-45); a housing (14) having a first end and a second end (as shown; figure 1), wherein the housing is designed to contain (as shown; figure 1) the electrical storage device (2), vaporizer (9), microprocessor (3), sensor (6), and liquid reservoir (11) and wherein the second end of the housing is a mouthpiece (15) from which a user can inhale vapor from the vaporizer (i.e., when a smoker smokes; column 4, lines 39-44).

Because the common technical features are disclosed by HON, the inventions are not so linked as to form a single general inventive concept. Therefore, Groups I-III lack unity.

NJOY Exhibit 1002.966

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[Continued on next page]

(54) Title: ELECTRONIC CIGARETTE ATOMIZER

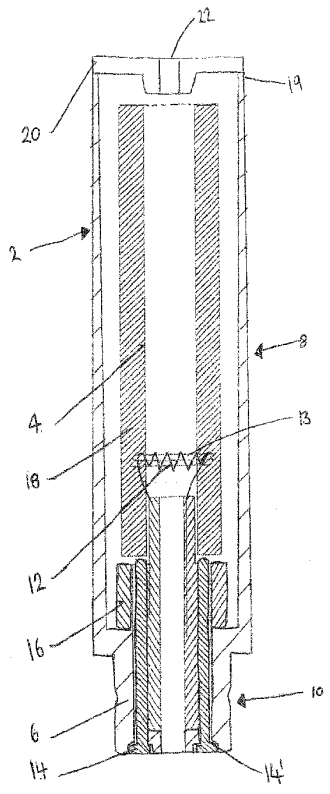


Figure 1

(57) Abstract: An electronic cigarette atomizer (2) comprises an outer housing (6) enclosing an inner pipe (4), and a heating element (12) located substantially within the inner pipe (4) which is electrically connected to at least one electrical connector pin (14, 14'), wherein the heating element (12) and the electrical connector pin (14, 14') are secured in contact with each other with a fastening sleeve (16).

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NJOY Exhibit 1002.967

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Electronic cigarette atomizer

Technical Field of the Invention

The present invention relates to electronic cigarettes and in particular, to improvements in atomizers to be used in electronic cigarettes.

Background to the Invention

Atomizers for use in electronic cigarettes typically include a heating wire which heats up when passing a current through the wire due to electrical resistance. In prior art atomizers, the heating wire is connected to the power supply directly, or via intermediary electrical connectors. Typically, the heating wire is connected to the power supply/electrical connectors by soldering them together. It has been known for such connections to break not only causing the electronic cigarette to malfunction, but also allowing for the solder to be mistakenly inhaled by a user.

It is known in the art to provide electronic cigarettes which comprise an atomizer component and a power supply component which are releasably connectable. Electronic cigarettes of this type allow for the atomizer, or indeed for the power supply component, to be replaced. This may be necessary when a user has exhausted the liquid contained within the atomizer, has drained the power supply, or when either component becomes faulty. Conventionally, the atomizer component and the power supply component are releasably connectable by means of a screw fit connection. Connections of this type have the disadvantage that they may become damaged through over tightening, or may become worn over time leading to a less secure connection.

NJOY Exhibit 1002.969

It would therefore be advantageous to provide an atomizer component for an electronic cigarette which does not include electrical connections which are soldered together.

It would also be advantageous to provide an electronic cigarette having releasably connectable atomizer and power supply components which are easily connectable/detachable and have increased longevity.

It is an aim of embodiments of the present invention to overcome or mitigate at least one of the problems in the prior art as described above.

Summary of the Invention

According to a first aspect of the present invention there is provided an electronic cigarette atomizer comprising: an outer housing enclosing an inner pipe; and a heating element located substantially within the inner pipe which is electrically connected to at least one electrical connector pin; wherein the heating element and the or each electrical connector pin are secured in contact with each other with a fastening sleeve.

The fastening sleeve may be formed from a polymeric material which may be a resilient material. In some embodiments the fastening sleeve comprises a resilient polymeric material such as silicone, or latex, or synthetic rubber for example. In some embodiments the fastening sleeve comprises a resilient material which urges the or each electrical connector pin into contact with the heating element.

In some embodiments the electrical connection is formed by contacting at least one conductive surface of the heating element with a corresponding conductive surface of the or each electrical connector pin. In other embodiments there may be

NJOY Exhibit 1002.970

provided intermediary electrical connection means between the heating element and the or each connector pin.

In some embodiments the heating element comprises a heating wire. In such embodiments each end of the heating wire may be connected to respective electrical connector pins.

The outer housing may comprise a main body portion enclosing the inner pipe and the heating element, and an extended end portion which protrudes from one end of the main body portion. In such embodiments, the extended portion may comprise a connection means operable to connect the atomizer to a further component of an electronic cigarette. In some embodiments the connection of the atomizer to the further component of an electronic cigarette forms an electrical connection between the two. In some embodiments the or each electrical connector pin extend from within the main body portion of the atomizer into the extended portion such that the or each pin may be electrically connected to the further component of an electronic cigarette via at least one electrical connection located within the further component.

In some embodiments the fastening sleeve is configured such that it ensures that the or each electrical connector pin is correctly aligned with respect to the at least one electrical connection on the further component of an electronic cigarette. In some embodiments the fastening sleeve may comprise a substantially elliptical cross-section which may be located within the outer housing of the atomizer in either a first orientation or a second orientation. In embodiments wherein there is provided a pair of electrical connector pins, the first orientation may correspond to the first connector pin being aligned to connect with a first electrical connection of the further

NJOY Exhibit 1002.971

component and the second electrical connector pin being aligned to connect with a second electrical connection of the further component. The second orientation may correspond to the first connector pin being aligned to connect with the second electrical connection of the further component and the second electrical connector pin being aligned to connect with the first electrical connection of the further component. In some embodiments the atomizer is prevented from being assembled incorrectly by ensuring that each electrical connector pin is correctly aligned with an electrical connection on the further component of an electronic cigarette independent of the orientation of the fastening sleeve.

The outer housing may also comprise an elliptical cross-section and the further component may comprise an elliptical cross-section. This configuration allows effective coupling of the housing and further component whilst allowing the or each connector pin to be aligned correctly when the fastening sleeve is in either of the first or second configurations, for example.

The further component of the electronic cigarette may comprise a power supply means such as a battery, for example. The battery may comprise a single-use battery, or a rechargeable battery for example.

In some embodiments the atomizer further comprises a liquid absorbent material located within the atomizer. In some embodiments the liquid absorbent material is located on the outer surface of the inner pipe of the atomizer.

The liquid absorbent material may be a filler material, for example. In some embodiments the liquid absorbent material comprises a fabric. The fabric may be

NJOY Exhibit 1002.972

cotton and in some embodiments the fabric comprises tobacco cotton, cotton wool, cotton gauze, or any combination thereof.

In further embodiments the heating element comprises a heating wire which is wrapped around a wick. The wick may be connected to the liquid absorbent material and is operable to draw liquid from the liquid absorbent material and towards the heating wire.

The outer housing of the atomizer may be formed from any suitable rigid material which may be a polymeric material, a metal or an alloy, for example. In some embodiments the outer housing of the atomizer is formed from a plastics material which may be polypropylene, for example.

In some embodiments the atomizer may be configured such that it is releasably connectable with a further component of an electronic cigarette. The releasable connection may comprise a plug and socket connection, for example.

The atomizer may further comprise a mouth piece being operable in use to allow vapour produced within the atomizer to be expelled through the mouth piece for inhalation by a user. In some embodiments the mouth piece comprises a cover located on an outer surface of the mouth piece.

In some embodiments the atomizer may be a drip tip atomizer. In such embodiments the drip tip atomizer is configured to allow a user to drip a liquid solution into the atomizer. In such embodiments the atomizer is configured such that the liquid solution may be dripped directly onto the heating element of the atomizer.

In other embodiments the atomizer may be a cartomizer which may comprise an atomizer as hereinbefore described and a cartridge. The cartridge may comprise a

reservoir of liquid solution. In such embodiments, the atomizer is configured such that the liquid solution is heated and vaporised upon the operation of the heating element.

According to a second aspect of the present invention there is provided an electronic cigarette atomizer which is releasably connectable to a further component of an electronic cigarette by means of a plug and socket connection.

The atomizer may be electrically connectable to the further component using the plug and socket connection.

The atomizer may comprise a main body portion and an extended portion which protrudes from a portion of the main body portion. In such embodiments, the extended portion may comprise the releasable connection means operable to connect the atomizer to a further component of an electronic cigarette.

In embodiments wherein the connection of the atomizer to the further component of an electronic cigarette forms an electrical connection between the two, the atomizer may comprise electrical connector pins extending from within the main body portion of the atomizer into the extended portion such that they may be electrically connected to the further component of an electronic cigarette.

In some embodiments a portion of the atomizer may be dimensioned such that it can be located within a recess or aperture within a further component of an electronic cigarette forming the plug and socket connection. In other embodiments the atomizer may comprise a recess into which a portion of a further component of an electronic cigarette may be located to form the plug and socket connection.

NJOY Exhibit 1002.974

The further component of the electronic cigarette may comprise a power supply means such as a battery, for example. The battery may comprise a single-use battery or a rechargeable battery, for example.

In some embodiments the atomizer comprises electrical components located within the atomizer which are secured in contact with each other with a fastening sleeve.

In some embodiments the atomizer comprises a mouthpiece having a cover located on the outer surface thereof.

The atomizer may comprise an atomizer in accordance with the first aspect of the present invention.

According to a third aspect of the present invention there is provided an electronic cigarette comprising an outer housing comprising a mouth piece operable in use to allow vapour produced within an atomizer located within or connected to the housing to be expelled therethrough; wherein the mouth piece comprises a resilient material.

The mouthpiece may be connected to or formed over or around the outer surface of the housing, and may comprise a cover.

In some embodiments the mouth piece may comprise an aperture to allow the vapour to be expelled from within the atomizer. In some embodiments the atomizer may comprise a drip tip atomizer and the mouth piece may be configured to allow a user to drip liquid into the atomizer through the aperture.

In some embodiments the cover comprises an aperture through which vapour produced within the atomizer may be expelled which may also be configured to allow a user to drip liquid into the atomizer through the aperture. In such embodiments the cover may be permanently connected to the outer surface of the mouth piece.

In other embodiments the cover is removable from the outer surface of the mouth piece. In such embodiments the cover may be removed from the outer surface of the mouth piece in order to access the aperture located within the mouthpiece.

The mouthpiece may be formed from silicone, natural or synthetic latex, natural or synthetic rubber, or the like, for example.

In some embodiments the electronic cigarette comprises electrical components located within the atomizer which are secured in contact with each other with a fastening sleeve.

In some embodiments the housing is releasably connectable to a further component of an electronic cigarette by means of a plug and socket connection.

The electronic cigarette may comprise an atomizer in accordance with the first and/or second aspects of the present invention.

According to a fourth aspect of the present invention there is provided an electronic cigarette comprising: an atomizer in accordance with the first, second and/or third aspect of the present invention; and a power supply component comprising a power supply means and at least one electrical connector pin electrically connected to the power supply means..

NJOY Exhibit 1002.976

In some embodiments the atomizer and the power supply component are releasably connectable means of a plug and socket connection. The atomizer and the power supply component may be electrically connectable using the plug and socket connection. In embodiments wherein the atomizer comprises a heating wire, the heating wire may be powered by the power supply means.

In some embodiments the electrical connection between the atomizer and the power supply component comprises electrically connecting electrical connector pins located within the atomizer to respective electrical connector pins within the power supply component.

In some embodiments the power supply means of the power supply component comprises a battery. In such embodiments the battery may comprise a single-use battery, or a rechargeable battery such as a lithium ion battery, for example.

In embodiments wherein the power supply means comprises a single use battery there is also provided a means to access and remove the battery from within the power supply component such that it can be replaced.

In embodiments wherein the power supply means comprises a rechargeable battery, the battery may be charged whilst within the power supply component. In such embodiments the power supply component further comprises a means to connect a charging apparatus thereto in order to charge the battery. In other embodiments the rechargeable battery is removable from within the power supply component and is charged separate from the component.

The electronic cigarette of the third or fourth aspects of the invention may further comprise an LED controlled by a printed circuit board. In such embodiments

the LED may be powered by the power supply. In some embodiments the LED is operable in use to indicate the operational status of the electronic cigarette.

Detailed Description of the Invention

In order that the invention may be more clearly understood an embodiment thereof will now be described, by way of example only, with reference to the accompanying drawings, of which:

Figure 1 is a side cross sectional view of an embodiment of the electronic cigarette atomizer of the present invention.

Figure 2 is a side cross sectional view of an embodiment of a power supply component of the electronic cigarette of the present invention.

Figure 1 illustrates an embodiment of the atomizer of the first and second aspects of the present invention for use in an electronic cigarette of the third and fourth aspects. The atomizer 2 includes an inner pipe in the form of high temperature pipe 4 located within and connected to an outer housing in the form of an atomizer pipe 6.

The atomizer pipe 6 is substantially cylindrical in shape and includes a main body portion 8 and an extended end portion 10. The diameter of the extended end portion 10 is marginally smaller in size than the diameter of the main body portion 8.

Located within the high temperature pipe 4 is a heating element in the form of heating wire 12 which is wrapped around a wick 13. Each end of the heating wire 12 is electrically connected to electrical connector pins 14, 14`. A fastening sleeve in the form of silicone sleeve 16 is provided within the atomizer 2 which ensures that the

heating wire 12 and the electrical connector pins 14, 14` remain in contact. The silicone sleeve 16 removes the need to solder the heating wire 12 to the connector pins 14, 14` thus removing the associated disadvantages.

The opposing ends of the electrical connector pins 14, 14` to the ends connected to the heating wire 12 protrude into the extended end portion 10 of the atomizer pipe 6 from within the main body portion 8.

In the embodiment illustrated in Figure 1 there is also provided a liquid absorbent material in the form of tobacco cotton 18 wound around the outer surface of the high temperature pipe 4. Tobacco cotton 18 is connected to the wick 13 such that liquid is drawn from within the tobacco cotton 18 towards the heating wire 12.

The opposing end of the atomizer pipe 6 to the extended end portion 10 includes a mouthpiece 19. A cover 20 formed from silicone covers the mouthpiece 19 and has an aperture 22 located therein for the expulsion of vapour generated within the atomizer pipe 6.

In the illustrated embodiment, the atomizer pipe 6 is formed from polypropylene. It is envisaged, however, that the atomizer pipe 6 may be formed from any suitable material including other plastics materials or indeed any combination thereof.

Figure 2 illustrates an embodiment of a power supply component 100 of the electronic cigarette of the present invention. The power supply component 100 includes a power supply means in the form of a battery 102 located within a battery conduit 104.

NJOY Exhibit 1002.979

At a first end of the conduit 104 the battery 102 is connected via a battery socket 106 to a first printed circuit board 108. The first printed circuit board 108 is connected to electrical connection pins 110, 110` and is operable to control the power supplied to the pins 110, 110`. The electrical connection pins 110, 110` are located within a recess 112 within one end of the conduit 104 in which there is also located a plastic sleeve 114.

At the opposing end of the conduit 104, the battery 102 is connected to a second printed circuit board 116 via a silicone cap 118. The second printed circuit board 116 is operable to control the operation of an LED indicator 120 operable to indicate the operational status of the electronic cigarette.

Referring now to Figures 1 and 2, an embodiment of the electronic cigarette of the present invention will be described.

The electronic cigarette is formed by connecting the atomizer 2, as illustrated in Figure 1, to the power supply component 100, as illustrated in Figure 2. This is achieved by locating the extended end portion 10 of the atomizer 2 into the recess 112 within the end of the conduit 104 of the power supply component 100. The atomizer 2 and the power supply component 100 are retained in this position by the frictional engagement of the outer surface of the extended end portion 10 of the atomizer pipe 6 and the plastic sleeve 114. In this configuration, the electrical connection pins 110, 110` of the power supply component 100 contact the electrical connector pins 14, 14` on the atomizer 2 forming an electrical connection between the atomizer 2 and the power supply component 100. In this way, the heating wire 12 is powered by the battery 102.

NJOY Exhibit 1002.980

The above embodiment is described by way of example only. Many variations are possible without departing from the scope of the invention as defined in the appended claims.

NJOY Exhibit 1002.981

CLAIMS

1. An electronic cigarette atomizer comprising:

an outer housing enclosing an inner pipe; and

a heating element located substantially within the inner pipe which is electrically connected to a least one electrical connector pin;

wherein the heating element and the or each electrical connector pin are secured in contact with each other with a fastening sleeve.

2. The atomizer of claim 1 wherein the fastening sleeve is formed from a resilient material.

3. The atomizer of claim 2 wherein the resilient material comprises silicone.

4. The atomizer of any one of claims 1 to 3 wherein the electrical connection comprises contacting at least one conductive surface of the heating element with a corresponding conductive surface of the or each electrical connector pin.

5. The atomizer of any preceding claim wherein the heating element comprises a heating wire which is connected at either end to respective electrical connector pins.

6. The atomizer of any preceding claim wherein the outer housing comprises a main body portion enclosing the inner pipe and the heating wire, and an extended portion which protrudes from the main body portion.

NJOY Exhibit 1002.982

7. The atomizer of claim 6 wherein the extended portion comprises a connection means operable to connect the atomizer to a further component of an electronic cigarette.

8. The atomizer of claim 7 wherein the or each electrical connector pin extends from within the main body portion of the atomizer into the extended portion such that the or each pin may be electrically connected to the further component of an electronic cigarette via at least one electrical connection located within the further component.

9. The atomizer of claim 8 wherein the fastening sleeve is configured such that that it ensures that the or each electrical connector pin is correctly aligned with respect to the at least one electrical connection on the further component of an electronic cigarette.

10. The atomizer of claim 9 wherein the fastening sleeve comprises a substantially elliptical cross-section which may be located within the outer housing of the atomizer in either a first orientation or a second orientation.

11. The atomizer of claim 10 wherein the or each electrical connector pin is correctly aligned with an electrical connection on the further component of an electronic cigarette independent of the orientation of the fastening sleeve.

12. The atomizer of any preceding claim wherein the atomizer further comprises liquid absorbent material located within the atomizer.

13. The atomizer of any preceding claim wherein the outer housing is formed from a plastics material.

NJOY Exhibit 1002.983

14. The atomizer of any preceding claim wherein the atomizer is configured such that it is releasably connectable with a further component of an electronic cigarette by means of a plug and socket connection

15. The atomizer of any preceding claim further comprising a mouth piece having a cover located on an outer surface thereof.

16. An electronic cigarette atomizer which is releasably connectable to a further component of an electronic cigarette by means of a plug and socket connection.

17. The atomizer of claim 16 wherein the atomizer is electrically connectable to the further component using the plug and socket connection.

18. The atomizer of claim 16 or claim 17 comprising a main body portion and an extended portion which protrudes from a portion of the main body portion and comprises the releasable connection means operable to connect the atomizer to a further component of an electronic cigarette.

19. The atomizer of claim 18 when dependent on claim 17 comprising electrical connector pins extending from within the main body portion of the atomizer into the extended portion such that they may be electrically connected to the further component of an electronic cigarette.

20. The atomizer of any one of claims 16 to 19 wherein a portion of the atomizer may be dimensioned such that it can be located within a recess or aperture within a further component of an electronic cigarette to form the plug and socket connection.

NJOY Exhibit 1002.984

21. The atomizer of any one of claims 16 to 19 wherein the atomizer may comprise a recess into which a portion of a further component of an electronic cigarette may be located to form the plug and socket connection.

22. The atomizer according to any one of claims 16 to 21 wherein the further component of the electronic cigarette comprises a power supply.

23. The atomizer of any one of claims 16 to 22 wherein the atomizer comprises a mouth piece having a cover located on an outer surface thereof.

24. An electronic cigarette comprising:

an outer housing comprising a mouth piece operable in use to allow vapour produced within an atomizer located within or connected to the housing to be expelled therethrough;

wherein the mouth piece comprises a resilient material.

25. An electronic cigarette as claimed in claim 24 comprising:

an atomizer as claimed in any one of claims 1 to 23; and

a power supply component comprising a power supply means and at least one electrical connector probe electrically connected to the power supply means..

26. The electronic cigarette of claim 25 wherein the atomizer and power supply component are releasably connectable by means of a plug and socket connection.

27. The electronic cigarette of claim 26 wherein the atomizer and the power supply component are electrically connectable using the plug and socket connection.

NJOY Exhibit 1002.985

28. The electronic cigarette of claim 27 wherein the electrical connection between the atomizer and the power supply component comprises electrically connecting electrical connector pins located within the atomizer to respective electrical connector pins within the power supply component.

29. The electronic cigarette of any one of claims 25 to 28 further comprising an LED controlled by a printed circuit board and powered by the power supply operable to indicate the operational status of the electronic cigarette.

30. An atomizer, power supply component or electronic cigarette substantially as described herein with reference to the accompanying drawings.

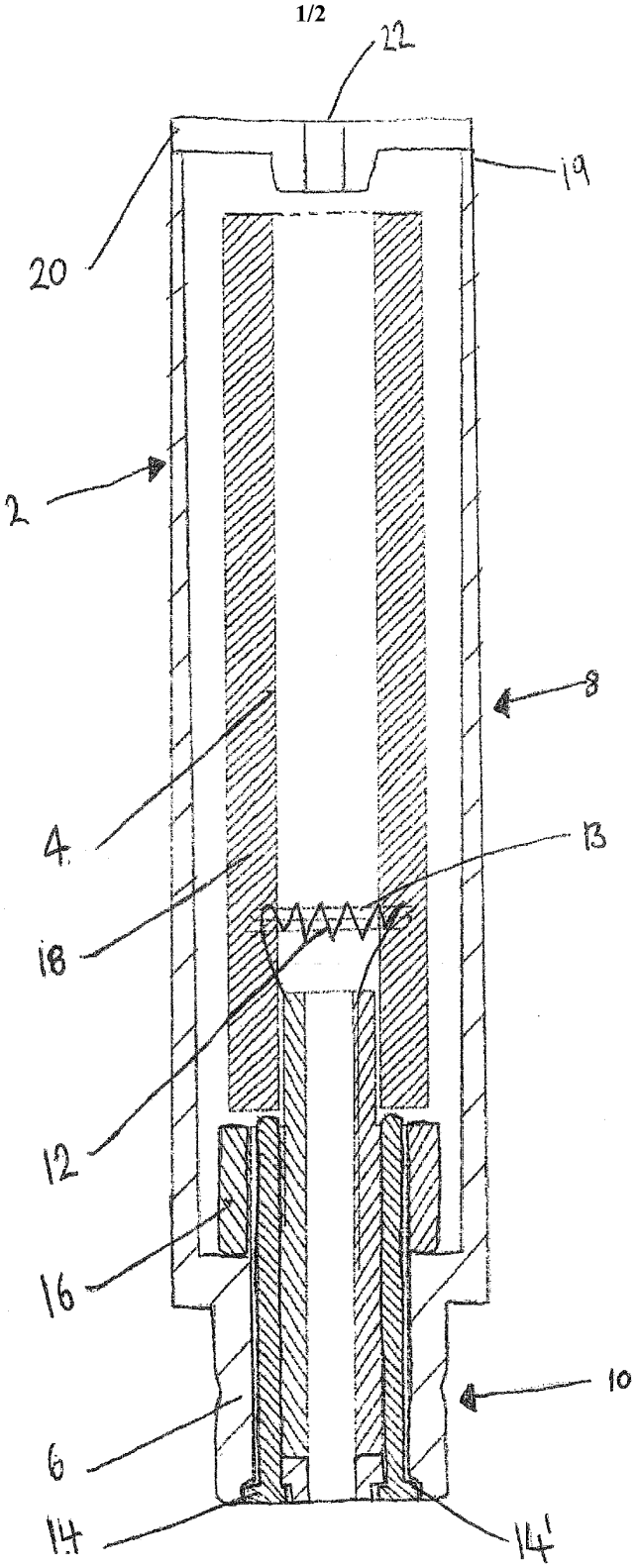


Figure 1

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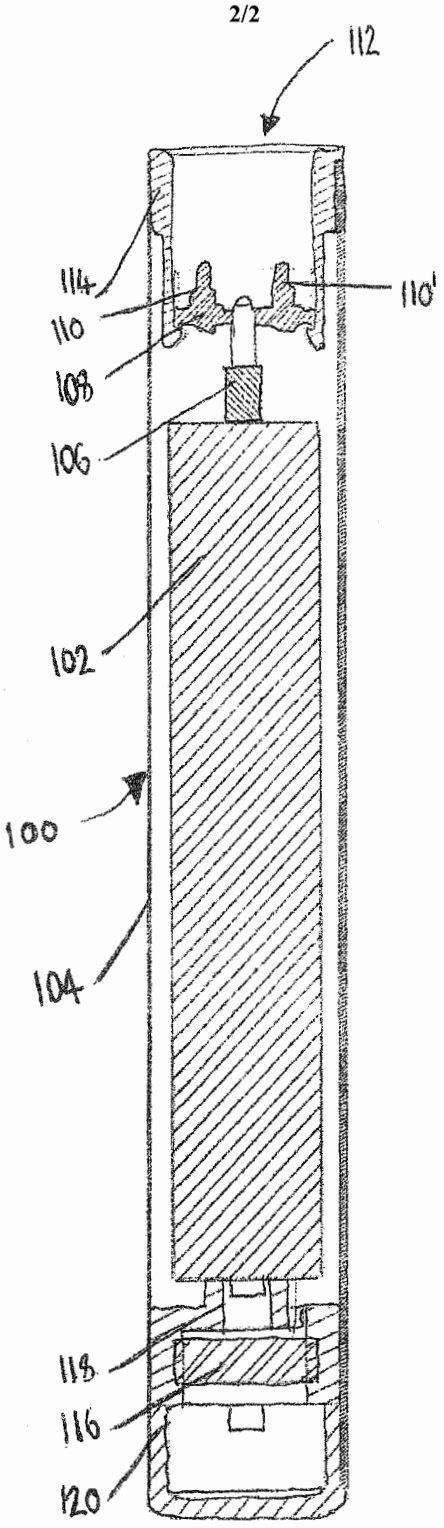


Figure 2

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INTERNATIONAL SEARCH REPORT

International application No.
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A. CLASSIFICATION OF SUBJECT MATTER

A24F 47/00(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A24F47+

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

VEN, CPRSABS, CNKI:cigaret+, electronic+, sleev+, atomizer

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
E	CN 203618783 U (CHEN WEI) 04 June 2014 (2014-06-04) paragraphs [0016]-[0024], figures 1, 2	1-9, 12-20, 22-27
X	CN 202722498 U (CHEN CHAO) 13 February 2013 (2013-02-13) paragraphs [0006]-[0027], figures 1-4	1-29
A	CN 102920028 A (SHENZHEN FIRST UNION TECHNOLOGY CO LTD) 13 February 2013 (2013-02-13) the whole document	1-30
A	CN 103380952 A (SHENZHEN FIRST UNION TECHNOLOGY CO LTD) 06 November 2013 (2013-11-06) the whole document	1-30
A	EP 2754361 A1 (SHENZHEN FIRST UNION TECHNOLOGY CO LTD) 16 July 2014 (2014-07-16) the whole document	1-30
A	EP 2614731 A1 (SHENZHEN FIRST UNION TECHNOLOGY CO LTD) 17 July 2013 (2013-07-17) the whole document	1-30

☑ Further documents are listed in the continuation of Box C. ☑ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

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"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
26 August 2014	**05 September 2014**

Name and mailing address of the ISA/	Authorized officer
STATE INTELLECTUAL PROPERTY OFFICE OF THE P.R.CHINA(ISA/CN) **6,Xitucheng Rd., Jimen Bridge, Haidian District, Beijing 100088 China**	**YANG,Lisha**
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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2013149484 A1 (LIU QIUMING) 10 October 2013 (2013-10-10) the whole document	1-30

NJOY Exhibit 1002.990

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2014/077165

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☑ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2014/077165

Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)			Publication date (day/month/year)
CN	203618783	U	04 June 2014	Non	e		
CN	202722498	U	13 February 2013	Non	e		
CN	102920028	A	13 February 2013	US	2014130817	A1	15 May 2014
				EP	2732714	A1	21 May 2014
CN	103380952	A	06 November 2013	Non	e		
EP	2754361	A1	16 July 2014	US	2014190503	A1	10 July 2014
EP	2614731	A1	17 July 2013	Non	e		
WO	2013149484	A1	10 October 2013	Non	e		

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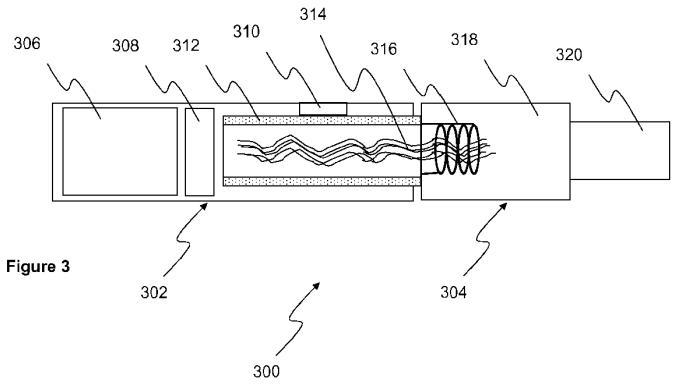


Figure 3

(57) Abstract: The present invention relates to a method of controlling an aerosol-generating system, and the associated system. The system comprises: an aerosol-generating article; and an aerosol-generating device. The device having a detector capable of detecting the presence of the aerosol-generating article and distinguishing the aerosol-generating article from other articles configured for use with the aerosol-generating system, based on a spectroscopic signature of a taggant incorporated within a material of the aerosol-generating article. The method comprises the steps of: detecting the presence of an aerosol-generating article; determining whether the article comprises a taggant; comparing the spectroscopic signature of the detected taggant with a look-up table of taggant spectroscopic signatures corresponding to articles configured for use with the system; preventing activation of the device, including preventing the supply of power to the heating element, unless the detected taggant spectroscopic signature corresponds to an article configured for use with the system; and activating the device if the detected taggant spectroscopic signature corresponds to an article configured for use with the system

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NJOY Exhibit 1002.993

AEROSOL-GENERATING ARTICLE AND ELECTRICALLY OPERATED SYSTEM INCORPORATING A TAGGANT

The present invention relates to an aerosol-generating article incorporating a taggant, for use in an electrically operated aerosol-generating device as part of an electrically operated aerosol-generating system. In particular, the aerosol-generating article may be a smoking article.

A number of documents, for example US-A-5 060 671, US-A-5 388 594, US-A-5 505 214, WO-A-2004/043175, EP-A-1 618 803, EP-A 1 736 065 and WO-A-2007/131449, disclose electrically operated aerosol-generating, smoking, systems, having a number of advantages. One advantage is that they significantly reduce sidestream smoke, while permitting the smoker to selectively suspend and reinitiate smoking.

Electrically heated smoking systems typically include a power supply, such as a battery, connected to a heater to heat an aerosol-forming substrate, to form the aerosol which is provided to the smoker. In operation, these electrically heated smoking systems typically provide a high power pulse to the heater to provide the temperature range desired for operation and to release the volatile compounds. Electrically heated smoking systems may be reusable and may be arranged to receive a disposable smoking article, containing the aerosol-forming substrate, to form the aerosol.

Aerosol-generating, smoking, articles developed for electrically heated smoking systems are typically specially designed, because the flavours are generated and released by a controlled heating of the aerosol-forming substrate, without the combustion that takes place in lit-end cigarettes and other smoking articles. Therefore, the structure of a smoking article designed for an electrically heated smoking system may be different from the structure of a lit-end smoking article. Using a lit-end smoking article with an electrically heated smoking system may result in a poor smoking experience for the user, and may also damage the system because, for example, the smoking article is not compatible with the system. In addition, there may be a number of different smoking articles which are each configured for use with the system, but which each provide a different smoking experience for the user.

Some of the electrically heated smoking systems of the prior art include a detector which is able to detect the presence of a smoking article received in the smoking system. Typically, known systems print identifiable ink on the surface of the smoking article, which is then detected by the electrically heated smoking device. It is an object of the present invention to provide an improved aerosol-generating article, and electrically operated smoking system including a

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detector which offers additional functionality to the smoker, and increased difficulty to produce counterfeit articles.

According to one aspect of the present invention, there is provided a method of controlling an aerosol-generating system. The system comprises: an aerosol-generating article including at least one component incorporating a taggant having an identifiable spectroscopic signature within a material of the at least one component; and an aerosol-generating device. The aerosol-generating device comprises: a cavity for at least partially receiving the aerosol-generating article; at least one heating element; a power supply for supplying power to the at least one heating element; electrical hardware connected to the power supply and the at least one heating element; and a detector capable of detecting the presence of the aerosol-generating article and distinguishing the aerosol-generating article from other articles configured for use with the aerosol-generating system, based on the spectroscopic signature of the taggant incorporated within a material of the aerosol-generating article. The method comprises the steps of: detecting the presence of an aerosol-generating article; determining whether the aerosol-generating article comprises a taggant; comparing the spectroscopic signature of the detected taggant with a look-up table of taggant spectroscopic signatures corresponding to aerosol-generating articles configured for use with the aerosol-generating system; preventing activation of the aerosol-generating device, including preventing the supply of power to the at least one heating element, unless the detected taggant spectroscopic signature corresponds to an aerosol-generating article configured for use with the aerosol-generating system; and activating the aerosol-generating device if the detected taggant spectroscopic signature corresponds to an aerosol-generating article configured for use with the aerosol-generating system.

Providing such a method of detecting a taggant incorporated into a material of an aerosol-generating article both increases the difficulty of counterfeit articles being produced, reduces the risk that unauthorised aerosol-generating articles are used with the system, and provides the user with a system that is easier to use.

The method preferably further comprises the step of detecting the presence of an aerosol-generating article presented externally to the aerosol-generating device. Providing such functionality enables the user to quickly and easily determine whether an aerosol-generating article is configured for use with the system. To yet further reduce the risk that counterfeit articles, or other articles not configured for use with the system, are used, the step of preventing activation of the aerosol-generating device, may further include preventing the aerosol-generating article from being received in the cavity of the aerosol-generating device. The

structural features of the aerosol-generating device to enable the article to be prevented from being received in the cavity are discussed below.

In one embodiment, the aerosol-generating system further comprises a charging unit. In this embodiment, the method further comprises the steps of: detecting the presence of an aerosol-generating article presented externally to the charging unit; and providing an activation signal from the charging unit to the aerosol-generating device unless the detected taggant spectroscopic signature corresponds to an aerosol-generating article configured for use with the aerosol-generating system.

In this embodiment, the charging unit preferably further comprises a cavity for at least partially receiving the aerosol-generating device. The method may further comprise the step of preventing release of the aerosol-generating device from the charging unit unless the detected taggant spectroscopic signature corresponds to an aerosol-generating article configured for use with the aerosol-generating system. Again, such a step yet further reduces the risk that counterfeit articles, or other articles not configured for use with the system, are used. The structural features of the charging unit to prevent the device from being released from the charging unit cavity are discussed below.

The step of activating the aerosol-generating device preferably further includes switching the aerosol-generating device from a standby mode to an active mode. Enabling the device to switch from a standby mode to an active mode allows the device to save power.

Once the device is in use, and power is provided to the at least one heating element to heat the aerosol-generating article and generate an aerosol, the method may further comprise the step of increasing the temperature of the at least one heating element to above a temperature at which the taggant is deactivated, preventing the smoking article from being used again. As will be appreciated, if the taggant is deactivated, it will not be able to be detected by the detector, and thus the device will not be activated and so the article cannot be re-used. This may improve the user experience. The temperature at which the taggant is deactivated may be lower than the operating temperature of the device.

Alternatively, the temperature at which the taggant is deactivated may be higher than the operating temperature of the device. In this alternative, the method may comprise the step of detecting the end of life of the smoking article, and increasing the temperature in dependence on the smoking article having reached the end of its life to a temperature above which the taggant is deactivated.

The end of life of the article may be determined by counting the number of puffs taken by a user, and, or alternatively, timing the length of the puffs taken by a user. The total number of

puffs, or the total length of time for the puffs may then be compared to a pre-determined life time for that article.

According to an aspect of the present disclosure, there is provided an aerosol-generating article for use in an electrically operated aerosol-generating device, the article comprising: at least one component incorporating a taggant within a material of the at least one component, wherein the taggant comprises an identifiable spectroscopic signature. The aerosol-generating article may be used in the aerosol-generating system when the above described method is carried out.

The use of the taggant incorporated within the material of a component of the article advantageously prevents the taggant from being removed from the component after manufacture. In this way, the tamper resistance, and difficulty of counterfeiting, of the aerosol-generating article was improved.

In use, the aerosol-generating article is received in an electrically operated aerosol-generating device which comprises means for determining the spectroscopic signature of the taggant. The means for determining the spectroscopic signature preferably comprises a light source and a light sensor. The aerosol-generating device is described in more detail below.

The aerosol-generating article may comprise an aerosol-forming substrate, a hollow tubular element, an aerosol cooling element and a mouthpiece arranged sequentially in co-axial alignment and circumscribed by an outer wrapper.

The taggant may be incorporated into any component of the aerosol-generating article, including but not limited to: paper, such as wrapper paper; filters; tipping papers; tobacco; tobacco wraps; coatings; binders; fixations; glues; inks, foams, hollow acetate tubes; wraps; and lacquers. The taggant may be incorporated into the component by either adding it during the manufacture of the material, for example by adding it to a paper slurry or paste before drying, or by painting or spraying it onto the component. Typically, the taggant is incorporated into the component in trace, nano-gram, quantities. For example, where the taggant is sprayed on the surface, the solution being sprayed may incorporate the taggant in a concentration of between 1 ppm and 1000 ppm.

To enable the taggant to be identified more accurately, the taggant may comprise an identifiable spectroscopic signature in absorption. When the taggant is illuminated by the light source of the aerosol-generating device, the taggant will absorb a specific wavelength, or set of wavelengths, and the wavelengths of light subsequently received by the light sensor will therefore enable the aerosol-generating device to determine the taggant in dependence on the absent wavelengths.

NJOY Exhibit 1002.997

The physical and chemical structure of the taggant can be controlled such that the absorbed wavelength of light can be set as required. In a preferred embodiment, the absorbed wavelength of light is not in the visible spectrum. Preferably, the absorbed wavelength is in the Infra-red or Ultraviolet range.

In addition, or instead of the taggant comprising an identifiable spectroscopic signature in absorption, the taggant may comprise an identifiable spectroscopic signature in emission. When the taggant is illuminated by the light source of the aerosol-generating device, the light preferably excites the taggant and emits at least one wavelength of light, shifted from the wavelength of the excitation light. As will be appreciated, this is a form of photoluminescence, and may be phosphorescence, or fluorescence. By controlling the physical and chemical structure of the taggant the spectroscopic signature can be controlled. In some embodiments, the identifiable signature may be in dependence on the time response of the emission in relation to the excitation, or the decay rate of the emission after excitation.

In a preferred embodiment, the wavelength of the emitted light is not in the visible spectrum. Preferably, the wavelength of the emitted light is in the Infra-red or Ultraviolet range.

In a preferred embodiment, the taggant is distributed throughout the material. By distributing the taggant throughout the material the orientation of the aerosol-generating article within the aerosol-generating device is not important. This enables the use of the system to be simpler for the user. In addition, by distributing the taggant throughout the material the tamper resistance of the article is improved, because it is more difficult to completely remove the taggant. In a particularly preferred embodiment, the taggant is substantially homogeneously distributed throughout the material.

There are preferably a plurality of taggants provided for use in the aerosol-generating article, each taggant having a different, and identifiable spectroscopic signature. In this way, a plurality of aerosol-generating articles can be provided, each having a different taggant having a different spectroscopic signature to enable the aerosol-generating device to distinguish between the aerosol-generating articles and operate accordingly. The operation of the aerosol-generating device is described in detail below.

The taggant is preferably stable at elevated temperatures of up to 1500 degrees Celsius. As used herein, the term stable refers to the taggant having a consistent spectroscopic signature, and that the taggant will not decompose. By providing a taggant which remains stable at elevated temperatures standard manufacturing processes may be used when manufacturing the aerosol-generating article, and in manufacturing the material of the aerosol-generating component.

The material of the aerosol-generating component incorporating the taggant may be manufactured by adding the taggant as an ingredient in the slurries used to make the material. The slurries may then be formed, for example by casting, and dried to produce the material, such as paper or wrapper material.

The taggant may be configured such that at normal operating temperature of the aerosol-generating article the taggant is deactivated. As used herein, deactivated refers to the taggant no longer having the identifiable spectroscopic signature. In use, the temperature required to generate an aerosol is greater than the temperature required to deactivate the taggant. In this way, the aerosol-generating device can determine whether the aerosol-generating article has been used previously, and operate accordingly. The temperature range of the aerosol-generating article components during normal operation is preferably between about 50 degrees Celsius and about 300 degrees Celsius depending on the location and type of component of the aerosol-generating device. As such, preferably the taggant is deactivated at a temperature between about 50 degrees Celsius and about 500 degrees Celsius. More preferably, the taggant is deactivated at a temperature between about 70 degrees Celsius and about 100 degrees Celsius.

The taggant may be deactivated by decomposing at the above described elevated temperatures such that is no longer has the identifiable spectroscopic signature. Alternatively, the taggant may be deactivated by being masked by an additional, temperature dependent, additive. The additional additive may become opaque at the elevated temperature, or may change colour to mask the taggant's signature.

Similarly, to the above description of the taggant being stable at elevated temperatures, the taggant is preferably chemically stable. Preferably, the taggant is sufficiently chemically stable so as not to decompose during manufacture of the material or the component. Thus, the taggant is preferably stable when it is: exposed to liquid water; exposed to water vapour; exposed to other commonly used solvents; upon drying; upon physical deformation of the material to form the component; upon exposure to increased temperatures; and upon exposure to reduced temperatures. As such, during the above described material manufacturing process, the taggant does not decompose and the taggant maintains the identifiable spectroscopic signature.

The taggant is preferably in powder form. Taggant powder advantageously enables the taggant to be incorporated into the material more easily. Preferably, the taggant is a powder composed of at least one of: a rare earth; an actinide metal oxide; a ceramic. The rare earth is preferably a lanthanide.

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The identifiable spectroscopic signature of the taggant may be associated with the aerosol-generating article type, the aerosol-forming substrate type, the date of production, the place of production, the batch number and other production details, and the use-by-date.

Where the aerosol-generating article comprises an outer wrapper, the outer wrapper, for example, may be a cigarette paper outer wrapper.

The aerosol-generating article may be between about 30 mm and about 120 mm in length, for example about 45 mm in length. The aerosol-generating article may be between about 4 mm and about 15 mm in diameter, for example about 7.2 mm. The aerosol-forming substrate may be between about 3 mm and about 30 mm in length.

As described above, preferably, the aerosol-generating article includes an aerosol-forming substrate. The aerosol-forming substrate preferably comprises a tobacco-containing material containing volatile tobacco flavour compounds which are released from the substrate upon heating. Alternatively, the aerosol-forming substrate may comprise a non-tobacco material such as those used in the devices of EP-A-1 750 788 and EP-A-1 439 876. Preferably, the aerosol-forming substrate further comprises an aerosol former. Examples of suitable aerosol formers are glycerine and propylene glycol. Additional examples of potentially suitable aerosol formers are described in EP-A-0 277 519 and US-A-5 396 911. The aerosol-forming substrate may be a solid substrate. The solid substrate may comprise, for example, one or more of: powder, granules, pellets, shreds, spaghettis, strips or sheets containing one or more of: herb leaf, tobacco leaf, fragments of tobacco ribs, reconstituted tobacco, homogenised tobacco, extruded tobacco and expanded tobacco. Optionally, the solid substrate may contain additional tobacco or non-tobacco volatile flavour compounds, to be released upon heating of the substrate.

Optionally, the solid substrate may be provided on or embedded in a thermally stable carrier. The carrier may take the form of powder, granules, pellets, shreds, spaghettis, strips or sheets. Alternatively, the carrier may be a tubular carrier having a thin layer of the solid substrate deposited on its inner surface, such as those disclosed in US-A-5 505 214, US-A-5 591 368 and US-A-5 388 594, or on its outer surface, or on both its inner and outer surfaces. Such a tubular carrier may be formed of, for example, a paper, or paper like material, a non-woven carbon fibre mat, a low mass open mesh metallic screen, or a perforated metallic foil or any other thermally stable polymer matrix. The solid substrate may be deposited on the surface of the carrier in the form of, for example, a sheet, foam, gel or slurry. The solid substrate may be deposited on the entire surface of the carrier, or alternatively, may be deposited in a pattern in order to provide a non-uniform flavour delivery during use. Alternatively, the carrier may be a non-woven fabric or fibre bundle into which tobacco components have been incorporated, such

as that described in EP-A-0 857 431. The non-woven fabric or fibre bundle may comprise, for example, carbon fibres, natural cellulose fibres, or cellulose derivative fibres.

The aerosol-forming substrate may be a liquid substrate and the smoking article may comprise means for retaining the liquid substrate. For example, the smoking article may comprise a container, such as that described in EP-A-0 893 071. Alternatively or in addition, the smoking article may comprise a porous carrier material, into which the liquid substrate may be absorbed, as described in WO-A-2007/024130, WO-A-2007/066374, EP-A-1 736 062, WO-A-2007/131449 and WO-A-2007/131450. The aerosol-forming substrate may alternatively be any other sort of substrate, for example, a gas substrate, or any combination of the various types of substrate. The taggant may be incorporated into the means for retaining the liquid substrate, for example within the material forming the container for retaining the liquid substrate. Alternatively or in addition, where present, the taggant may be incorporated into the porous carrier material.

The aerosol-generating article is preferably a smoking article.

According to a further aspect of the present invention, there is provided an electrically operated aerosol-generating system, comprising: an aerosol-generating article including at least one component incorporating a taggant having an identifiable spectroscopic signature within a material of the at least one component. The article and the taggant are preferably as described herein. The system further comprises an aerosol-generating device, comprising: a cavity for at least partially receiving the aerosol-generating article; at least one heating element; a power supply for supplying power to the at least one heating element; electrical hardware connected to the power supply and the at least one heating element; and a detector capable of detecting the presence of the aerosol-generating article and distinguishing the aerosol-generating article from other articles configured for use with the aerosol-generating system, based on the spectroscopic signature of the taggant incorporated within a material of the aerosol-generating article. The electrical hardware is configured to carry out the method of controlling the aerosol-generating system as described above.

The detector may be provided adjacent an external surface of the aerosol-generating device. The detector may be provided at any position along the external surface of a housing of the aerosol-generating device. In one embodiment, the detector is provided at about the mid-point along the length of the housing. Where the detector is provided adjacent an external surface of the aerosol-generating device, the device may further comprise means for preventing the aerosol-article-generating article from being received in the cavity. In this embodiment, the electrical hardware is configured to only allow aerosol-generating articles to be inserted which are configured for use with system. Any suitable means for preventing access to the cavity may be provided, for example, a protrusion may be provided within the cavity which is retracted by

the controller when an article configured for use with the system is presented to the detector. Alternatively, a hinge lid which is controlled by the electrical hardware may be provided which at least substantially covers the open end of the cavity. The hinge lid being opened when an article configured for use with the system is presented to the detector.

The aerosol-generating system may further comprise a charging unit. The detector may be provided adjacent an external surface of the charging unit. The detector may be provided at any position along any of the external surfaces the charging unit. In this embodiment, the charging unit comprises electrical hardware configured to provide an activation signal to the aerosol-generating device when the detected taggant spectroscopic signature corresponds to an aerosol-generating article configured for use with the aerosol-generating system. Providing the detector within the charging unit may enable the device to be simpler and may reduce the power consumption of the device.

Furthermore, in the embodiment comprising a detector in the charging unit, the charging unit may further comprise a cavity for at least partially receiving the aerosol-generating device, and means for preventing release of the aerosol-generating device from the charging unit unless the detected taggant spectroscopic signature corresponds to an aerosol-generating article configured for use with the aerosol-generating system. By preventing the device from being released, the user is prevented from using articles not configured for use with the system. Any suitable means for preventing the release may be used. For example, a protrusion, which engages with a corresponding indentation on the device may lock the device within the cavity. The protrusion being movable such that when an article configured for use with the system is presented to the charging unit, the charging unit electrical hardware sends a signal to move the protrusion to release the device. Alternatively, a hinged lid may be provided to cover the open end of the cavity, which is locked until an article configured for use with the system is presented to the charging unit.

According to a further aspect of the present disclosure, there is provided an electrically operated aerosol-generating system. The system comprises: an aerosol-generating article, as described herein, including at least one component incorporating a taggant within a material of the at least one component; a cavity for at least partially receiving the aerosol-generating article; at least one heating element; a power supply for supplying power to the at least one heating element; electrical hardware connected to the power supply and the at least one heating element; and a detector capable of detecting the presence of the aerosol-generating article in the cavity and distinguishing the aerosol-generating article from other articles configured for use with the aerosol-generating system, based on the taggant incorporated within a material of the aerosol-generating article.

As can be seen, the aerosol-generating system is a combination of an aerosol-generating device and one or more aerosol-generating articles for use with the device. The aerosol-generating system may include additional components, such as for example a charging unit for recharging an on-board electric power supply in the electrically operated or electric aerosol-generating device.

The system is preferably arranged to initiate when the detector detects the aerosol-generating article in the cavity. In this way, the user is not required to activate the device using, for example, an activation button.

As described above in relation to the aerosol-generating article, each type of aerosol-generating article is preferably provided with a taggant having a different identifiable spectroscopic signature. The electrical hardware is therefore preferably arranged to establish a heating protocol for the at least one heating element based on the particular aerosol-generating article identified by the detector.

The detector preferably is a spectroscopic detector comprising an optical sensor including at least one light emitter and at least one light sensor. Preferably, the light emitter is configured to emit infra-red wavelength light, or ultraviolet wavelength light. Preferably, the light sensor is configured to detect infra-red wavelength light, or ultraviolet wavelength light.

In one embodiment, the article is one article of a plurality of articles configured for use with the system. In that case, the detector is capable of detecting the presence of the article in the cavity and also capable of distinguishing the article from other of the plurality of articles configured for use with the system, based on the identification information.

In one embodiment, the system is configured to receive a plurality of articles including taggant incorporated thereon, and the system is arranged to operate only with a subset of the plurality of articles configured for use with the system, each article of the subset being identifiable by the detector, based on the taggant properties.

In this way, the system can be set up for use with only particular articles by, for example, programming the electrical hardware. This feature provides a number of advantages. First, this may reduce or eliminate counterfeit smoking articles for use with the system. Second, this may allow manufacturers or distributors to limit the smoking articles which can be used with the system, for example, to account for different smoking articles available in different regions or jurisdictions. Third, this can also allow the smoking system to be configured for use with different subsets of smoking articles. For example, the smoking system, on purchase, might be usable with a first subset of smoking articles. After an update to the electrical hardware, the smoking system might be usable with a second, larger, subset of smoking articles. After a

further update to the electrical hardware, the smoking system might be usable with a third, larger, subset of smoking articles.

The aerosol-generating device is preferably a handheld aerosol-generating device that is comfortable for a user to hold between the fingers of a single hand. The aerosol-generating device may be substantially cylindrical in shape. Preferably, the electrically heated smoking system is reusable. Preferably, each article is disposable.

The aerosol-generating device may have a polygonal cross section and a protruding button formed on one face: in this embodiment, the external diameter of the aerosol-generating device may be between about 12.7 mm and about 13.65 mm measured from a flat face to an opposing flat face; between about 13.4 mm and about 14.2mm measured from an edge to an opposing edge (that is, from the intersection of two faces on one side of the aerosol-generating device to a corresponding intersection on the other side); and between about 14.2 mm and about 15 mm measured from a top of the button to an opposing bottom flat face. The longitudinal length of the device may be between about 70 mm and about 120 mm. The diameter of the device may be between about 10 mm and about 20 mm.

During operation, the aerosol-generating article, and its aerosol-forming substrate, may be completely received in the cavity and thus completely contained within the electrically operated aerosol-generating system. In that case, a user may puff on a mouthpiece of the electrically operated aerosol-generating system. Alternatively, during operation, the article may be partially received in the cavity such that the aerosol-forming substrate is fully or partially contained within the electrically operated aerosol-generating system. In that case, a user may puff directly on the article or on a mouthpiece of the electrically operated aerosol-generating system.

Preferably, and as described above, the electrically operated aerosol-generating system is arranged to initiate, when the detector detects the smoking article in the cavity. The system may be initiated when the electrical hardware connects the power supply and the at least one heating element. Alternatively, or in addition, the system may be initiated when the system switches from a standby mode to an active mode. Alternatively, or in addition, the system may further comprise a switch and may be initiated when the switch is turned on, such that the at least one heating element is heated only when an article is detected in the cavity. Initiation of the system may additionally or alternatively comprise other steps.

The detector is capable of detecting whether or not an aerosol-generating article is present in the cavity, or adjacent the device or charging unit in dependence on the location of the detector. Because of this, the system and smoking article have a number of advantages. For example, power saving is provided, because the system does not need to permanently remain in an active mode, but can remain in a standby mode, switching to the active mode only

when an article is detected. In addition, the power used can be optimised for a particular user, when an article is detected, depending on usage habits of the user. The system also allows for a shorter time to first puff for an article, because the article can be heated as soon as it is detected. This minimizes the time delay between a user's first puff and the user receiving the aerosol. Furthermore, safety may be improved because the system activates only when a valid article is detected. Therefore, there is no chance that the heating element will energize unless the valid article is present.

The detector may also be arranged to indicate when the article is removed from the cavity. In that case, the system may be arranged to switch from the active mode to the standby mode. Alternatively, or in addition, if the system comprises a switch, the switch may be turned off when the smoking article is removed from the cavity.

Preferably, the electrical hardware comprises a programmable controller, for example, a microcontroller, for controlling operation of the heating element. In one embodiment, the controller may be programmable by software. Alternatively, the controller may comprise application specific hardware, such as an Application-Specific Integrated-Circuit (ASIC), which may be programmable by customising the logic blocks within the hardware for a particular application. Preferably, the electrical hardware comprises a processor. Additionally, the electrical hardware may comprise memory for storing heating preferences for particular articles, user preferences, user smoking habits or other information. Preferably, the information stored can be updated and replaced depending on the particular articles usable with the smoking system. Also, the information may be downloaded from the system.

In one exemplary embodiment, the electrical hardware comprises a sensor to detect air flow indicative of a user taking a puff. The sensor may comprise a thermistor. The sensor may be an electro-mechanical device. Alternatively, the sensor may be any of: a mechanical device, an optical device, an opto-mechanical device and a micro electro mechanical systems (MEMS) based sensor. In that case, the electrical hardware may be arranged to provide an electric current pulse to the at least one heating element when the sensor senses a user taking a puff. In an alternative embodiment, the system further comprises a manually operable switch, for a user to initiate a puff.

Preferably, the electrical hardware is arranged to establish a heating protocol for the at least one heating element based on the particular article identified by the detector.

The heating protocol may comprise one or more of: a maximum operating temperature for the heating element, a maximum heating time per puff, a minimum time between puffs, a maximum number of puffs per article and a maximum total heating time for the article. Establishing a heating protocol tailored to the particular article is advantageous because the

aerosol-forming substrates in particular articles may require, or provide an improved user experience with, particular heating conditions. As already mentioned, preferably, the electrical hardware is programmable, in which case various heating protocols may be stored and updated.

Preferably, the electrical hardware is arranged to store information based on the particular article identified by the detector. This allows monitoring of the various article types used by a particular user, in order to track customer preferences. The information may be stored in the electrical hardware, preferably in the memory. The information is preferably retrievable from the electrical hardware.

The at least one heating element may comprise a single heating element. Alternatively, the at least one heating element may comprise more than one heating element. The heating element or heating elements may be arranged appropriately so as to most effectively heat the aerosol-forming substrate in an article.

The at least one heating element preferably comprises an electrically resistive material. Suitable electrically resistive materials include but are not limited to: semiconductors such as doped ceramics, electrically "conductive" ceramics (such as, for example, molybdenum disilicide), carbon, graphite, metals, metal alloys and composite materials made of a ceramic material and a metallic material. Such composite materials may comprise doped or undoped ceramics. Examples of suitable doped ceramics include doped silicon carbides. Examples of suitable metals include titanium, zirconium, tantalum and metals from the platinum group. Examples of suitable metal alloys include stainless steel, nickel-, cobalt-, chromium-, aluminium-titanium- zirconium-, hafnium-, niobium-, molybdenum-, tantalum-, tungsten-, tin-, gallium-, manganese- and iron-containing alloys, and super-alloys based on nickel, iron, cobalt, stainless steel, Timetal® and iron-manganese-aluminium based alloys. In composite materials, the electrically resistive material may optionally be embedded in, encapsulated or coated with an insulating material or vice-versa, depending on the kinetics of energy transfer and the external physicochemical properties required. Examples of suitable composite heating elements are disclosed in US-A-5 498 855, WO-A-03/095688 and US-A-5 514 630.

Alternatively, the at least one heating element may comprise an infra-red heating element, a photonic source such as, for example, those described in US-A-5 934 289, or an inductive heating element, such as, for example, those described in US-A-5 613 505.

The at least one heating element may take any suitable form. For example, the at least one heating element may take the form of a heating blade, such as those described in US-A-5 388 594, US-A-5 591 368 and US-A-5 505 214. Alternatively, the at least one heating element may take the form of a casing or substrate having different electro-conductive portions, as

described in EP-A-1 128 741, or an electrically resistive metallic tube, as described in WO-A-2007/066374. Alternatively, one or more heating needles or rods that run through the centre of the aerosol-forming substrate, as described in KR-A-100636287 and JP-A-2006320286, may also be suitable. Alternatively, the at least one heating element may be a disk (end) heater or a combination of a disk heater with heating needles or rods. Other alternatives include a heating wire or filament, for example a Ni-Cr, platinum, tungsten or alloy wire, such as those described in EP-A-1 736 065, or a heating plate.

The at least one heating element may heat the aerosol-forming substrate by means of conduction. The heating element may be at least partially in contact with the substrate, or the carrier on which the substrate is deposited. Alternatively, the heat from the heating element may be conducted to the substrate by means of a heat conductive element. Alternatively, the at least one heating element may transfer heat to the incoming ambient air that is drawn through the electrically operated aerosol-generating system during use, which in turn heats the aerosol-forming substrate by convection. The ambient air may be heated before passing through the aerosol-forming substrate, as described in WO-A-2007/066374.

According to a yet further aspect of the present invention, there is provided a method of controlling an aerosol-generating system. The system comprises: an aerosol-generating article including at least one component incorporating a taggant having an identifiable spectroscopic signature within a material of the at least one component; and an aerosol-generating device. The aerosol-generating device comprises: a cavity for at least partially receiving the aerosol-generating article; at least one heating element; a power supply for supplying power to the at least one heating element; electrical hardware connected to the power supply and the at least one heating element; and a detector capable of detecting the presence of the aerosol-generating article and determining the spectroscopic signature of the taggant incorporated within a material of the aerosol-generating article. The method comprises the steps of: in a first mode of operation: detecting the presence of an aerosol-generating article; and switching to a second mode of operation when the presence of an aerosol-generating article is detected; and in the second mode of operation: determining whether the aerosol-generating article comprises a taggant; and if so, determining the spectroscopic signature of the detected taggant.

Preferably, in the first mode the detector operates in a low power mode, and in the second mode, the detector operates in a high power mode.

By operating the system in two distinct modes, the total power consumption of the system may be reduced, which enables the operational time of the system to be increased for a given capacity of power supply. As will be appreciated, alternatively the size of the system may be

reduced by reducing the size and therefore capacity of the power supply while maintaining the operational time of the system.

In the first mode, the detector may be configured to detect the presence of an aerosol-generating article by monitoring for a change in the received signal. The method may comprise comparing the received signal to a threshold value, where it is determined that an aerosol-generating article is present if the signal exceeds the threshold. Such a threshold comparison may reduce the rate of false positives, thus further increasing the operational time of the system.

In the first mode, the method may comprise detecting the presence of an aerosol-generating article using a proximity sensor, and in the second mode, the method may comprise determining the spectroscopic signature of the detected taggant using a light emitter and receiver. The proximity sensor may be a capacitive-, photoelectric- or inductive-type proximity sensor. Preferably, the proximity sensor is a capacitive-type sensor. In a particularly preferred embodiment, the capacitive-type sensor is optimised for recognising the paper wrapper of an aerosol-generating article.

The first mode may also use the same light emitter and receiver as used in the second mode. However, the power provided to the light emitter is lower in the first mode of operation than in the second mode of operation. In the first mode, it is only required to determine the presence of an aerosol-generating article which requires less power than when determining the spectroscopic signature of the taggant.

The method according to this yet further aspect of the present invention may also comprise any of the other method steps and features as described herein, where appropriate.

According to a yet further aspect of the present invention, there is provided an electrically operated aerosol-generating system. The system comprises: an aerosol-generating article including at least one component incorporating a taggant having an identifiable spectroscopic signature within a material of the at least one component; and an aerosol-generating device. The aerosol-generating device comprises: a cavity for at least partially receiving the aerosol-generating article; at least one heating element; a power supply for supplying power to the at least one heating element; electrical hardware connected to the power supply and the at least one heating element; and a detector capable of detecting the presence of the aerosol-generating article and determining the spectroscopic signature of the taggant incorporated within a material of the aerosol-generating article. The detector is configured to operate in a first mode, where the detector is configured to detect the presence of an aerosol-generating article, and in a second mode, where the detector is configured to determine whether the aerosol-generating article comprises a taggant, and if so, determine the spectroscopic signature

of the detected taggant. The detector is further configured to switch from the first mode of operation to the second mode of operation when the presence of an aerosol-generating article is detected.

In a preferred embodiment, the power consumption of the detector in the first mode of operation is lower than the power consumption of the detector in the second mode of operation. In one embodiment, the power consumption in the first mode is between about 3 mA and about 6 mA, preferably about 5 mA, and the power consumption in the second mode is between about 7 mA and about 10 mA, preferably about 8 mA.

By operating the system in two distinct modes, the total power consumption of the system may be reduced, which enables the operational time of the system to be increased for a given capacity of power supply. As will be appreciated, alternatively the size of the system may be reduced by reducing the size and therefore capacity of the power supply while maintaining the operational time of the system.

The detector may includes a proximity detector, the proximity detector being active in the first mode of operation. Preferably, the proximity detector is not active in the second mode of operation. The proximity detector may be a capacitive-, photoelectric-, or inductive-type capacitive proximity detector.

The electrical hardware may be configured to compare the received signal from the detector, when the detector is operating in the first mode, to a threshold value, where it is determined that an aerosol-generating article is present if the signal exceeds the threshold. Such a threshold comparison may reduce the rate of false positives, thus further increasing the operational time of the system,

The detector of the aerosol-generating device may be a single detector comprising a light emitter and a light detector, where in the first mode, the light emitter operates at a lower power than in the second mode. In the first mode, the light detector is only monitoring for a change in received signal, and so the power requirements are lower.

The electrical hardware may be configured to switch the detector from the first mode of operation to the second mode of operation when the presence of an aerosol-generating article is detected.

The system according to this yet further aspect of the present invention may also comprise any of the other system features, or be configured to carry out any of the method steps as described herein, where appropriate.

Any feature in one aspect of the invention may be applied to other aspects of the invention, in any appropriate combination. In particular, method aspects may be applied to apparatus aspects, and vice versa. Furthermore, any, some and/or all features in one aspect

can be applied to any, some and/or all features in any other aspect, in any appropriate combination.

It should also be appreciated that particular combinations of the various features described and defined in any aspects of the invention can be implemented and/or supplied and/or used independently.

The invention will be further described, by way of example only, with reference to the accompanying drawings in which:

- Figure 1 shows an aerosol-generating article according to the invention;
- Figure 2 shows an aerosol-generating system according to the invention;
- Figure 3 shows a schematic representation of an alternative aerosol-generating system according to the invention;
- Figure 4 shows a schematic representation of a further alternative aerosol-generating system according to the invention;
- Figure 5 shows a schematic representation of a yet further alternative aerosol-generating system according to the invention; and
- Figures 6 show schematic representations of another alternative aerosol-generating system according to the invention.

Figure 1 shows an aerosol-generating article 100. The article 100 comprises an aerosol-forming substrate 102, a hollow tubular transfer element 104, a mouthpiece 106, and an outer wrapper 108. The outer wrapper 108 comprises a taggant (represented by the dots). The taggant is incorporated in the wrapper during manufacturing of the material.

The wrapper material in this example is manufactured by incorporating the taggant, in powder form, to the wrapper paper material slurry, before the slurry is formed into paper and dried. The taggant is thermally and chemically stable at the temperature and conditions used during manufacture such that the final material is provided with a taggant. Alternatively, the taggant may be applied to the wrapper material in a solution by spraying, printing, painting or the like.

The aerosol-generating article for use in an electrically operated aerosol-generating device as described below, incorporates the taggant within the wrapper. The taggant has an identifiable spectroscopic signature.

The use of the taggant incorporated within the material of the wrapper prevents the taggant from being removed from the wrapper after manufacture. In this way, the tamper resistance, and difficulty of counterfeiting, of the aerosol-generating article are improved.

The taggant material can be selected to control the optical properties such that it can absorb a specific wavelength of light to enable identification and/or emit light at a shifted wavelength as compared to a wavelength of light used to excite the taggant.

Figure 2 shows a perspective view of one exemplary embodiment of an electrically operated aerosol-generating system 200 according to the invention. The electrically operated aerosol-generating system 200 is a smoking system comprising a housing 202 having a front housing portion 204 and a rear housing portion 206. The front housing portion 204 includes a front end portion 208 having a cavity 210 capable of receiving an article, such as a smoking article. In Figure 2, the smoking system 200 is shown with a smoking article in the form of cigarette 100. In this embodiment, the front housing portion 204 also includes a display 212. The display 212 is not shown in detail, but it may comprise any suitable form of display, for example a liquid crystal display (LCD), a light-emitting diode (LED) display or a plasma display panel. In addition, the display may be arranged to show any required information, for example relating to smoking article or cleaning article.

The electrically heated smoking system 200 also includes a detector (not shown in Figure 2) positioned in or adjacent the cavity 210. The detector is able to detect the presence of an article in the cavity and is also able to identify the various articles which may be usable with the system. The detector comprises means for determining the spectroscopic signature of the taggant. The means for determining the spectroscopic signature comprises a light source and a light sensor.

Figure 3 shows a schematic representation of a further exemplary embodiment of an aerosol-generating system 300 according to the invention. The aerosol-generating system comprises an aerosol-generating device 302 and an aerosol-generating article 304. The aerosol-generating device 302 comprises a power supply 306, such as a battery, control circuitry 308, and a detector 310. The device 302 is also provided with a cavity for receiving the aerosol-generating article 304. The aerosol-generating article 304 comprises an aerosol-generating liquid substrate container 312, a capillary wick 314, an electrically operated heater 316, an aerosol forming chamber 318 and a mouthpiece 320.

The aerosol-generating article 304 is a cartridge, such as a disposable cartridge, for use in the aerosol-generating device 302. The container of the cartridge comprises a taggant, as described herein, incorporated into the material used to form the container. The taggant has an identifiable spectroscopic signature.

Similarly to the exemplary embodiment shown in Figure 2, the detector 310 is capable of detecting the presence of the aerosol-generating article 304 in the cavity and distinguishing the aerosol-generating article from other articles configured for use with the aerosol-generating

system 302, based on the taggant incorporated within the material of the container 312. As will be appreciated, the taggant may be incorporated into any other component of the aerosol-generating article. The detector 310 comprises a light source and a light sensor for determining the spectroscopic signature of the taggant to identify the aerosol-generating article 304.

In use, when the user inserts the aerosol-generating article 304 into the aerosol-generating device 302 the detector 310 determines the type of aerosol-generating article being inserted by emitting light, and detecting the response received by the light sensor.

When the user draws on the mouthpiece, the control circuitry, in dependence on the type of aerosol-generating article 304 detected, provides power to the heater 316 to generate an aerosol. The power supplied may optimised in accordance with the brand of aerosol-generating article, or in accordance with pre-determined user preferences, and so on. Alternatively, or in addition, if the aerosol-generating article 304 is not recognised by the detector, the control circuitry may prevent power being supplied to the heater 316 to prevent the use of unauthorised aerosol-generating articles.

Figure 4 shows a schematic representation of a further aerosol-generating system 400. The system shown in Figure 4 is similar to that shown in Figure 3. The aerosol-generating system 400 comprises an aerosol-generating device 402 and an aerosol-generating article 304; the aerosol-generating article 304 is the same as that described above with reference to Figure 3. The aerosol-generating device 402 is also the same as described above with reference to Figure 3, except that the detector 404 is provided on an external surface of the device housing.

In this example, the detector 404 is capable of detecting the presence of the aerosol-generating article 304 being presented externally to the device 402. Again, the detector is capable of distinguishing the aerosol-generating article from other articles configured for use with the aerosol-generating system 400, based on the taggant incorporated within the material of the container 312. As will be appreciated, the taggant may be incorporated into any other component of the aerosol-generating article. The detector 404 comprises a light source and a light sensor for determining the spectroscopic signature of the taggant to identify the aerosol-generating article 304.

As can be seen, the device further comprises a protrusion 406 which when in a first position, as shown, prevents the article 304 from being inserted into the cavity. The protrusion 406 is movable such that in a second position the article 304 may be inserted.

In use, when the user presents the aerosol-generating article 304 to the detector 404, the detector determines the type of aerosol-generating article by emitting light, and detecting the response received by the light sensor.

If the article is configured for use with the system, the control circuitry 308 activates the device, and withdraws the means 406 for preventing the article being inserted into the cavity 312 The user then inserts the article into the cavity and operates the device as described above.

Figures 5 show a yet further example of an aerosol-generating system according to the invention. Figure 5(a) shows a charging unit 500. Figure 5(b) shows an aerosol-generating device 502. The device 502 in this example is an electrically heated aerosol-generating device adapted to receive an aerosol-generating article 504 comprising an aerosol-forming substrate. Similarly to the article 100 described above, the article 504 also comprises a taggant. The charging device 500 comprises a primary battery 506, control electronics 508, and electrical contacts 510 configured to provide electrical power to the aerosol-generating device 502, from the battery 506, when the device 502 is in connection with the electrical contacts 510. The charging device is configured to charge the device 502 utilising the battery 506. The electrical contacts 510 are provided adjacent the bottom of a cavity 512. The cavity is configured to receive the device 502. A lid 514 is provided that is configured to secure the device 502 within the cavity 512 of the primary device 500. The components of the charging device 500 are housed within the housing 516.

The charging unit 500 is further provided with a detector 517, similar to the detector described above, on an external surface of the housing 516.

The device 502 comprises a rechargeable battery 526, secondary control electronics 528 and electrical contacts 530. As described above, the rechargeable battery 526 of the device 502 is configured to receive a supply of power from the primary battery 506 when the electrical contacts 530 are in contact with the electrical contacts 510 of the charging device 500 and the lid is in the closed position. The device 502 further comprises a cavity 532 configured to receive the aerosol generating article 504. A heater 534, in the form of, for example, a blade heater, is provided at the bottom of the cavity 532.

In use, with the device 502 within the cavity 512 of the charging unit, the user activates the device 502 by presenting an article 504 to the detector 517 on the charging unit. If the article is recognised as an article configured for use in the system, the control electronics 508 sends a signal to the device 502 which enables the device for use. Power may then be provided from the battery 526 via the control electronics 528 to the heater 534. The heater is heated to a standard operational temperature that is sufficient to generate an aerosol from the aerosol-forming substrate of the aerosol-generating article 504.

In one example, the lid 514 comprises a locking mechanism to retain the device 502 within the cavity 512 until an article 504, which is configured for use with the system, is presented to the detector 517.

Figures 6 show schematic representations of a further exemplary embodiment of an aerosol-generating system 600 according to the invention. The system of Figure 6 is similar to that shown in Figure 3. The aerosol-generating system 600 comprises an aerosol-generating device 602 and an aerosol-generating article 604. The aerosol-generating device 602 comprises a power supply 606, such as a battery, control circuitry 608, and a detector 610. The device 302 is also provided with a cavity 612 for receiving the aerosol-generating article 604. The aerosol-generating article 604 comprises an aerosol-generating liquid substrate container 614, a capillary wick 616, an electrically operated heater 618, an aerosol forming chamber 620 and a mouthpiece 622.

The aerosol-generating article 604 is a cartridge, such as a disposable cartridge, for use in the aerosol-generating device 602. The container of the cartridge comprises a taggant 623, as described herein, incorporated into the material used to form the container. The taggant has an identifiable spectroscopic signature. A portion 624 of the container, receivable in the cavity 612 of the device 602 does not comprise a taggant. However, as will be appreciated, the taggant may be provided throughout the container, in a similar way to articles 100, 304 and 504 described above.

Similarly to the exemplary embodiment shown in Figures 2 and 3, the detector 610 is capable of detecting the presence of the aerosol-generating article 604 in the cavity and distinguishing the aerosol-generating article from other articles configured for use with the aerosol-generating system 600, based on the taggant incorporated within the material of the container. The detector 610 comprises a light source and a light sensor for determining the spectroscopic signature of the taggant to identify the aerosol-generating article 604.

In use, the device 602 is initially in a first, low power, mode in which the detector monitors only for the presence of an aerosol-generating article. In the first mode, the detector is not capable of determining the spectroscopic signature of the taggant. In one example, the power consumption of the device in the first mode is about 5 mA. The device 602 in the first mode, awaiting the user to insert an aerosol-generating article into the cavity is shown in Figure 6(a).

As shown in Figure 6(b), when the user inserts an aerosol-generating article 604 into the cavity 612, the detector detects the presence of the article, and the electrical hardware switches the device to operate in a second mode, in which the detector is capable of determining the spectroscopic signature of the taggant. In the first mode, the detector emits light, at a low

power, and monitors a light sensor for the received signal. When the received light exceeds a pre-determined threshold, the detector determines that an aerosol-generating article is present.

In one example, when in the second mode, the detector has a power consumption of about 8 mA.

On continued insertion into the cavity, as shown in Figure 6(c), the taggant containing portion of the article 604 is provided adjacent the detector 610. The device 602 is in the second mode of operation and is capable of determining the taggant, and comparing the determined taggant to a list of taggants corresponding to articles for use with the system. The operation of the device then continues as described above.

The detector and associated electrical hardware described with reference to Figure 6 may also be employed in the systems 200, 400 and 500 described with reference to Figures 2, 4 and 5 respectively. That is to say, the systems 200, 400 and 500 may be provided with a detector, or device, capable of operating in a first mode in which the detector is only configured to detect the presence of an aerosol-generating article, and in a second mode in which the spectroscopic signature of a taggant can be determined.

The exemplary embodiments described above illustrate but are not limiting. In view of the above-discussed exemplary embodiments, other embodiments consistent with the above exemplary embodiments will now be apparent to one of ordinary skill in the art.

CLAIMS:

1. A method of controlling an aerosol-generating system, the system comprising:

an aerosol-generating article including at least one component incorporating a taggant having an identifiable spectroscopic signature within a material of the at least one component; and

an aerosol-generating device, comprising:

a cavity for at least partially receiving the aerosol-generating article;

at least one heating element;

a power supply for supplying power to the at least one heating element;

electrical hardware connected to the power supply and the at least one heating element; and

a detector capable of detecting the presence of the aerosol-generating article and distinguishing the aerosol-generating article from other articles configured for use with the aerosol-generating system, based on the spectroscopic signature of the taggant incorporated within a material of the aerosol-generating article,

the method comprising the steps of:

detecting the presence of an aerosol-generating article;

determining whether the aerosol-generating article comprises a taggant;

comparing the spectroscopic signature of the detected taggant with a look-up table of taggant spectroscopic signatures corresponding to aerosol-generating articles configured for use with the aerosol-generating system;

preventing activation of the aerosol-generating device, including preventing the supply of power to the at least one heating element, unless the detected taggant spectroscopic signature corresponds to an aerosol-generating article configured for use with the aerosol-generating system; and

activating the aerosol-generating device if the detected taggant spectroscopic signature corresponds to an aerosol-generating article configured for use with the aerosol-generating system.

2. A method of controlling an aerosol-generating system according to Claim 1, further comprising the step of detecting the presence of an aerosol-generating article presented externally to the aerosol-generating device.

3. A method of controlling an aerosol-generating system according to Claim 2, wherein the step of preventing activation of the aerosol-generating device, further includes preventing the aerosol-generating article from being received in the cavity of the aerosol-generating device.

4. A method of controlling an aerosol-generating system according to Claim 1, 2 or 3, wherein the aerosol-generating system further comprises a charging unit, the method further comprising the steps of:

detecting the presence of an aerosol-generating article presented externally to the charging unit; and

providing an activation signal from the charging unit to the aerosol-generating device unless the detected taggant spectroscopic signature corresponds to an aerosol-generating article configured for use with the aerosol-generating system.

5. A method of controlling an aerosol-generating system according to Claim 4, wherein the charging unit further comprises a cavity for at least partially receiving the aerosol-generating device, the method further comprising the step of: preventing release of the aerosol-generating device from the charging unit unless the detected taggant spectroscopic signature corresponds to an aerosol-generating article configured for use with the aerosol-generating system.

6. A method of controlling an aerosol-generating system according to any of the preceding claims, wherein the step of activating the aerosol-generating device further includes switching the aerosol-generating device from a standby mode to an active mode.

7. A method of controlling an aerosol-generating system according to any of the preceding claims, further comprising the steps of: increasing the temperature of the at least one heating element to above a temperature at which the taggant is deactivated, preventing the smoking article from being used again.

8. A method of controlling an aerosol-generating system according to Claim 7, further comprising the step of detecting the end of life of the smoking article, and increasing the temperature in dependence on the smoking article having reached the end of its life.

9. An electrically operated aerosol-generating system, comprising:

an aerosol-generating article including at least one component incorporating a taggant having an identifiable spectroscopic signature within a material of the at least one component; and

an aerosol-generating device, comprising:

a cavity for at least partially receiving the aerosol-generating article;

at least one heating element;

a power supply for supplying power to the at least one heating element;

electrical hardware connected to the power supply and the at least one heating element; and

a detector capable of detecting the presence of the aerosol-generating article and distinguishing the aerosol-generating article from other articles configured for use with the aerosol-generating system, based on the spectroscopic signature of the taggant incorporated within a material of the aerosol-generating article, wherein,

the electrical hardware is configured to carry out the method of controlling the aerosol-generating system according to any of the preceding claims.

10. An electrically operated aerosol-generating system according to Claim 9, wherein the taggant comprises an identifiable spectroscopic signature in absorption.

11. An electrically operated aerosol-generating system according to Claim 10, wherein the taggant absorbs at least one specific wavelength of light.

12. An electrically operated aerosol-generating system according to Claim 9 or 10, wherein the taggant comprises an identifiable spectroscopic signature in emission.

13. An electrically operated aerosol-generating system according to Claim 12, wherein the taggant, upon excitation by light, emits at least one wavelength, shifted from the wavelength of the excitation light.

14. An electrically operated aerosol-generating system according to any of Claims 9 to 14, wherein the taggant is distributed throughout the material.

15. An electrically operated aerosol-generating system according to Claim 14, wherein the taggant is substantially homogeneously distributed throughout the material.

16. An electrically operated aerosol-generating system according to any of Claims 9 to 15, wherein, between a temperature of about 50 degrees Celsius and about 500 degrees Celsius, the taggant is deactivated, and wherein, in use, the temperature required to generate an aerosol is greater than the temperature required to deactivate the taggant.

17. An electrically operated aerosol-generating system according to any of Claims 9 to 16, wherein the taggant is sufficiently chemically stable so as not to decompose during manufacture of the material or component.

18. An electrically operated aerosol-generating system according to any of Claims 9 to 17, wherein the taggant is a powder composed of at least one of: a rare earth; an actinide metal oxide; a ceramic.

19. An electrically operated aerosol-generating system according to any of Claims 9 to 18, wherein the detector is provided adjacent an external surface of the aerosol-generating device.

20. An electrically operated aerosol-generating system according to Claim 19, wherein the aerosol-generating device further comprises means for preventing the aerosol-article-generating article from being received in the cavity, wherein the electrical hardware is configured to only allow aerosol-generating articles to be inserted which are configured for use with system.

21. An electrically operated aerosol-generating system according to any of Claims 9 to 20, further comprising a charging unit, wherein the detector is provided adjacent an external surface of the charging unit.

22. An electrically operated aerosol-generating system according to Claim 21, wherein the charging unit comprises electrical hardware configured to provide an activation signal to the aerosol-generating device when the detected taggant spectroscopic signature corresponds to an aerosol-generating article configured for use with the aerosol-generating system.

23. An electrically operated aerosol-generating system according to Claim 21 or 22, wherein the charging unit further comprises: a cavity for at least partially receiving the aerosol-generating device; and means for preventing release of the aerosol-generating device from the charging unit unless the detected taggant spectroscopic signature corresponds to an aerosol-generating article configured for use with the aerosol-generating system.

24. An electrically operated aerosol-generating system according to any of Claims 9 to 23, wherein the system is arranged to initiate when the detector detects the aerosol-generating article in the cavity.

25. An electrically operated aerosol-generating system according to any of Claims 9 to 24, wherein the electrical hardware is arranged to establish a heating protocol for the at least one heating element based on the particular aerosol-generating article distinguished by the detector.

26. An electrically operated smoking system according to any of Claims 9 to 25, wherein the detector is a spectroscopic detector comprising an optical sensor including at least one light emitter and at least one light sensor.

27. A method of controlling an aerosol-generating system, the system comprising:

an aerosol-generating article including at least one component incorporating a taggant having an identifiable spectroscopic signature within a material of the at least one component; and

an aerosol-generating device, comprising:

a cavity for at least partially receiving the aerosol-generating article;

at least one heating element;

a power supply for supplying power to the at least one heating element;

electrical hardware connected to the power supply and the at least one heating element; and

a detector capable of detecting the presence of the aerosol-generating article and determining the spectroscopic signature of the taggant incorporated within a material of the aerosol-generating article,

the method comprising the steps of:

in a first mode of operation:

detecting the presence of an aerosol-generating article; and

switching to a second mode of operation when the presence of an aerosol-generating article is detected; and

in the second mode of operation:

determining whether the aerosol-generating article comprises a taggant; and if so,

determining the spectroscopic signature of the detected taggant.

28. A method of controlling an aerosol-generating system according to Claim 27, wherein in the first mode the detector operates in a low power mode, and in the second mode, the detector operates in a high power mode.

29. A method of controlling an aerosol-generating system according to Claim 27 or 28, wherein in the first mode, the detector is configured to detect the presence of an aerosol-generating article by monitoring for a change in the received signal.

30. A method of controlling an aerosol-generating system according to Claim 27, 28 or 29, wherein, in the first mode, the method comprises detecting the presence of an aerosol-generating article using a proximity sensor, and in the second mode, the method comprises determining the spectroscopic signature of the detected taggant using a light emitter and receiver.

31. A method of controlling an aerosol-generating system according to Claim 27, 28, 29 or 30, wherein, in the second mode, the method further comprises:

comparing the spectroscopic signature of the taggant with a look-up table of taggant spectroscopic signatures corresponding to aerosol-generating articles configured for use with the aerosol-generating system, and;

preventing activation of the aerosol-generating device, including preventing the supply of power to the at least one heating element, unless the detected taggant spectroscopic signature corresponds to an aerosol-generating article configured for use with the aerosol-generating system; and

activating the aerosol-generating device if the detected taggant spectroscopic signature corresponds to an aerosol-generating article configured for use with the aerosol-generating system.

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32. A method of controlling an aerosol-generating system according to Claim 31, and any of Claims 2 to 8.

33. An electrically operated aerosol-generating system, comprising:

an aerosol-generating article including at least one component incorporating a taggant having an identifiable spectroscopic signature within a material of the at least one component; and

an aerosol-generating device, comprising:

a cavity for at least partially receiving the aerosol-generating article;

at least one heating element;

a power supply for supplying power to the at least one heating element;

electrical hardware connected to the power supply and the at least one heating element; and

a detector capable of detecting the presence of the aerosol-generating article and determining the spectroscopic signature of the taggant incorporated within a material of the aerosol-generating article,

wherein, the detector is configured to operate in a first mode, where the detector is configured to detect the presence of an aerosol-generating article, and in a second mode, where the detector is configured to determine whether the aerosol-generating article comprises a taggant, and if so, determine the spectroscopic signature of the detected taggant,

wherein, the detector is further configured to switch from the first mode of operation to the second mode of operation when the presence of an aerosol-generating article is detected.

34. An electrically operated aerosol-generating system according to Claim 33, wherein, the power consumption of the detector in the first mode of operation is lower than the power consumption of the detector in the second mode of operation.

35. An electrically operated aerosol-generating system according to Claim 33 or 34, wherein the detector includes a proximity detector, the proximity detector being active in the first mode of operation.

36. An electrically operated aerosol-generating system according to Claim 33, 34 or 35, wherein the electrical hardware is configured to switch the detector from the first mode of

operation to the second mode of operation when the presence of an aerosol-generating article is detected.

37. An electrically operated aerosol-generating system according to Claim 33, 34, 35, or 36, wherein the detector is capable of distinguishing the aerosol-generating article from other articles configured for use with the aerosol-generating system, based on the spectroscopic signature of the taggant incorporated within a material of the aerosol-generating article, and wherein, the electrical hardware is configured to carry out the method of controlling the aerosol-generating system according to any claims 1 to 8, or 27 to 30.

38. An electrically operated aerosol-generating system according to Claim 37, and any of claims 10 to 26.

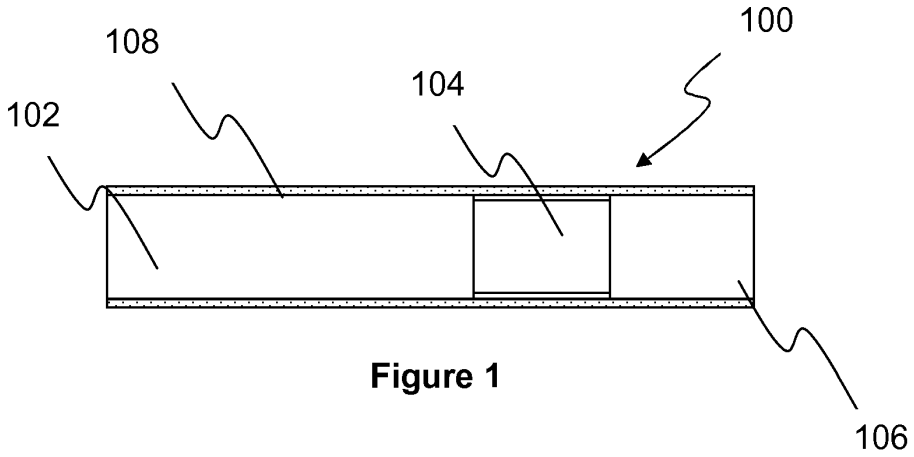
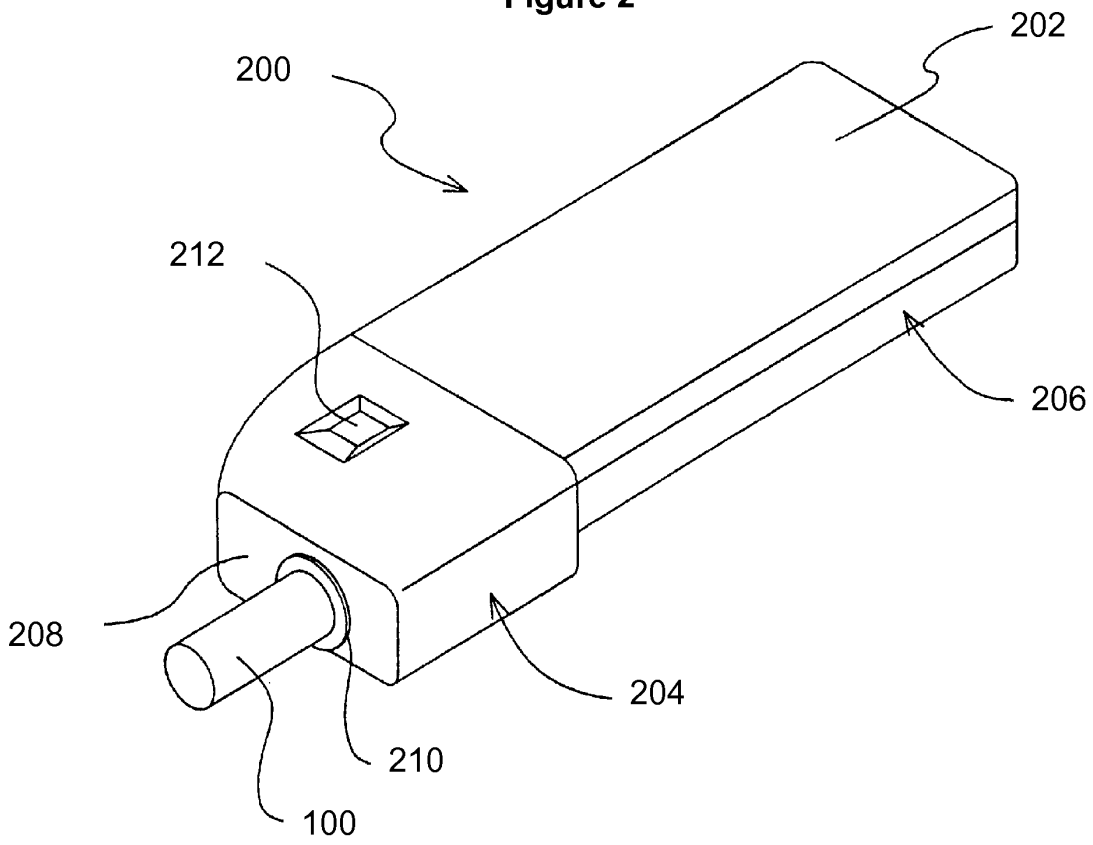


Figure 1

Figure 2



NJOY Exhibit 1002.1024

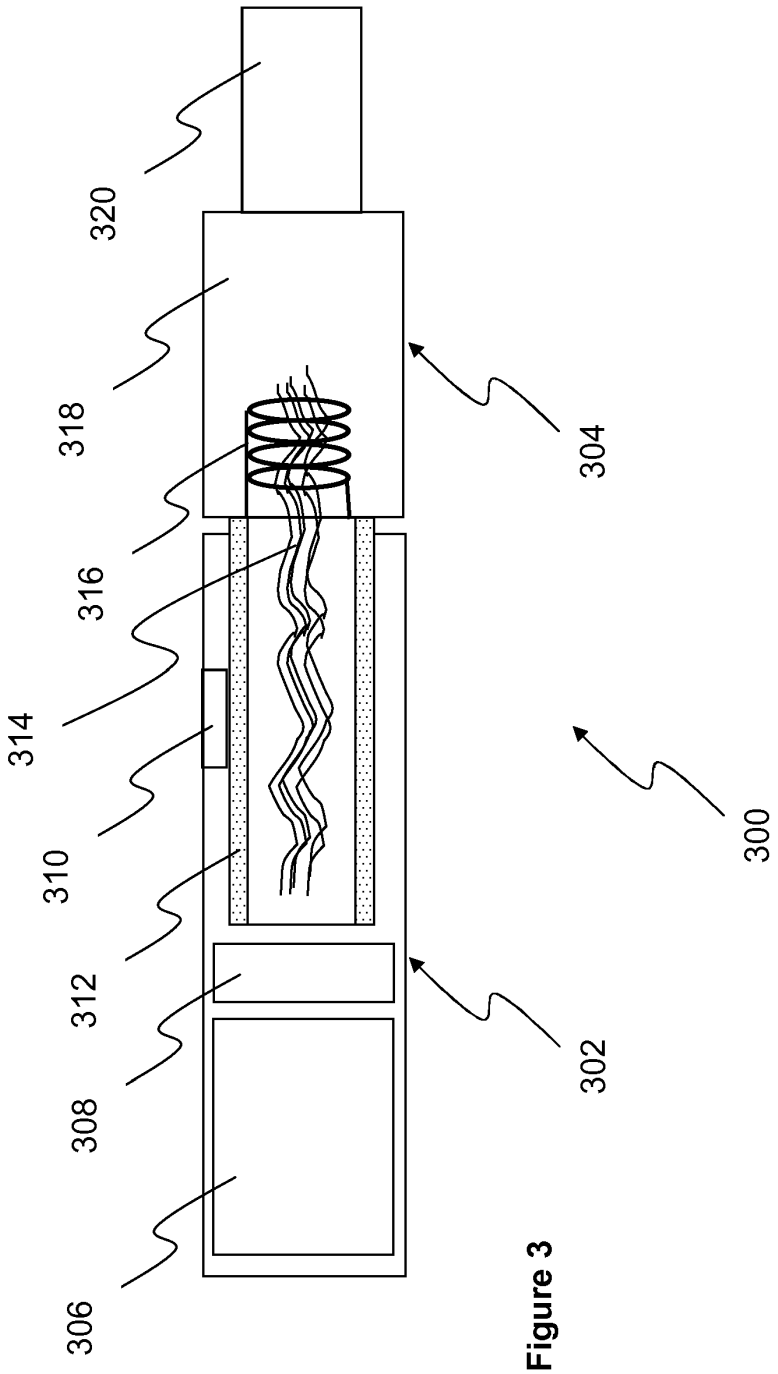


Figure 3

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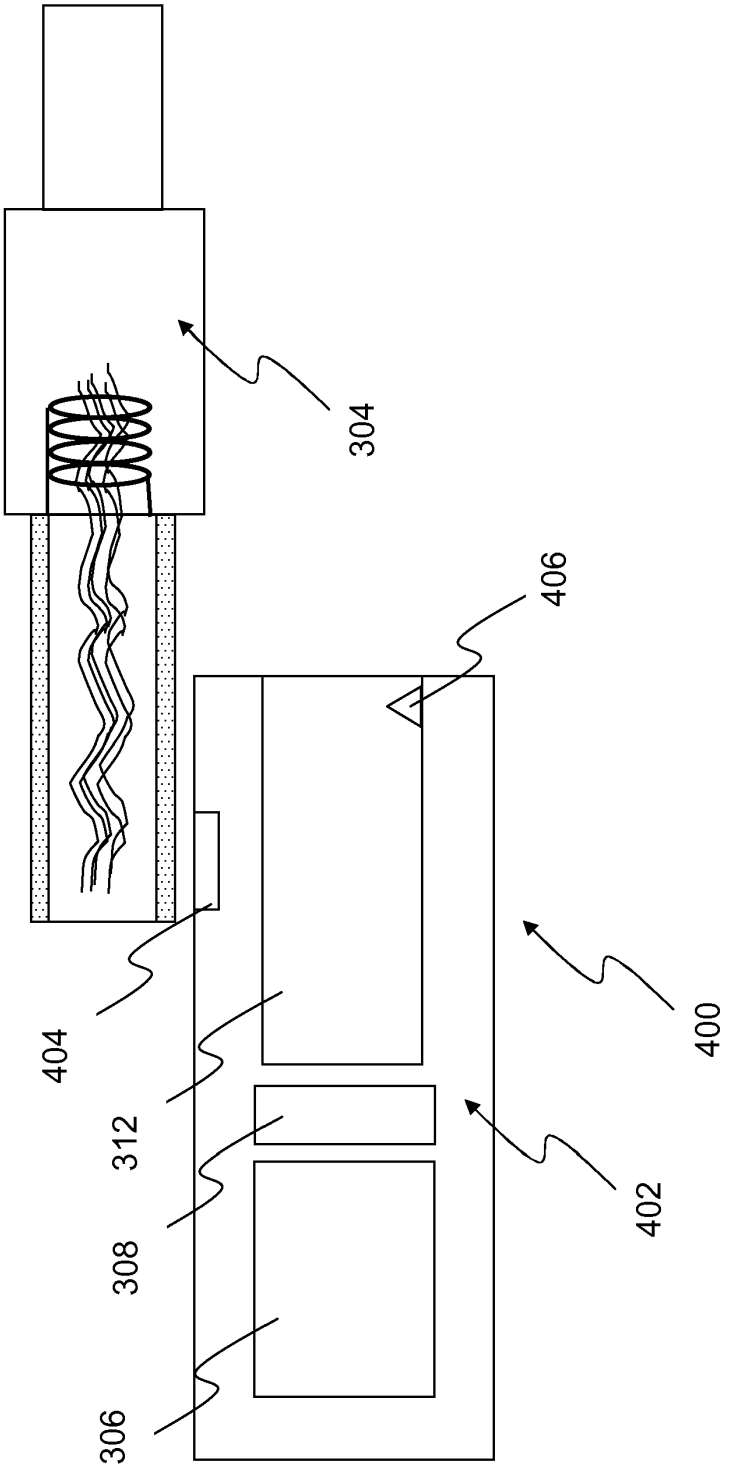


Figure 4

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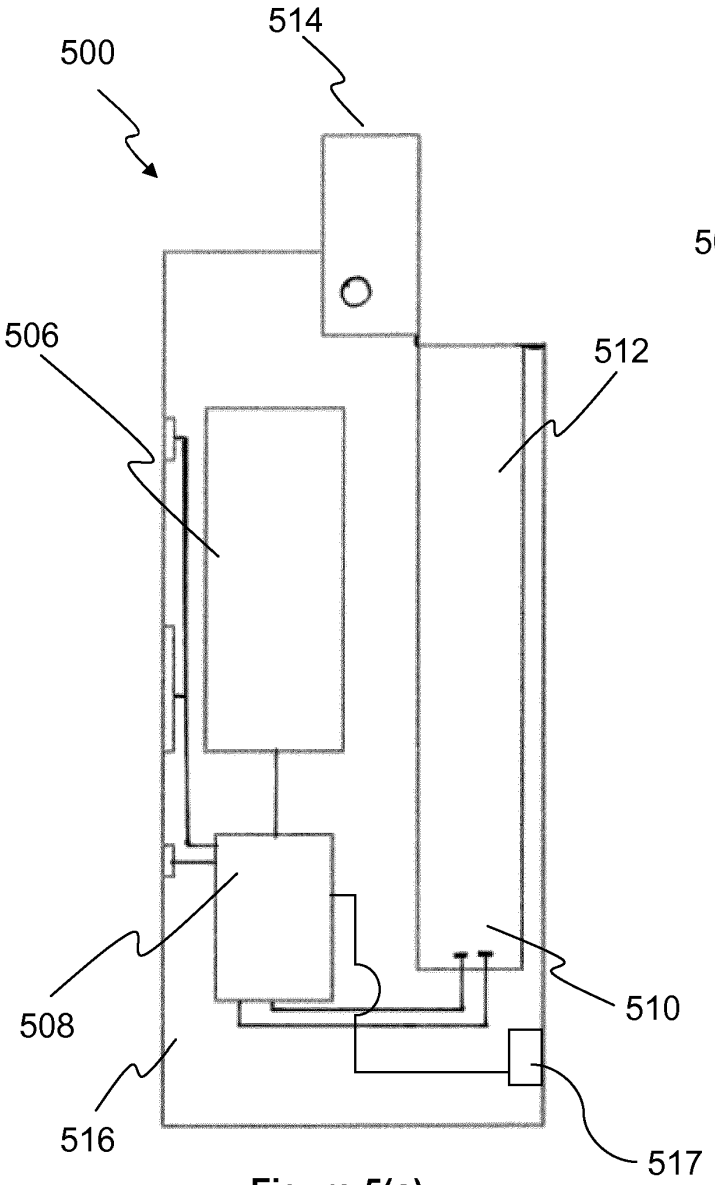


Figure 5(a)

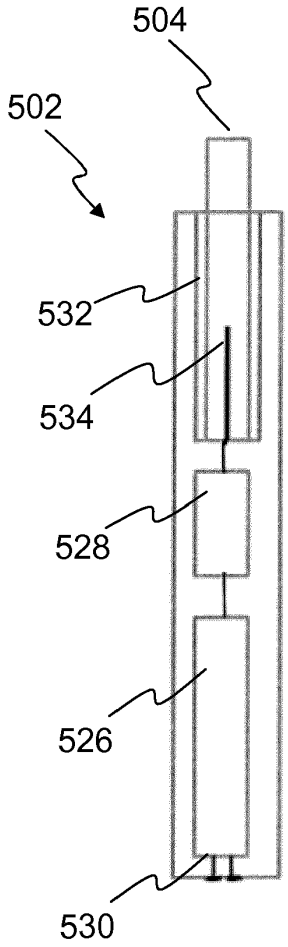


Figure 5(b)

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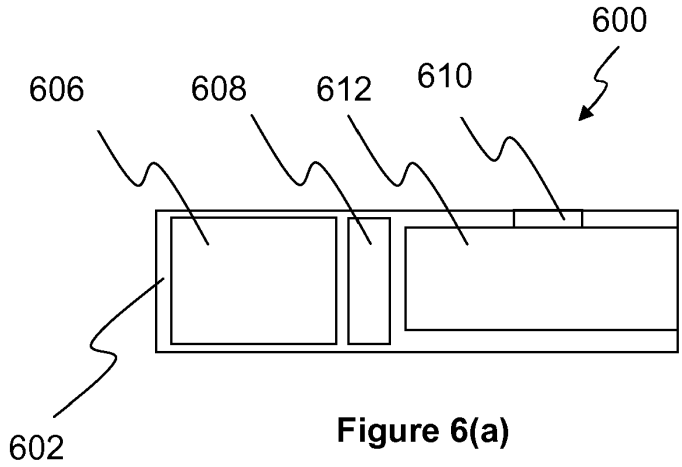


Figure 6(a)

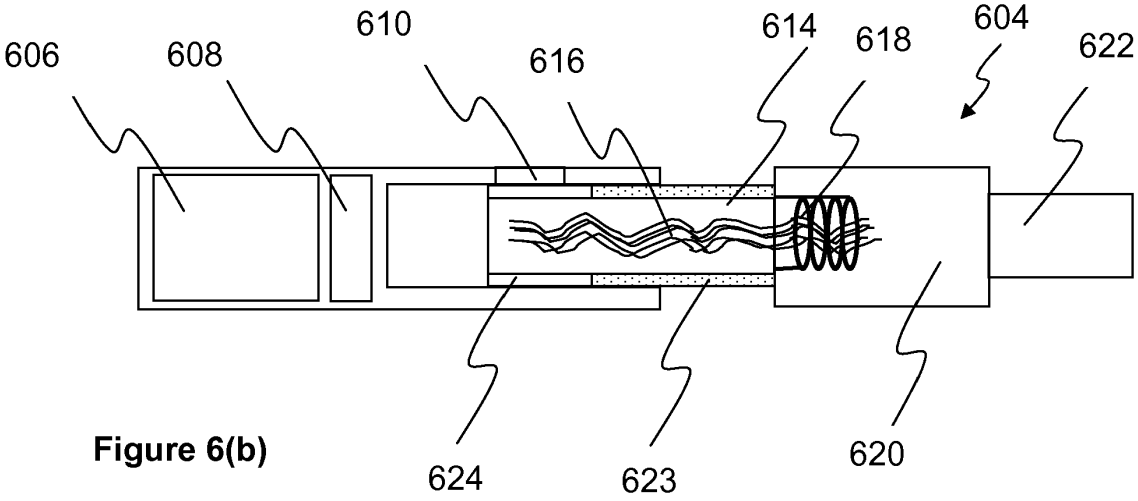


Figure 6(b)

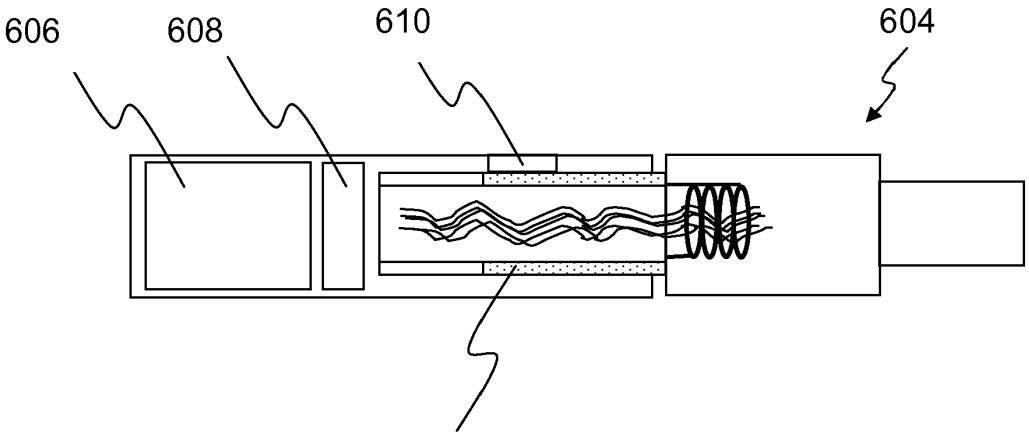


Figure 6(c)

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2014/076453

A. CLASSIFICATION OF SUBJECT MATTER
INV. A24F47/00
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A24F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2010/163063 A1 (FERNANDO FELIX [GB] ET AL) 1 July 2010 (2010-07-01)	1,6,7, 9-11, 14-18, 24-29, 31-34, 36-38
A	paragraphs [0009], [0014], [0015], [0025], [0026], [0029] - [0032], [0038] - [0039], [0045] - [0047]; figures	2-5,8, 12,13, 19-23, 30,35

-/--

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
11 March 2015	18/03/2015

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Kock, Søren

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	Huis-Stijl Ontwerp ET AL: "AIPIA > News > AIP", , 8 August 2013 (2013-08-08), XP055115857, Retrieved from the Internet: URL:http://www.aip-worldcongress.org/news_197_award-for-taggant-technology.php [retrieved on 2014-04-29] the whole document	1-38
A	US 2005/112360 A1 (BERGER GERALD [US] ET AL) 26 May 2005 (2005-05-26) paragraphs [0002], [0012], [0019], [0031]; figures	1-38
A	US 7 985 590 B2 (MCNEIL SCOTT EARL [US]) 26 July 2011 (2011-07-26) column 1, line 20 - column 2, line 60 column 11, lines 1-8	1-38
A	WO 02/068945 A1 (KEYMASTER TECHNOLOGIES INC [US]; KAISER BRUCE J [US]; MEYER GERHARD A) 6 September 2002 (2002-09-06) abstract	1-38

NJOY Exhibit 1002.1030

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2014/076453

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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		AU 2009332645 A1	07-07-2011
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		WO 02068945 A1	06-09-2002

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A61M 11/04 (2006.01)

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(74) **Agent**: **MCCONCHIE, Connor**; D Young & Co LLP, 120 Holborn, London EC1N 2DY (GB).

(81) **Designated States** *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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Published:

— *with international search report (Art. 21(3))*

(54) **Title**: AEROSOL-FORMING MEMBER

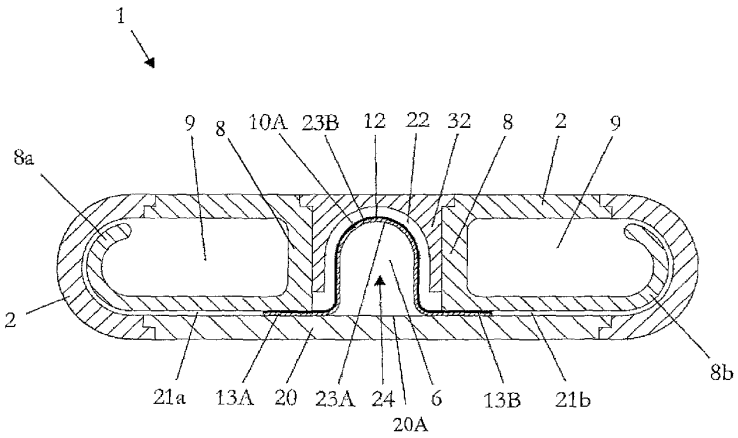


Figure 3

(57) **Abstract**: An aerosol-forming member comprising a sheet of material configured to wick and to heat a solution is disclosed. The sheet of material comprises a non-planar inner major surface having a capillary structure configured to emit vapour during use, and an outer major surface that is configured to emit less vapour than the inner major surface during use.

WO 2015/114325 A1

NJOY Exhibit 1002.1032

Aerosol-Forming Member

Field of the Invention

The invention relates to an aerosol-forming member for an aerosol delivery device. The invention also relates to an aerosol delivery device component comprising the aerosol-forming member according to the invention, and an aerosol delivery device comprising said aerosol delivery device component.

Background

An aerosol delivery device is a device used for delivering substances into the body via the lungs. One type of aerosol delivery device forms a vapour of a solution in which the substances are dissolved. This vapour condenses within the aerosol delivery device as it mixes with air so as to form droplets or aerosol which is suitable for inhalation. These aerosol delivery devices may comprise a heating element that is configured to evaporate the solution held within the aerosol delivery device so as to form said aerosol. Alternatively, some aerosol delivery devices may utilise piezo atomizers to generate the aerosol.

Summary

According to the invention, there is provided an aerosol-forming member comprising a sheet of material configured to wick and to heat a solution, the sheet of material comprising a non-planar inner major surface having a capillary structure configured to emit vapour during use, and an outer major surface that is configured to emit less vapour than the inner major surface during use.

In one embodiment, the sheet of material is non-planar. The sheet of material may have a U-shaped, Ω-shaped or V-shaped cross-section. Alternatively, the sheet of material may have a partial polygonal cross-section.

In one embodiment, the capillary structure extends throughout the whole sheet of material, and the sheet of material is formed from a heatable material.

In one embodiment, the sheet of material comprises a single layer formed with the capillary structure, the sheet of material is made of a heatable material.

NJOY Exhibit 1002.1033

In another embodiment, the sheet of material comprises a first layer that is formed from a heatable material and a second layer comprising the capillary structure, wherein the first layer forms the outer major surface and the second layer forms the inner major surface.

In one embodiment, the inner and the outer major surfaces may be porous, and the pore size of the outer major surface is smaller than the pore size of the inner major surface such that the amount of vapour emitted from the outer major surface is less compared to the inner major surface when in use.

In one embodiment, the outer major surface is non-porous such that the amount of vapour emitted from the outer major surface is less compared to the inner major surface when in use.

In another embodiment, the aerosol-forming member further comprises a cover located against the outer major surface such that the amount of vapour emitted from said outer major surface is less compared to the inner major surface when in use.

In yet another embodiment, the outer major surface is vapour impermeable.

According to another aspect of the invention, there is provided an aerosol delivery device component comprising an air inlet and an air outlet fluidly communicating via an aerosol chamber defined by chamber walls, and an aerosol-forming member as described above which is at least partially located in the aerosol chamber. In another embodiment, the whole aerosol-forming member is located in the aerosol chamber.

In one embodiment, the aerosol-forming member is positioned within the aerosol chamber such that the outer and inner major surfaces are aligned with a direction of flow of air through the aerosol chamber.

In another embodiment, the chamber walls comprise a chamber side wall wherein at least a portion of the chamber side wall follows the contour of the outer major surface of the sheet of material.

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The sheet of material may comprise two opposing ends that are attached to one of the chamber walls such that the sheet of material and said chamber wall are forming a passage disposed in the aerosol chamber.

In one embodiment, the chamber walls may at least partially comprise a heat shield.

According to yet another aspect of the invention, there is provided an aerosol delivery device comprising an aerosol delivery device component as described above or an aerosol-forming member as described above.

In a broad aspect of the present invention, there is disclosed an aerosol-forming member comprising a non-planar sheet of material configured to wick and to heat a solution, the sheet of material comprising an inner major surface having a capillary structure configured to emit vapour during use, and an outer major surface configured to emit vapour during use, wherein the sheet of material is configured to provide an aerosol adjacent to the inner major surface with an aerosol density that is greater than that of an aerosol provided adjacent the outer major surface.

Brief Description of the Drawings

Embodiments of the invention will now be described, by way of example only, with reference to the accompanying drawings in which:

Figure 1 shows a cross-sectional side view of an aerosol delivery device comprising an aerosol-forming member according to an embodiment of the invention;
Figure 2 shows a cross-sectional side view of an aerosol delivery device component comprising an aerosol-forming member according to an embodiment of the invention;
Figure 3 shows a cross-sectional view of the aerosol delivery device along the line X-X of Figure 2;
Figure 4 shows a perspective view of the aerosol-forming member of Figure 1;
Figure 5 shows a cross-sectional view of an aerosol delivery device comprising an aerosol-forming member according to another embodiment of the invention;
Figure 6 shows a cross-sectional view of an aerosol delivery device comprising an aerosol-forming member according to yet another embodiment of the invention;
Figure 7 shows a cross-sectional view of an aerosol delivery device comprising an aerosol-forming member according to a further embodiment of the invention.

NJOY Exhibit 1002.1035

Figure 8 shows a cross-sectional side view of an aerosol delivery device according to another embodiment of the invention;

Figure 9 shows a cross-sectional view of the aerosol delivery device along the line X-X of figure 8, the aerosol delivery device comprises an aerosol-forming member according to an embodiment of the invention;

Figure 10 shows a cross-sectional view of an aerosol delivery device according to another embodiment of the invention;

Figure 11 shows a cross-sectional view of an aerosol delivery device according to yet another embodiment of the invention;

Figure 12 shows a cross-sectional view of an aerosol delivery device according to a further embodiment of the invention; and

Figure 13 shows a cross-sectional view of an aerosol delivery device according to another embodiment of the invention.

Detailed Description

Referring now to figure 1, an aerosol delivery device 1 according to the present invention is disclosed. The aerosol delivery device comprises an aerosol delivery device component 1', and an energy store component 1". The aerosol delivery device component 1' is removably attachable to the energy store component 1", however it is envisaged that in an alternative embodiment, the aerosol delivery device component 1' and the energy store component 1" are inseparable such that they form as a single component.

The aerosol delivery device component 1' may be disposable and the energy store component 1" may be reusable. However, it is envisaged that when the two components are formed as a single component then the aerosol delivery device may be disposable or reusable.

The energy source component 1" comprises a housing holding a battery 15 and an electric circuitry 31 as shown in figure 1. It should be appreciated that an alternative power source to a battery may be used.

The aerosol delivery device component 1' is shown in greater detail in Figure 2 and it comprises a housing 2 formed with a mouthpiece 3 at one end and an attachment end formed with a connecting passage 35 at the opposite end. The connecting passage 35

NJOY Exhibit 1002.1036

electrically connects components held in the aerosol delivery device component 1' with the battery 15 disposed in the energy store component 1" via the electric circuitry 31.

The housing 2 is further formed with an air passage extending through the aerosol delivery device component 1'. The air passage comprises an air inlet 5, plenum chamber 4, chamber inlet 33, aerosol chamber 6, chamber outlet 28 and outlet aperture 7. In use air is drawn in through the air inlet 5, into the plenum chamber 4, then to the chamber inlet 33 which supplies the air into the aerosol chamber 6, the air then exits the aerosol chamber 6 via chamber outlet 28 and leaves the aerosol delivery device component 1' via the outlet aperture 7 formed in the mouthpiece 3.

Figure 3 illustrates a cross-sectional view of the aerosol delivery device component 1' along line X-X shown in Figure 2. As can be seen in Figure 3, the aerosol chamber 6 is located in the centre of the housing and is defined by chamber walls. The chamber walls comprise two partitioning walls 8, a chamber side wall 32 and a support plate 20 as explained in more detail below. An aerosol-forming member 10A according to an embodiment of the invention is located in the aerosol chamber 6. On opposite sides of each partitioning walls 8 relative to the aerosol chamber 6, are two solution reservoirs 9 configured to contain a solution.

According to one embodiment of the invention, the aerosol-forming member 10A may comprise a sheet of material having a single layer that is configured to wick and heat a solution. Thus, the sheet of material can absorb solution from the solution reservoirs 9 and thereafter heat it up so that it evaporates and forms a vapour. The sheet of material is sheet-like in nature and has a rectangular shape. However, it should be understood that the sheet of material may be of any shape, for example, circular, oval or square. The sheet of material comprises inner and outer major surfaces 23A, 23B. The sheet of material may comprise an open-pored structure, foam structure, mesh structure or interconnecting network of pores, all of which form a capillary structure. The capillary structure enables the aerosol-forming member 10A to wick or absorb a solution. The *term "capillary structure"* used herein is to be understood as a structure through which liquid or a solution can travel as a result of capillary action.

In one embodiment of the aerosol-forming member 10A, the sheet of material may be made of a porous granular, fibrous or flocculent sintered metal(s) so as to form said capillary structure. In another embodiment, the sheet of material comprises an open-

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pored metallic foam or a group of layers of wire mesh or calendered wire mesh which also form a capillary structures. The sheet of material may be made of stainless steel. It is envisaged that a thin support layer (not shown) may be sintered onto one or both of the inner and outer major surfaces 23A, 23B. Such a support layer may be formed from a wire mesh made of stainless steel.

The capillary structure is exposed at least on the inner major surface 23A of the aerosol-forming member 10A. For example, the aerosol-forming member 10A may be formed with a capillary structure that extends throughout the whole aerosol-forming member 10A such that it is exposed on both inner and outer major surfaces 23A, 23B of the sheet of material. In another embodiment, the aerosol-forming member 10A is configured such that the capillary structure does not extend throughout the whole aerosol-forming member 10A. For example, the capillary structure may only be exposed on the inner major surface 23A or a section of the inner major surface 23A.

The outer major surface 23B of the sheet of material is configured to emit less vapour than the inner major surface 23A during use. This may be achieved by sealing the outer major surface 23B, for example, by locating a cover 12 against the outer major surface. The cover 12 may comprise of a thin layer made of a dielectric/non-conductive material. Alternatively, the outer major surface 23B itself may be modified appropriately, for example, by making it non-porous or by configuring it such that it has a smaller pore size than the inner major surface 23A.

The material from which the sheet of material is formed is heatable in that it comprises sufficient electrical resistivity so that when current is passed through, the sheet of material heats up to a temperature sufficient to cause the solution held in the capillary structure to evaporate or vaporise. In the embodiments as described above wherein the capillary structure extends throughout the whole sheet of material, the sheet of material can be considered to comprise a heating element formed with a capillary structure such that the heating element and the capillary structure are integrated and form a single entity or unit, and the sheet of material can be described as comprising a heating element and a wick that are arranged in the same surface.

In an alternative un-illustrated embodiment, the sheet of material may comprise a plurality of layers, for example it may comprise any combination of the aforementioned structures and materials, e.g. by providing multiple layers of different structures/

NJOY Exhibit 1002.1038

materials, the layers being joined together, e.g. by sintering. One such alternative un-illustrated embodiment will now be described in more detail.

The aerosol-forming member comprises a sheet of material that is sheet-like in nature and formed from a plurality of layers. The sheet of material comprises a non-porous heatable first layer acting as a heating element and a second layer providing the capillary structure. The first layer is formed from a material that is configured to be heated up and may comprise a metal foil, it may be made of stainless steel or nickel chromium alloys. The second layer is formed with an open-pored structure, foam structure, mesh structure or interconnecting network of pores, all of which form a capillary structure. The capillary structure enables the aerosol-forming member 10A to wick or absorb a solution. This second layer may comprise a fibre web or fabric made of glass fibres, glass fibre yarns or any other non-conductive and inert, thus relatively non-heatable fibre materials. In this embodiment the sheet of material can be described as comprising a heating element and a wick that are arranged in parallel surfaces and are connected to each other. The second layer acts as a wick.

The first layer (heating element) and the second layer (wick having a capillary structure) are laid on top of each other so as to form a sheet of material having two opposing inner and outer major surfaces, wherein the capillary structure is exposed on the inner major surface. The layers may be connected to each other by mechanical or chemical means or by a heat treatment. In one embodiment, the layers are sintered to one another.

In an alternative embodiment both the first and the second layers may be made of a heatable material. For instance, the second layer may be made of a homogenous, granular, fibrous or flocculent sintered metal(s) or comprise an open-pored metallic foam or a wire mesh structure all of which form said capillary structure. In this embodiment the sheet of material can be described as comprising a heating element and a wick that are arranged in the same surface and in parallel surfaces.

In another embodiment, the first and second layers may be made of porous heatable material(s), such that both layers are configured to heat and wick a solution. In this embodiment the sheet of material can be described as comprising a heating element and a wick that are arranged in the same surface and in parallel surfaces.

NJOY Exhibit 1002.1039

In a further alternative un-illustrated embodiment, the sheet of material comprises a porous first layer having small sized pores and a second porous layer having larger sized pores than the first layer, thus both layers are formed with a capillary structure however the second layer forming the inner major surface can emit more vapour than the first layer forming the outer major surface. At least one of the two layers is formed from a heatable material as described above. Both layers may be formed with a structure and material as discussed above in relation to the capillary structure.

In yet an alternative un-illustrated embodiment, the sheet of material comprises a third layer that is similar to the second layer in that it comprises a capillary structure. The second and the third layers sandwich the first layer such that the capillary structure is exposed on both the inner and the outer major surfaces of the sheet of material.

The aerosol-forming member comprising a sheet of material formed from a plurality of layers as described according to any of the embodiments above may further comprise a cover closing or sealing the outer major surface so as to decrease the amount of vapour emitted from said outer major surface.

The sheet of material according to any of the above described embodiments has thickness or depth that falls within the range of 20-500μm. Alternatively, the thickness falls within the range of 50 to 200μm. The thickness or depth should be understood as meaning the distance between the inner and outer major surfaces 23A, 23B of the sheet of material.

Referring again to Figure 3 as well as Figure 4, the sheet of material is non-planar and has opposing short ends 13A, 13B and opposing longitudinal ends 13C, 13D. To manufacture the aerosol-forming element 10A the sheet of material is bent so that it has a curve-shape or a U-shape so as to form a channel 24, as described in more detail hereinafter. The short ends 13A, 13B of the aerosol-forming member 10A are flat and are integrally formed at approximately 90 degrees with respective parallel straight sections 17A, 17B of the aerosol-forming member via respective corner portions 18A, 18B. The ends of the straight sections 17A, 17B that are distal to the corner portions 18A, 18B are integrally formed with opposing ends of a semi-circular curved section 19 so that the aerosol-forming member 10A has an overall U-shaped cross-section, as can be seen in Figures 3 and 4. Thus, the aerosol-forming member 10A comprises sections that substantially face or oppose one another, i.e. they do not lie in the same plane.

Advantageously, the curved or non-planar configuration increases the efficiency of the aerosol-forming member 10A, and the aerosol delivery device 1, can be made more compact. The efficiency of the aerosol-forming member 10A is defined as the ratio of aerosol particulate mass delivered to the user to vapour mass emitted from the aerosol-forming member 10A.

The flat short ends 13A, 13B of the aerosol-forming member 10A are mounted to the support plate 20 as shown in figure 3 so that a major surface 20A of the support plate 20 faces the inner curvature of the curved section 19. Thus, the aerosol-forming member 10A can be considered as bulging away from the support plate 20. As a result of this arrangement, the aerosol-forming member 10A is suspended in the aerosol chamber 6. It should be understood that the support plate 20 may be integral with the housing 2 or a discrete component. In an alternative embodiment, the support plate is omitted and the aerosol-forming member 10A is attached to the housing 2 such that the aerosol forming member 10A bulges away from the housing 2. In one embodiment the support plate 20 is a printed circuit board (PCB) and the aerosol-forming member 10A may be electrically connected to the PCB.

Moreover the aerosol-forming member 10A is disposed in the aerosol delivery device 1 such that the outer and inner major surfaces 23A, 23B are parallel or substantially aligned with a direction of flow of air through the aerosol chamber 6.

Furthermore, each short end 13A, 13B is securely located in gaps formed between the support plate 20 and the partitioning walls 8. The gaps have a width sufficient so as to provide a capillary effect, thus these gaps are referred to as first and second capillary gaps 21a, 21b. Each partitioning wall 8 comprises a tongue 8a, 8b that extend into respective solution reservoir 9 such that each capillary gap 21a, 21b is in fluid communication with the solution reservoirs 9. The three-dimensional geometry of the capillary gaps 21a, 21b help to surely feed solution from the solution reservoirs 9 to the flat short ends 13A, 13B of the aerosol-forming member 10A independent of the aerosol delivery device position.

The aerosol-forming member 10A is disposed in the aerosol chamber 6, with the chamber side wall 32 following or corresponding to the curvature of the aerosol-forming member 10A so that a heat insulating air gap 22 is formed therebetween. The

chamber side wall 32 may be partially formed from a heat shield. The heat shield is formed from a heat resistant material like glass or ceramic and protects the housing 2 which is made of plastic from high temperatures. Alternatively, the housing 2 itself may be moulded from a heat resistant plastic.

The inner major surface 23A of the aerosol-forming member 10A faces towards the major surface 20A of the support plate 20. Thus, the capillary structure is exposed or faces towards the major surface 20A of the support plate 20. Furthermore, the inner major surface 23A of the aerosol-forming member 10A form a channel 24 for directing or guiding the flow of aerosol formed from the evaporating vapour through the aerosol delivery device component 1'. This channel 24 is further enclosed so as to form a passage by the aerosol-forming member 10A being mounted on the support plate 20. The term "channel" used herein is to be understood as being formed from a non-planar surface or a plurality of surfaces that that lie in different planes.

The outer major surface 23B of the aerosol-forming member 10A faces towards the chamber side wall 32 and partitioning walls 8 and is configured to be vapour impermeable or vapour restrictive such that less amount of vapour is emitted from the outer major surface 23B compared to the inner major surface 23A. In the embodiment, where the aerosol-forming member 10A comprises a sheet of material having capillary structure exposed on both its inner and the outer major surface 23A, 23B, a cover 12 is positioned on the outer major surface 23B such that vapour is restricted from being emitted from the aerosol-forming member via the outer major surface 23B as explained above and illustrated in figure 3. Alternatively, the outer major surface 23B itself may be modified appropriately, e.g. by making the surface non-porous or by providing a pore size that is smaller than the pore size on the inner major surface 23A.

In alternative embodiments where the aerosol-forming member comprises a sheet of material comprising a non-porous heatable first layer, for instance a metal foil, and where the outer major surface is formed by said non-porous heatable layer, no cover is required as the heatable layer is non-porous and does not generally enable vapour to be emitted therethrough.

It should be understood that the above described embodiments prevent or reduce the amount of vapour emitted from the outer major surface of the aerosol-forming member 10A. Advantageously, these configurations reduce the amount of vapour and aerosol

condensing on the chamber walls and/or partitioning walls 8. They also assist the emitted vapour to be directed towards the centre of the channel 24 increasing vapour density and also guiding the aerosol formed from the vapour through the channel 24.

When the aerosol delivery device component 1' is attached to the energy store component 1" as shown in figure 1, the short ends 13A, 13B of the aerosol-forming member 10A are electrically connected via the electric circuitry 31 to the positive and negative terminals of the battery 15 respectively. When current is drawn from the battery 15 and through the sheet of material, the resistance of the sheet of material causes it to increase in temperature so that solution held in the pores or voids of the capillary structure evaporates. In the embodiment wherein the sheet of material comprises a non-porous heatable first layer, for instance a metal foil, and where the outer major surface is formed by said first layer, the resistance of said first layer causes the first layer, acting as a heating element, to increase in temperature. The first layer in turn heats up the adjacent second and/or third layers including the solution held in the pores or voids of the capillary structure of said second and/or third layers. In an alternative embodiment, the longitudinal ends 13C, 13D are connected to the terminals of the battery 15. In another embodiment, the current drawn from the battery 15, and the temperature level of the aerosol-forming member 10A may be controlled by a switching circuit, e.g. a Power-MOSFET switching circuit, included in the electrical circuitry 31.

Operation of the aerosol-forming member 10A will now be described with reference to figures 1 to 4. In use, the user may manually activate the aerosol delivery device 1 or the aerosol delivery device may be activated automatically as the user starts puffing on the aerosol delivery device. This may be achieved by a pressure sensor connected to the electric circuitry 31 via the connecting passage 35. The pressure sensor may be located in the plenum chamber 4. When the aerosol delivery device is activated, the battery 15 provides a potential difference between the opposing short ends 13A, 13B or alternatively between the opposing longitudinal ends 13C, 13D of the aerosol-forming member 10A . This causes current to flow through the sheet of material such that the aerosol-forming member 10A increases in temperature. This increase in temperature causes the solution held in the capillary structure of the aerosol-forming member 10A to mainly evaporate from the inner major surface 23A so as to form a vapour. The evaporated solution or vapour mixes with air drawn by the user into the aerosol chamber 6, via air inlet 5, plenum chamber 4 and chamber inlet 33. The evaporated

NJOY Exhibit 1002.1043

solution mixes with the air in the channel 24 formed by the inner major surface 23A of the aerosol-forming member 10A. As the vapour mixes with the air it condenses and forms droplets such that an inhalable aerosol is produced.

The cover 12 provided on the major outer surface 23B of the sheet of material as shown in figure 3 prevents or reduces the amount of solution evaporating from the major outer surface 23B of the sheet of material, thus minimising unwanted condensation forming on the chamber walls. Similarly, in the alternative embodiments wherein the outer major surface 23B is not formed with a capillary structure, i.e. it is non-porous, solution is prevented or reduced from evaporating from said outer major surface 23B. Furthermore, by preventing or reducing the amount of solution from evaporating from the major outer surface 23B of the aerosol-forming member 10A and by the curvature of the inner major surface 23A directing the vapour towards the centre of the channel 24, the vapour density in the channel 24 is increased, which means that more aerosol may be generated and inhaled by the user. Thus, the efficiency of the aerosol-forming member 10A is improved compared to planar aerosol-forming members known from the prior art.

After the aerosol-forming member 10A has been activated and aerosol has formed in the channel 24, the aerosol is drawn through the channel 24 as the user continues to inhale. The curvature of the inner major surface 23A of the aerosol-forming member 10A guides or directs the aerosol through the aerosol chamber 6. The aerosol then exits the aerosol chamber 6 through a chamber outlet 28. The aerosol then passes through an optional aerosol refining member 34 provided in the housing 2, causing the aerosol to be cooled. The refining member 34 may also contain flavouring agents like menthol that are released into the flow of aerosol, before entering the user's mouth via the outlet 7 provided in the mouthpiece 3. Meanwhile, the solution that has evaporated from the capillary structure of the aerosol-forming member 10A is replaced by fresh solution from the solution reservoirs 9 due to the capillary effect of the capillary gaps 21a, 21b and the capillary structure of the aerosol-forming member 10A as described above and fresh air enters the channel 24 via the air inlet 5, chamber plenum 4 and chamber inlet 33.

In one embodiment, a pressure drop element such as a flow resistor may be positioned in the plenum chamber 4 so that the flow of air into the aerosol chamber 6 can be controlled. The flow resistor may consist of a simple aperture or hole and may be

identical to the air inlet 5 in the housing 2. Alternatively, the flow resistor may consist of a porous body similar to a cigarette filter providing the flow resistance of a conventional cigarette (not shown).

Conventional aerosol delivery devices may comprise a sponge to collect condensate that is not inhaled by the user so as to prevent condensation from accumulating on the internal walls and components. As the present invention minimises the amount of vapour condensing onto internal walls and components, a sponge is not required, which simplifies the manufacturing process and reduces costs. Furthermore, by minimising or preventing the vapour from condensing onto the housing 2, the transfer of condensation heat to the housing 2 may be reduced, making the aerosol delivery device 1 more comfortable for the user to hold.

Referring now to figure 5, an aerosol-forming member 10B according to yet another embodiment of the invention is shown. The aerosol forming member 10B is similar to the embodiment described with reference to figures 1 to 4, with like features retaining the same reference numerals. The straight sections 17A, 17B of the aerosol-forming member 10A are omitted and instead the corner portions 18A, 18B extend towards each other such that the cross-section of the aerosol-forming member has a partial circular, sack-like shape or Ω-shape (omega shape). In this embodiment, the aerosol-forming member 10B is curved or bent such that it forms an almost circular channel 24. Thus, the aerosol-forming member 10B comprises sections that substantially face or oppose one another, i.e. they do not lie in the same plane. Therefore, vapour is emitted towards a centre of the channel 24 such that less vapour and/or aerosol gets in contact with the support plate 20. The vapour is almost completely enclosed by the inner major surface 23A. Thus, the efficiency of the aerosol-forming member 10B is improved compared to a planar aerosol-forming member. Moreover, it should be understood that this embodiment has the same advantages as those described with reference to figure 3. Furthermore, this embodiment may comprise any of the alternative configurations as described with reference to figures 1 to 4.

Referring now to figure 6, an aerosol-forming member 10C according to another embodiment of the invention is shown. The aerosol-forming member 10C is similar to the embodiment described with reference to figures 1 to 4, with like features retaining the same reference numerals. However, the curved section 19 of the aerosol-forming member 10A is omitted and instead the straight sections 17A, 17B extend from the

respective corner portions 18A, 18B at an oblique angle and meet each other such that the aerosol-forming member 10C has a V-shaped cross section. In one embodiment, the straight sections 17A, 17B may extend from the respective corner portions 18A, 18B at 45-80 degrees. A channel 24 is formed between the two straight sections 17A, 17B, in the 'trough' of the V-shape. Thus, the aerosol-forming member 10C comprises sections that substantially face or oppose one another, i.e. they do not lie in the same plane. As with the previously described embodiments, the surface area of the aerosol-forming member 10C is increased in comparison to a flat aerosol-forming member and therefore the aerosol delivery device can be made more compact. Moreover, it should be understood that this embodiment has the same advantages as those described with reference to figures 1 to 4. Furthermore, this embodiment may comprise any of the alternative configurations as described with reference to figures 1 and 4.

Referring now to figure 7, an aerosol-forming member 10D according to a yet another embodiment of the invention is shown. The aerosol-forming member 10D is similar to the embodiment with reference to figures 1 to 4, with like features retaining the same reference numerals. However, the curved section 19 of the aerosol-forming member 10A is omitted and instead the straight sections 17A, 17B are connected to a straight section 17C that extends at a right angle relative to the straight sections 17A, 17B so as to form a partial quadrilateral or tetragon. Alternatively a plurality of straight sections may be provided that extend at an angle relative to the straight sections 17A, 17B so as to form a partial polygon. All sections 17A, 17B, 17C are integrally formed. A channel 24 is formed in the space between the straight sections 17A, 17B, and the straight connecting section 17C. Thus, the aerosol-forming member 10D comprises sections that substantially face or oppose one another, i.e. they do not lie in the same plane. Moreover, it should be understood that this embodiment has the same advantages as those described with reference to figures 1 to 4. Furthermore, this embodiment may comprise any of the alternative configurations as described with reference to figures 1 and 4.

Although in the above described embodiments the short ends 13A, 13B, straight sections 17A, 17B or straight angled sections 17A, 17B (V-shape) , corner portions 18A, 18B, curved section 19, straight connecting section 17C are integrally formed, in an alternative embodiment (not shown) they may be separate components that are bonded together.

NJOY Exhibit 1002.1046

It should be understood that the aerosol-forming member according to the present invention is not limited to being used with the aerosol delivery device described and shown herein. The aerosol-forming member according to the present invention can be used in any appropriate aerosol delivery device.

For example, an alternative aerosol delivery device is shown in figure 8 and the aerosol-forming member according to the present invention can be implemented in such a device.

The aerosol delivery device 101 shown in figure 8, comprises a housing 102 formed with a mouthpiece 103. The housing 102 is further formed with an air passage extending through the aerosol delivery device 101. The air passage comprises an air inlet 105, an air channel 104a, a chamber inlet 104b, an aerosol chamber 106, a chamber outlet 128 and an outlet aperture 107.

A cross-section of the aerosol delivery device 101 shown in figure 8 along line X-X is shown in figure 9. The aerosol chamber 106 is defined by chamber walls which comprises a partitioning wall 108 and a support plate 120. On an opposite side of the partitioning wall 108 relative to the aerosol chamber is a solution reservoir 109.

An aerosol-forming member 110A is located in the aerosol chamber 106. The aerosol forming member 110A comprises a sheet of material having opposing inner and outer major surfaces 123A, 123B. The sheet of material may further comprise any combination of features described above with reference to figures 1 to 7. The aerosol-forming member 110A may also comprise a cover 112 to prevent or reduce vapour from emitting from the outer major surface 123B.

The aerosol-forming member 110A is located in the aerosol chamber 106 in a similar manner as the embodiments described with reference to figures 1 to 7, and so a detailed description will be omitted. However, it should be appreciated that the aerosol-forming member 110A comprises flat short ends 113A, 113B that are mounted to the support plate 120 as shown in figure 9 so that a major surface 120A of the support plate 120 faces a curved section of the inner major surface 123A. Thus, the aerosol-forming member 110A can be considered as bulging away from the support plate 120. As a result of this arrangement, the aerosol-forming member 110A is

suspended in the aerosol chamber 106. In an alternative embodiment, the support plate 120 is omitted and the aerosol-forming member 110A is attached to the housing 102 such that the aerosol forming member 110A bulges away from the housing 102.

Furthermore, the inner major surface 123A of the aerosol-forming member 110A forms a channel 124 for directing or guiding the flow of aerosol formed from the evaporating vapour through the aerosol delivery device component 1'. This channel 124 is further enclosed so as to form a passage by the aerosol-forming member 110A being mounted on the support plate 120.

The aerosol-forming member 110A is disposed in the aerosol chamber 106, with partitioning wall 108 following or corresponding to the curvature of the aerosol-forming member 110A so that a heat insulating air gap 122 is formed therebetween. The partitioning wall 108 may be partially formed from a heat shield as described above. Alternatively, the housing 2 itself may be moulded from a heat resistant plastic.

Furthermore, each short end 113A, 113B is securely located in gaps formed between the support plate 20 and the partitioning wall 8. The gaps have a width sufficient so as to provide a capillary effect, thus these gaps are referred to as first and second capillary gaps 121a, 121b.

Two supply apertures 125, 125A are formed in the partitioning wall 108 such that the solution reservoir 109 is in fluid communication with the first and second capillary gap 121a, 121b . The two supply apertures 125, 125A may be of such a width so as to provide a capillary effect assisting solution towards the first and second capillary gaps 121a 121b. It should be understood that the aerosol delivery device 101 may comprise a single supply aperture or it may comprise more than two supply apertures to control the flow of solution to the capillary gaps 121a, 121b.

Referring now to Figure 10, an alternative embodiment of an aerosol delivery device 201 is shown, with like features retaining the same reference numerals. In this embodiment, two parallel capillary plates 126A, 126B, 126C, 126D are located in each supply aperture 125, 125A. These extend out of each supply aperture 125, 125A and into the solution reservoir 109. Each pair of parallel capillary plates 126A, 126B, 126C, 126D are spaced from one another so as to form a capillary path 127, 127A. This arrangement causes each capillary path 127, 127A to be in fluid communication with the capillary

NJOY Exhibit 1002.1048

structure of the aerosol-forming member 110A via the first and second capillary gap 121a, 121b respectively. The capillary plates 126A, 126B, 126C, 126D act as an extension of the capillary gaps 121a, 121b and can assist in supplying the aerosol-forming member 110A with solution. Therefore, in use, a solution held in the solution reservoir 109 moves by capillary action into each capillary path 127, 127A and is supplied, via the first and second capillary gaps 121a, 121b to the capillary structure at the short ends 113A, 113B of the aerosol-forming member 110A. The capillary structure provides a capillary effect similar to a wick, thus the capillary structure enables the aerosol-forming member 110A to absorb or suck up the solution provided to the first and second capillary gaps 121a, 121b such that the solution is distributed throughout the whole capillary structure of the aerosol-forming member 110A. It should be understood that only one or some of the supply apertures 125, 125A may be provided with capillary plates. It is also envisaged that the capillary plates may be substituted for a tube.

Referring now to figure 11, an aerosol-forming member 110B similar to that described with reference to figure 5 is located in the aerosol delivery device 201 described with reference to figure 10 with like features retaining the same reference numerals. The cross-section of the aerosol-forming member 110B has a partial circular, sack-like shape or Ω-shaped (omega shaped). In this embodiment, the aerosol-forming member 110B is curved or bent such that it forms a channel 124. Thus, the aerosol-forming member 110B comprises sections that substantially face or oppose one another, i.e. they do not lie in the same plane. Therefore, vapour is emitted towards a centre of the channel 124 such that less vapour and/or aerosol gets in contact with the support plate 120. Furthermore, such a 'sack' or omega shaped cross-section increases the surface area of the aerosol-forming member 10B within the aerosol chamber 6, increasing the efficiency of the aerosol-forming member 10B, and thus the aerosol delivery device 201 can be made more compact. Moreover, it should be understood that this embodiment has the same advantages as those described with reference to the other figures. Furthermore, this embodiment may comprise any of the alternative configurations as described with reference to the other figures. For example, the aerosol-forming member 110B is shown in figure 11 to comprise an optional cover 112.

Referring now to figure 12, an aerosol-forming member 110C similar to that described with reference to figure 6 is located in the aerosol delivery device 201 described with reference to figure 9 with like features retaining the same reference numerals. The cross-section of the aerosol-forming member 110C has a V-shaped cross section. The

aerosol-forming member 110C comprises sections that substantially face or oppose one another, i.e. they do not lie in the same plane. A channel 124 is formed in the 'trough' of the V-shape. As with the previously described embodiments, the surface area of the aerosol-forming member 10C is increased in comparison to a flat aerosol-forming member and therefore the inhaler can be made more compact. Moreover, it should be understood that this embodiment has the same advantages as those described with reference to the other figures. Furthermore, this embodiment may comprise any of the alternative configurations as described with reference to the other figures. For example, the aerosol-forming member 110C is shown in figure 12 to comprise an optional cover 112.

Referring now to figure 13, an aerosol-forming member 110D according to a yet another embodiment of the invention is shown. The aerosol delivery device is similar to the embodiment described with reference to figure 10, with like features retaining the same reference numerals. The aerosol-forming member 110D has cross-section that forms a partial polygon having a channel 124. Thus, the aerosol-forming member 110D comprises sections that substantially face or oppose one another, i.e. they do not lie in the same plane. Moreover, it should be understood that this embodiment has the same advantages as those described with reference to the other figures. Furthermore, this embodiment may comprise any of the alternative configurations as described with reference to the other figures. For example, the aerosol-forming member 110D is shown in figure 13 to comprise an optional cover 112.

Although the aerosol-forming members 110B, 110C, 110D described with reference to figures 11 to 13 are shown to be positioned in aerosol delivery devices 201 comprising capillary plates extending into the solution reservoir 109, it should be understood that these capillary plates are optional. Furthermore, it should be understood that the aerosol-forming members 110A, 110B, 110C, 110D described with reference to figures 9 to 13 can be located in any suitable aerosol delivery device.

The above described embodiments of the aerosol-forming member of the aerosol delivery device 1 are described for use with a solution. It should be understood that this solution may comprise certain constituents or substances that may have a stimulatory or therapeutic effect on the user. These constituents or substances may be of any kind that is suitable for being delivered via inhalation. The solution in which the constituents or substances are held or dissolved may primarily consist of water, ethanol, glycerol,

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propylene glycol or mixtures of the aforementioned solvents. By means of a sufficiently high degree of dilution in an easily volatile solvent, such as ethanol and/or water, even substances which are otherwise difficult to evaporate can evaporate in a substantially residue-free manner, and thermal decomposition of the liquid material can be avoided or significantly reduced.

It should be recognised that other shapes of aerosol forming-member are also intended to fall within the scope of the invention, provided that the cross-section of the aerosol-forming member follows a non-planar path and sections of the aerosol-forming member substantially face one another so as to form a channel that can guide or direct the flow of vapour and/or aerosol. The term "substantially" face or oppose one another is to be understood as sections that are parallel or at an angle to each other, and that do not lie in the same plane.

It should be appreciated that according to a broad aspect of the invention, the aerosol-forming member provided comprises a non-planar sheet of material configured to wick and to heat a solution. The sheet of material comprises an inner major surface having a capillary structure configured to emit vapour during use, and an outer major surface configured to emit vapour during use. The sheet of material is configured to provide an aerosol adjacent to the inner major surface with an aerosol density that is greater than that of an aerosol provided adjacent the outer major surface. The aerosol density should be understood to as aerosol particles in weight per volume of gas.

In order to address various issues and advance the art, the entirety of this disclosure shows by way of illustration various embodiments in which the claimed invention(s) may be practiced and provide for superior aerosol-forming member, aerosol delivery device component and an aerosol delivery device. The advantages and features of the disclosure are of a representative sample of embodiments only, and are not exhaustive and/or exclusive. They are presented only to assist in understanding and teach the claimed features. It is to be understood that advantages, embodiments, examples, functions, features, structures, and/or other aspects of the disclosure are not to be considered limitations on the disclosure as defined by the claims or limitations on equivalents to the claims, and that other embodiments may be utilised and modifications may be made without departing from the scope and/or spirit of the disclosure. Various embodiments may suitably comprise, consist of, or consist essentially of, various combinations of the disclosed elements, components, features,

NJOY Exhibit 1002.1051

parts, steps, means, etc. In addition, the disclosure includes other inventions not presently claimed, but which may be claimed in future.

NJOY Exhibit 1002.1052

Claims

1. An aerosol-forming member comprising a sheet of material configured to wick and to heat a solution, the sheet of material comprising a non-planar inner major surface having a capillary structure configured to emit vapour during use, and an outer major surface that is configured to emit less vapour than the inner major surface during use.

2. An aerosol-forming member according to claim 1, wherein the sheet of material is non-planar.

3. An aerosol-forming member according to any of the preceding claim, wherein the sheet of material has a U-shaped, Ω-shaped, V-shaped or partial polygonal cross-section.

4. An aerosol-forming member according to any preceding claims, wherein the capillary structure extends throughout the whole sheet of material, and the sheet of material is formed from a heatable material.

5. An aerosol-forming member according to any of claims 1 to 3, wherein the sheet of material comprises a first layer that is formed from a heatable material and a second layer comprising the capillary structure, and the first layer forms the outer major surface and the second layer forms the inner major surface.

6. An aerosol-forming member according to any preceding claim, wherein the inner and outer major surfaces are porous, and the pore size of the outer major surface is smaller than the pore size of the inner major surface major such that the amount of vapour emitted from the outer major surface is less compared to the inner major surface when in use.

7. An aerosol-forming member according to any of claims 1 to 5, wherein the outer major surface is non-porous such that the amount of vapour emitted from the outer major surface is less compared to the inner major surface when in use.

8. An aerosol-forming member according to any of claims 1 to 6, further comprising a cover located against the outer major surface such that the amount of

vapour emitted from said outer major surface is less compared to the inner major surface when in use.

9. An aerosol-forming member according to any preceding claims, wherein the outer major surface is vapour impermeable.

10. An aerosol delivery device component comprising an air inlet and an air outlet fluidly communicating via an aerosol chamber defined by chamber walls, and an aerosol-forming member according to any of claims 1 to 9 which is at least partially located in the aerosol chamber.

11. An aerosol delivery device component according to claim 10, wherein the aerosol-forming member is positioned within the aerosol chamber such that the outer and inner major surfaces are aligned with a direction of flow of air through the aerosol chamber.

12. An aerosol delivery device component according to claim 10 or 11, wherein the chamber walls comprise a chamber side wall, and at least a portion of the chamber side wall follows the contour of the outer major surface of the sheet of material.

13. An aerosol delivery device component according to any of claims 10 to 12, wherein the sheet of material comprises two opposing ends that are attached to one of the chamber walls such that the sheet of material and said chamber wall form a passage disposed in the aerosol chamber.

14. An aerosol delivery device component according to any of claims 10 to 13, wherein the chamber walls at least partially comprise a heat shield.

15. An aerosol delivery device comprising an aerosol delivery device component as claimed in claims 10 to 14 or an aerosol-forming member as claimed in claims 1 to 9.

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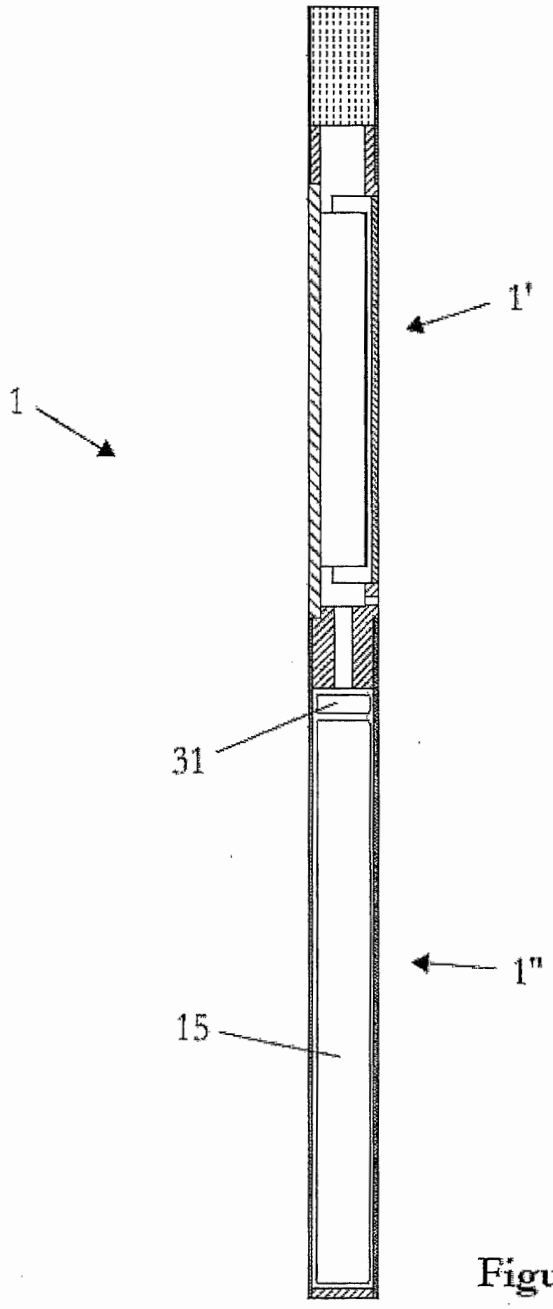


Figure 1

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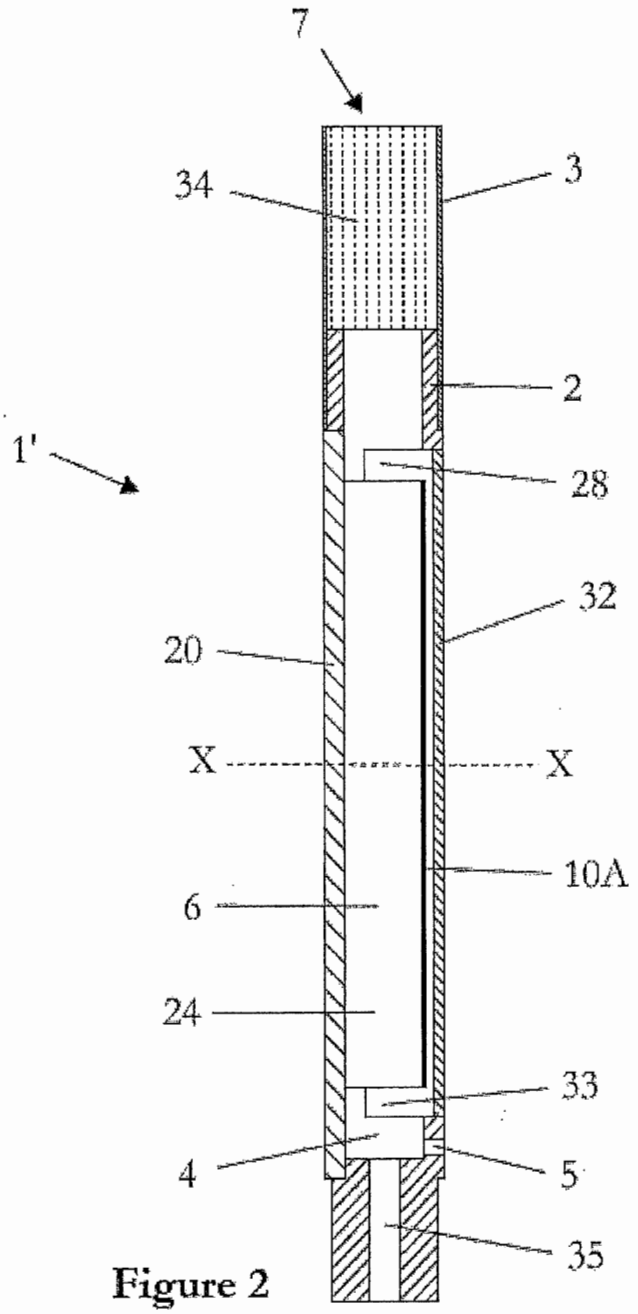


Figure 2

NJOY Exhibit 1002.1056

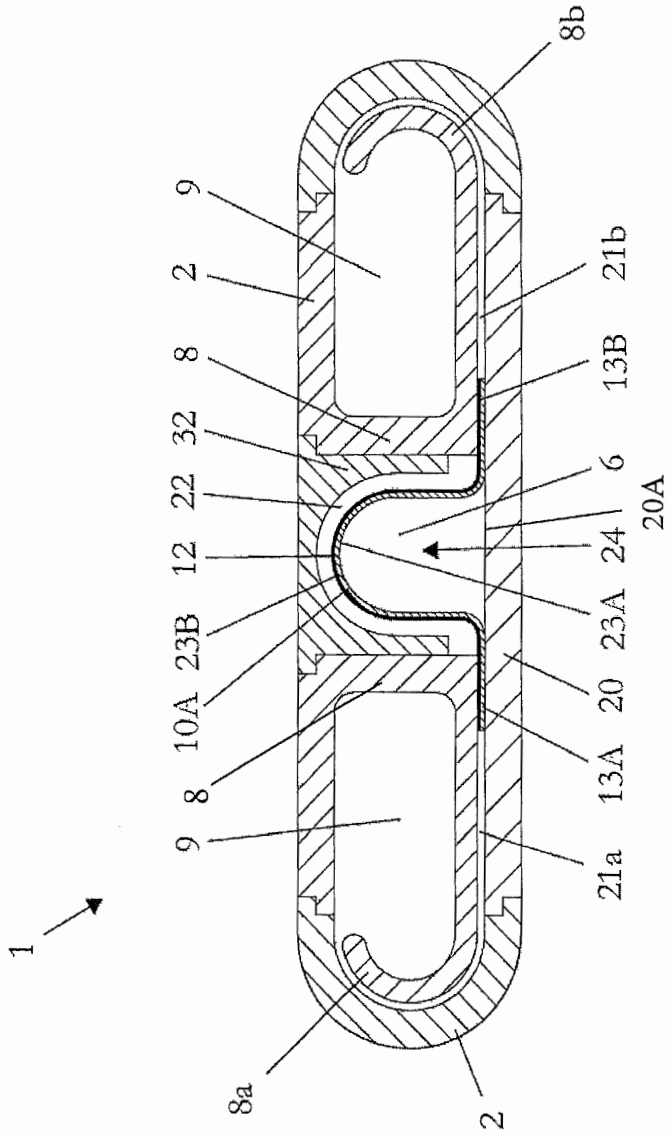


Figure 3

NJOY Exhibit 1002.1057

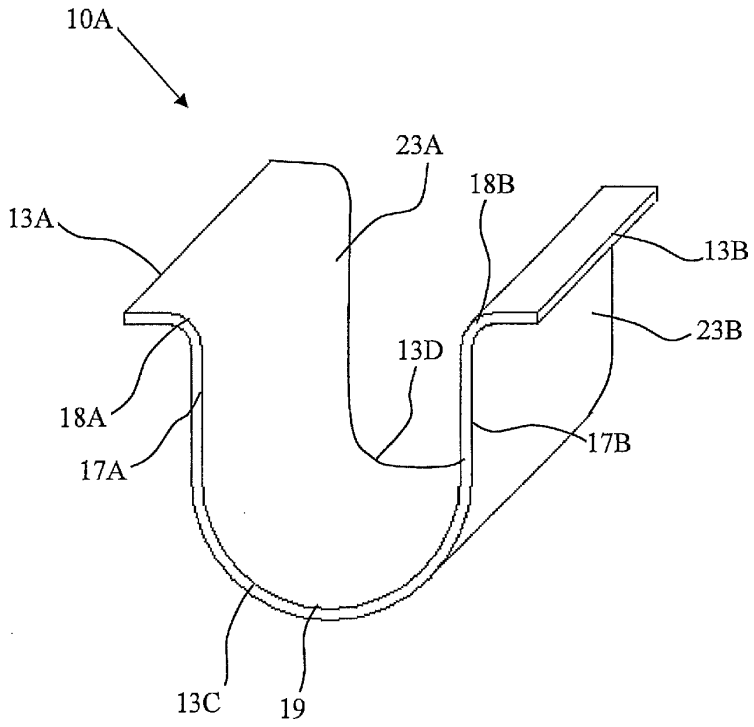


Figure 4

NJOY Exhibit 1002.1058

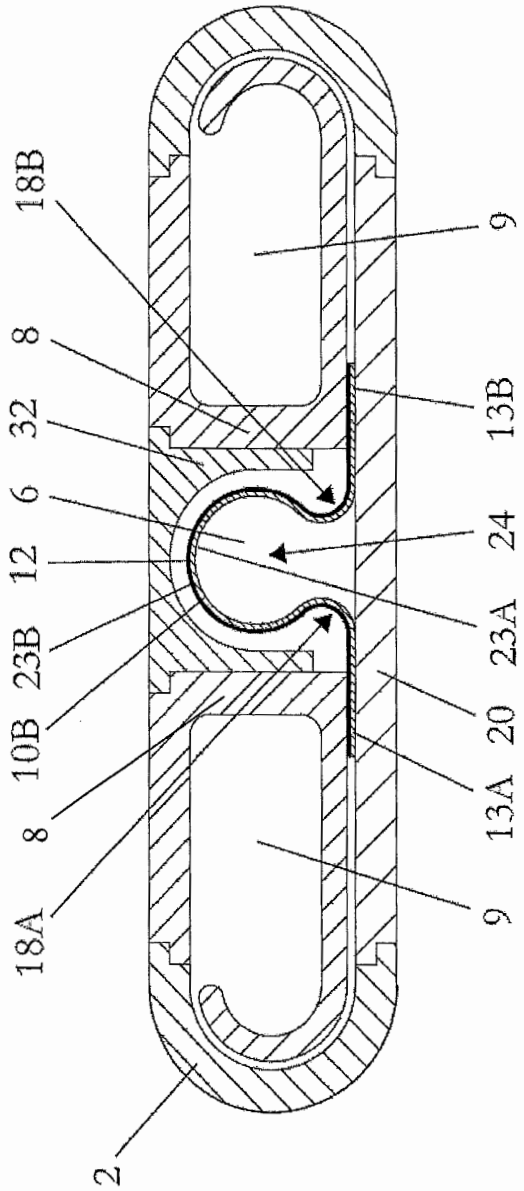


Figure 5

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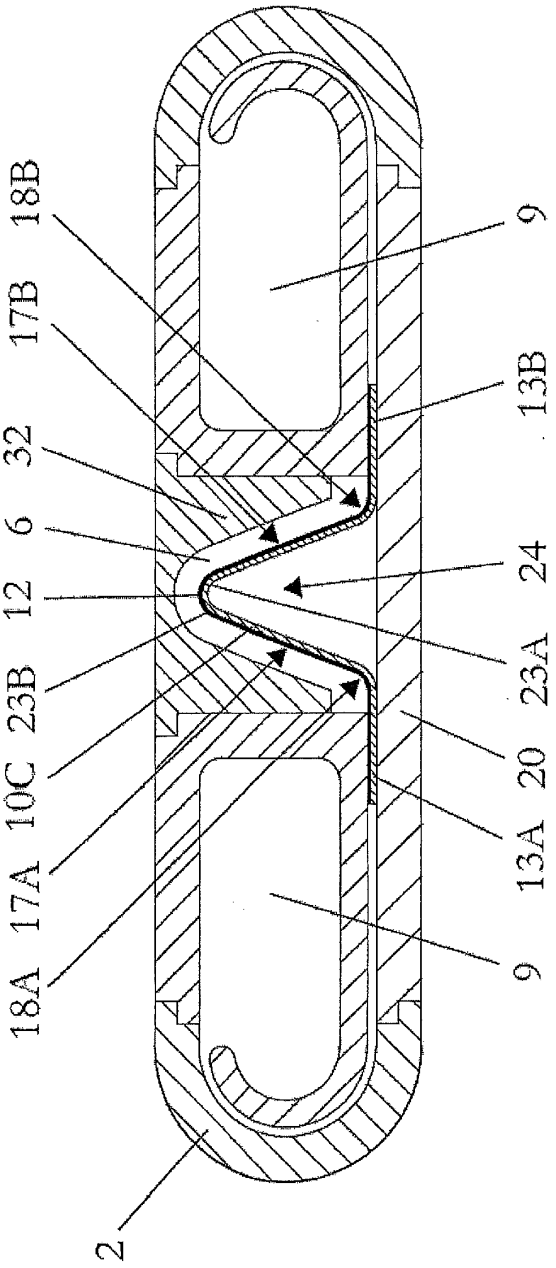


Figure 6

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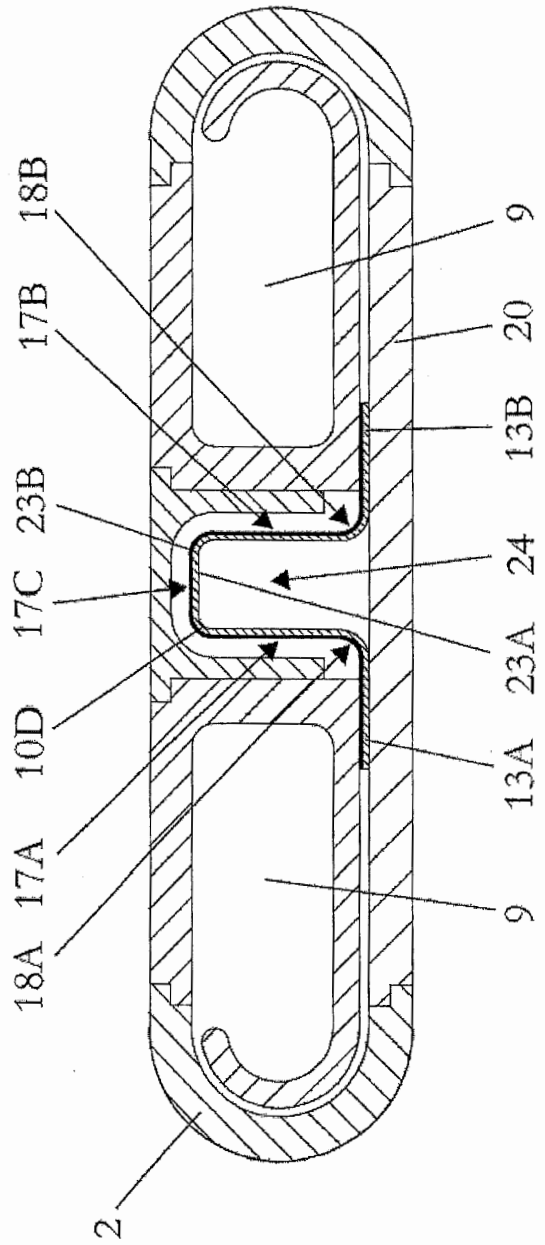


Figure 7

NJOY Exhibit 1002.1061

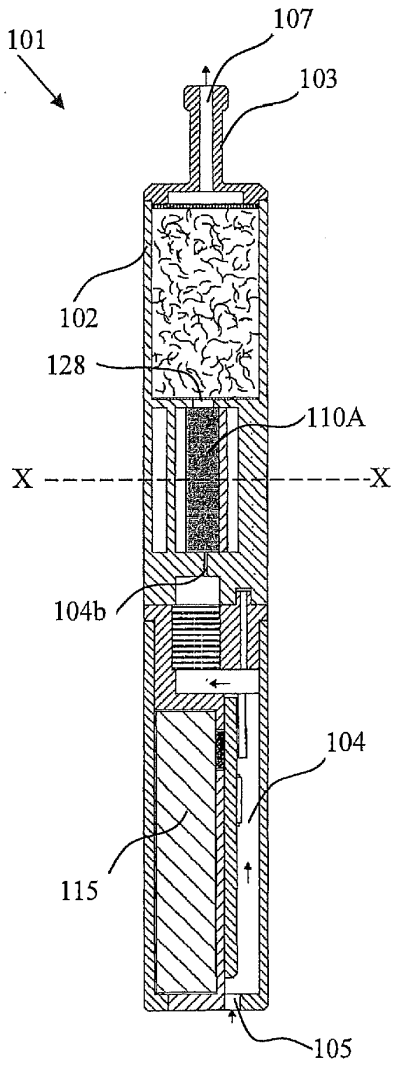


Figure 8

NJOY Exhibit 1002.1062

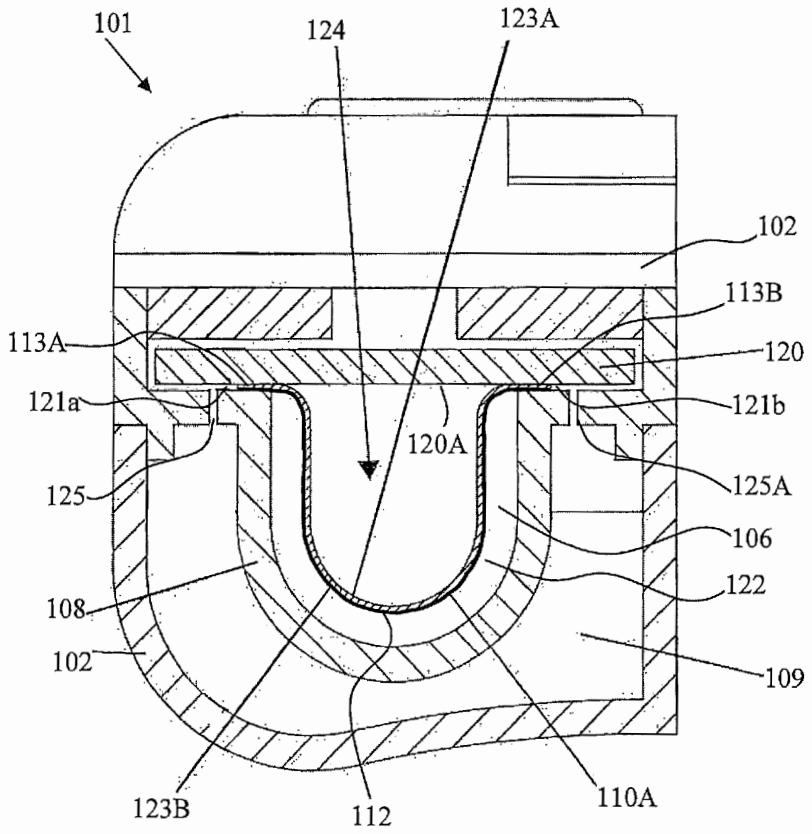


Figure 9

NJOY Exhibit 1002.1063

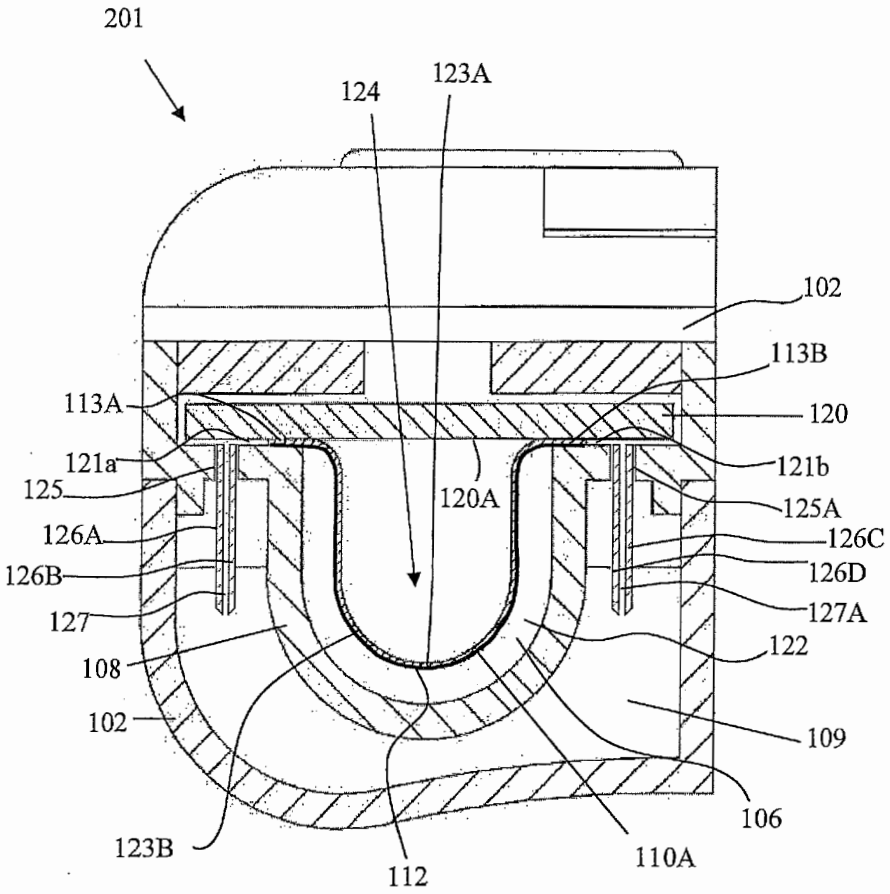


Figure 10

NJOY Exhibit 1002.1064

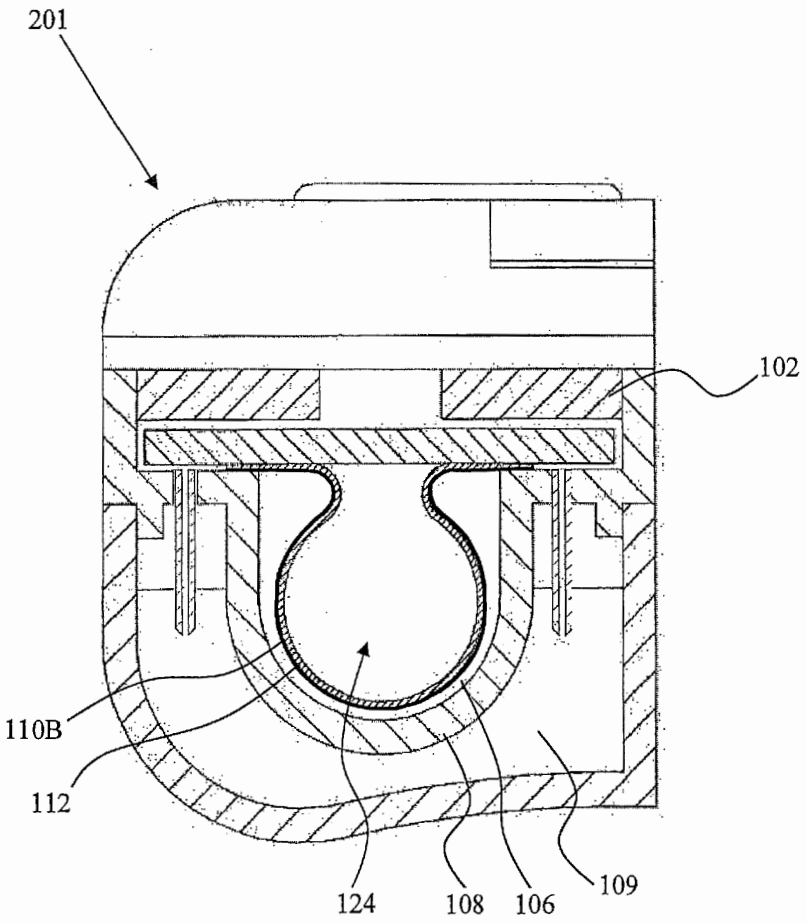


Figure 11

NJOY Exhibit 1002.1065

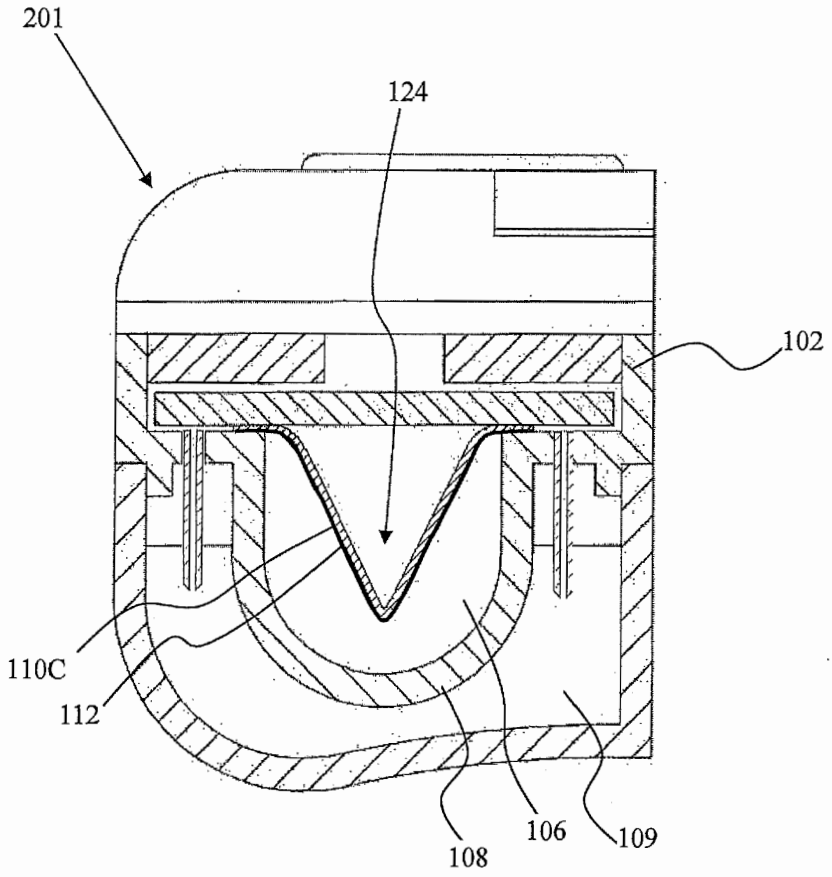


Figure 12

NJOY Exhibit 1002.1066

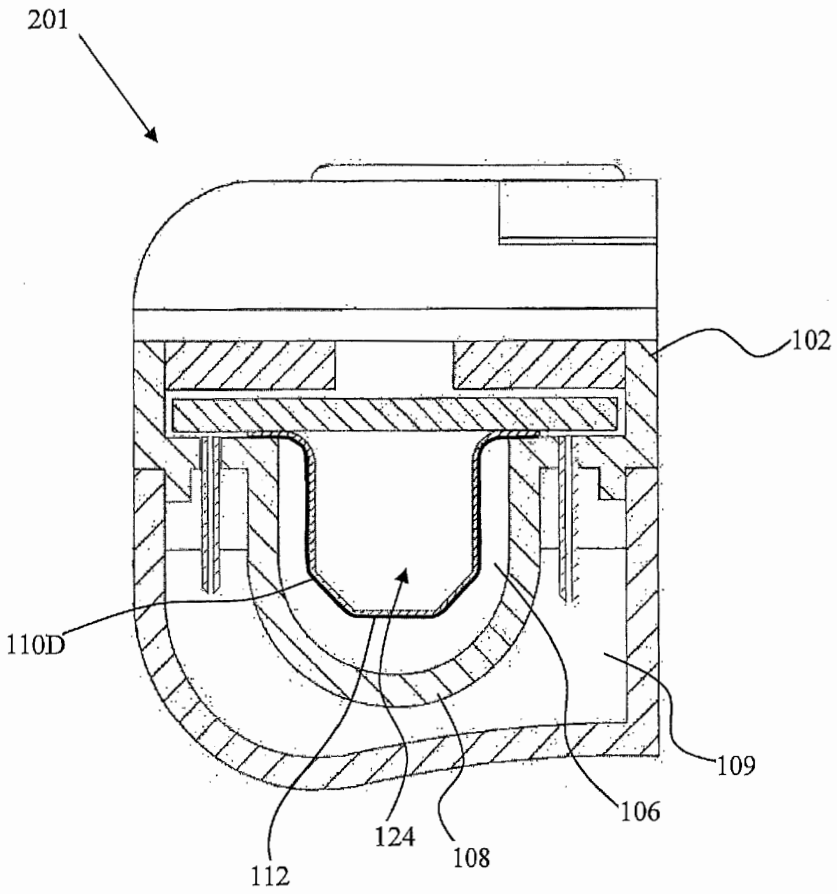


Figure 13

NJOY Exhibit 1002.1067

INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2015/050191

A. CLASSIFICATION OF SUBJECT MATTER
INV. A24F47/00 A61M11/04 A61M15/06
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A24F A61M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2013/057185 A1 (BATMARK LTD [GB]) 25 April 2013 (2013-04-25)	1-5,7-15
Y	The whole document especially figures 4b, 7, 8 and page 9, line 28 to page 15, line 22	6

X	US 2011/226236 A1 (BUCHBERGER HELMUT [AT]) 22 September 2011 (2011-09-22)	1,4-15
Y	The whole document especially figures 9-15 and paragraphs [0116]-[0127]	6

X	US 2013/081623 A1 (BUCHBERGER HELMUT [AT]) 4 April 2013 (2013-04-04) paragraph [0008] - paragraph [0038]; figures 2,3,7-9 paragraph [0046] - paragraph [0049]	1,3-15

	-/--	

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

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"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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Date of the actual completion of the international search	Date of mailing of the international search report
27 March 2015	10/04/2015

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Liess, Helmar

NJOY Exhibit 1002.1068

INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2015/050191

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 2 340 729 A1 (PHILIP MORRIS PROD [CH]) 6 July 2011 (2011-07-06) paragraph [0057] - paragraph [0082]; figures 1-21 -----	1-5,7-15

NJOY Exhibit 1002.1069

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/GB2015/050191

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2013057185 A1	25-04-2013	AR 088464 A1	11-06-2014
		AT 511344 A4	15-11-2012
		CN 103987285 A	13-08-2014
		EP 2768327 A1	27-08-2014
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NJOY Exhibit 1002.1070

(12) NACH DEM VERTRAG ÜBER DIE INTERNATIONALE ZUSAMMENARBEIT AUF DEM GEBIET DES PATENTWESENS (PCT) VERÖFFENTLICHTE INTERNATIONALE ANMELDUNG

(19) Weltorganisation für geistiges Eigentum
Internationales Büro

(43) Internationales Veröffentlichungsdatum
1. Oktober 2015 (01.10.2015)

WIPO | PCT

(10) Internationale Veröffentlichungsnummer
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A61K 8/49 (2006.01)

(21) Internationales Aktenzeichen: PCT/EP2015/051546

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27. Januar 2015 (27.01.2015)

(25) Einreichungssprache: Deutsch

(26) Veröffentlichungssprache: Deutsch

(30) Angaben zur Priorität:
102014104260.3 26. März 2014 (26.03.2014) DE

(71) Anmelder: **BEIERSDORF AG** [DE/DE]; Unnastraße 48, 20253 Hamburg (DE).

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(81) Bestimmungsstaaten *(soweit nicht anders angegeben, für jede verfügbare nationale Schutzrechtsart)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Bestimmungsstaaten *(soweit nicht anders angegeben, für jede verfügbare regionale Schutzrechtsart)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), eurasisches (AM, AZ, BY, KG, KZ, RU, TJ, TM), europäisches (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

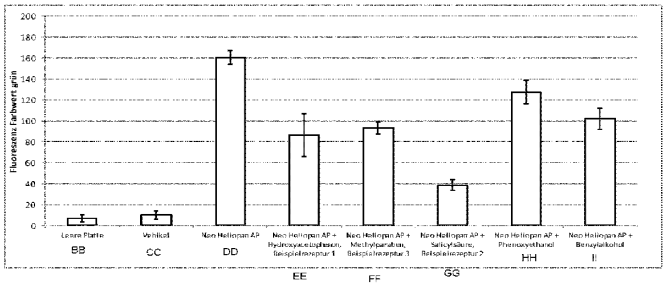
Veröffentlicht:

— *mit internationalem Recherchenbericht (Artikel 21 Absatz 3)*

(54) **Title**: SUNSCREEN ACTIVE-INGREDIENT COMBINATIONS CONSISTING OF PHENYLENE-1,4-BIS-(2-BENZIMIDAZYL)-3,3'-5,5'-TETRASULFONIC ACID AND/OR PHENYLENE-1,4-BIS-(2-BENZIMIDAZYL)-3,3'-5,5'-TETRASULFONIC ACID SALTS AND LOW-MOLECULAR PHENOL DERIVATES, AND COSMETIC OR DERMATOLOGICAL PREPARATIONS CONTAINING SAID ACTIVE-INGREDIENT COMBINATIONS

(54) **Bezeichnung** : LICHTSCHUTZWIRKSAME WIRKSTOFFKOMBINATIONEN AUS PHENYLEN-1,4-BIS-(2-BENZIMIDAZYL)-3,3'-5,5'-TETRASULFONSÄURE UND/ODER PHENYLEN-1,4-BIS-(2-BENZIMIDAZYL)-3,3'-5,5'-TETRASULFONSÄURESALZEN UND NIEDERMOLEKULAREN PHENOLDERIVATEN SOWIE KOSMETISCHE ODER DERMATOLOGISCHE ZUBEREITUNGEN, DIESE WIRKSTOFFKOMBINATIONEN ENTHALTEND

Fig. 1



JJ **Fig. 1. Fluoreszenz von Neo Heliopan AP in O/W-Emulsionen, gemindert durch verschiedene niedermolekulare Phenolderivate. Anregungswellenlänge: 365 nm. Farbwert „grün", aus der Fotographie ausgewertet.**

AA Fluorescence Tonal Value Green
BB Empty plate
CC Vehicle
DD Neo Heliopan AP
EE Neo Heliopan AP + hydroxyacetophenone, Example recipe 1
FF Neo Heliopan AP + methyl paraben, Example recipe 3
GG Neo Heliopan AP + salicylic acid, Example recipe 2
HH Neo Heliopan AP + phenoxyethanol
II Neo Heliopan AP + benzyl alcohol
JJ Fig. 1 Fluorescence of Neo Heliopan AP in O/W emulsions, reduced by different low-molecular phenol derivatives. Excitation wavelength: 365 nm. tonal value "green" (evaluation from field of photograp.

(57) **Abstract**: The invention relates to sunscreen active-ingredient combinations consisting of phenylene-1,4-bis-(2-benzimidazyl)-3,3'-5,5'-tetrasulfonic acid and/or phenylene-1,4-bis-(2-benzimidazyl)-3,3'-5,5'-tetrasulfonic acid salts and one or more low-molecular phenol derivatives.

(57) **Zusammenfassung**: Lichtschutzwirksame Wirkstoffkombinationen aus Phenylen-1,4-bis-(2-benzimidazyl)-3,3'-5,5'- tetrasulfonsäure und/oder Phenylen-1,4-bis-(2-benzimidazyl)-3,3'-5,5'-tetrasulfonsäuresalzen und einem oder mehreren niedermolekularen Phenolderivaten.

WO 2015/144328 A1

NJOY Exhibit 1002.1071

Beiersdorf AG
Hamburg

Lichtschutzwirksame Wirkstoffkombinationen aus Phenylen-1,4-bis-(2-benzimidazyl)-3,3'-5,5'-tetrasulfonsäure und/oder Phenylen-1,4-bis-(2-benzimidazyl)-3,3'-5,5'-tetrasulfonsäuresalzen und niedermolekularen Phenolderivaten sowie kosmetische oder dermatologische Zubereitungen, diese Wirkstoffkombinationen enthaltend

Die vorliegende Erfindung betrifft Lichtschutzwirksame Wirkstoffkombinationen aus Phenylen-1,4-bis-(2-benzimidazyl)-3,3'-5,5'-tetrasulfonsäure und/oder Phenylen-1,4-bis-(2-benzimidazyl)-3,3'-5,5'-tetrasulfonsäuresalzen und niedermolekularen Phenolderivaten sowie kosmetische oder dermatologische Zubereitungen, diese Wirkstoffkombinationen enthaltend.

Die schädigende Wirkung des ultravioletten Teils der Sonnenstrahlung auf die Haut ist allgemein bekannt. Während Strahlen mit einer Wellenlänge, die kleiner als 290 nm ist (der sogenannte UVC-Bereich), von der Ozonschicht in der Erdatmosphäre absorbiert werden, verursachen Strahlen im Bereich zwischen 290 nm und 320 nm, dem sogenannten UVB-Bereich, ein Erythem, einen einfachen Sonnenbrand oder sogar mehr oder weniger starke Verbrennungen.

Als ein Maximum der Erythemwirksamkeit des Sonnenlichtes wird der engere Bereich um 308 nm angegeben.

Zum Schutz gegen UVB-Strahlung sind zahlreiche Verbindungen bekannt, bei denen es sich um Derivate des 3-Benzylidencamphers, der 4-Aminobenzoesäure, der Zimtsäure, der Salicylsäure, des Benzophenons sowie auch des 2-Phenylbenzimidazols handelt.

Auch für den Bereich zwischen etwa 320 nm und etwa 400 nm, dem sogenannten UVA-Bereich, ist es wichtig, Filtersubstanzen zur Verfügung zu haben, da auch dessen Strahlen Schäden hervorrufen können. Man hat lange Zeit fälschlicherweise angenommen, dass die langwellige UV-A-Strahlung mit einer Wellenlänge zwischen 320 nm und 400 nm nur eine vernachlässigbare biologische Wirkung aufweist und dass dementsprechend die UV-B-Strahlen für die meisten Lichtschäden an der menschlichen Haut verantwortlich seien. Inzwischen ist allerdings durch zahlreiche Studien belegt, dass UV-A-Strahlung im Hinblick auf die Auslösung photodynamischer, speziell phototoxischer Reaktionen und chronischer Veränderungen der Haut weitaus gefährlicher als UV-B-Strahlung ist. Auch kann der schädigende Einfluss der UV-B-Strahlung durch UV-A-Strahlung noch verstärkt werden.

NJOY Exhibit 1002.1072

So ist es u.a. erwiesen, dass selbst die UV-A-Strahlung unter ganz normalen Alltagsbedingungen ausreicht, um innerhalb kurzer Zeit die Collagen- und Elastinfasern zu schädigen, die für die Struktur und Festigkeit der Haut von wesentlicher Bedeutung sind. Hierdurch kommt es zu chronischen lichtbedingten Hautveränderungen – die Haut „altert" vorzeitig. Zum klinischen Erscheinungsbild der durch Licht gealterten Haut gehören beispielsweise Falten und Fältchen sowie ein unregelmäßiges, zerfurchtes Relief. Ferner können die von lichtbedingter Hautalterung betroffenen Partien eine unregelmäßige Pigmentierung aufweisen. Auch die Bildung von braunen Flecken, Keratosen und sogar Karzinomen bzw. malignen Melanomen ist möglich. Eine durch die alltägliche UV-Belastung vorzeitig gealterte Haut zeichnet sich außerdem durch eine geringere Aktivität der Langerhanszellen und eine leichte, chronische Entzündung aus.

Etwa 90 % der auf die Erde gelangenden ultravioletten Strahlung besteht aus UV-A-Strahlen. Während die UV-B-Strahlung in Abhängigkeit von zahlreichen Faktoren stark variiert (z.B. Jahres- und Tageszeit oder Breitengrad), bleibt die UV-A-Strahlung unabhängig von jahres- und tageszeitlichen oder geographischen Faktoren Tag für Tag relativ konstant. Gleichzeitig dringt der überwiegende Teil der UV-A-Strahlung in die lebende Epidermis ein, während etwa 70 % der UV-B-Strahlen von der Hornschicht zurückgehalten werden.

Vorbeugender Schutz gegen UV-A-Strahlen, beispielsweise durch Auftrag von Lichtschutzfiltersubstanzen in Form einer kosmetischen oder dermatologischen Formulierung auf die Haut, ist daher von grundsätzlicher Wichtigkeit.

Im allgemeinen ist das Lichtabsorptionsverhalten von Lichtschutzfiltersubstanzen sehr gut bekannt und dokumentiert, zumal in den meisten Industrieländern Positivlisten für den Einsatz solcher Substanzen existieren, welche recht strenge Maßstäbe an die Dokumentation anlegen. Für die Dosierung der Substanzen in den fertigen Formulierungen können die Extinktionswerte allenfalls eine Orientierungshilfe bieten, denn durch Wechselwirkungen mit Inhaltsstoffen der Haut oder der Hautoberfläche selbst können Unwägbarkeiten auftreten. Ferner ist in der Regel schwierig vorab abzuschätzen, wie gleichmäßig und in welcher Schichtdicke die Filtersubstanz in und auf der Hornschicht der Haut verteilt ist.

Zur Prüfung der UV-A-Schutzleistung wird üblicherweise die IPD-Methode verwendet (IPD ≡ **i**mmediate **p**igment **d**arkening). Hierbei wird – ähnlich der Bestimmung des Lichtschutzfaktors - ein Wert ermittelt, der angibt, um wie viel länger die mit dem Lichtschutzmittel geschützte Haut mit UV-A-Strahlung bestrahlt werden kann, bis die gleiche Pigmentierung auftritt wie bei der ungeschützten Haut.

NJOY Exhibit 1002.1073

Die Einsatzkonzentration bekannter Lichtschutzfiltersubstanzen, die insbesondere auch im UV-A-Bereich eine hohe Filterwirkung zeigen, ist häufig gerade in Kombination mit anderen als Festkörper vorliegenden Substanzen begrenzt. Es bereitet daher gewisse formulierungstechnische Schwierigkeiten, höhere Lichtschutzfaktoren bzw. UV-A-Schutzleistung zu erzielen.

Da Lichtschutzfiltersubstanzen in der Regel kostspielig sind und da manche Lichtschutzfiltersubstanzen zudem schwierig in höheren Konzentrationen in kosmetische oder dermatologische Zubereitungen einzuarbeiten sind, war es eine Aufgabe der Erfindung, auf einfache und preiswerte Weise zu Zubereitungen zu gelangen, welche bei ungewöhnlich niedrigen Konzentrationen an herkömmlichen UV-A-Lichtschutzfiltersubstanzen dennoch eine akzeptable oder sogar hohe UV-A-Schutzleistung erreichen.

Die UV-Strahlung kann aber auch zu photochemischen Reaktionen führen, wobei dann die photochemischen Reaktionsprodukte in den Hautmetabolismus eingreifen. Vorwiegend handelt es sich bei solchen photochemischen Reaktionsprodukten um radikalische Verbindungen, beispielsweise Hydroxyradikale. Auch undefinierte radikalische Photoprodukte, welche in der Haut selbst entstehen, können aufgrund ihrer hohen Reaktivität unkontrollierte Folgereaktionen an den Tag legen. Aber auch Singulettsauerstoff, ein nichtradikalischer angeregter Zustand des Sauerstoffmoleküls kann bei UV-Bestrahlung auftreten, ebenso kurzlebige Epoxide und viele andere. Singulettsauerstoff beispielsweise zeichnet sich gegenüber dem normalerweise vorliegenden Triplettsauerstoff (radikalischer Grundzustand) durch gesteigerte Reaktivität aus. Allerdings existieren auch angeregte, reaktive (radikalische) Triplettzustände des Sauerstoffmoleküls.

Um diesen Reaktionen vorzubeugen, können den kosmetischen bzw. dermatologischen Formulierungen zusätzlich Antioxidantien und/oder Radikalfänger einverleibt werden.

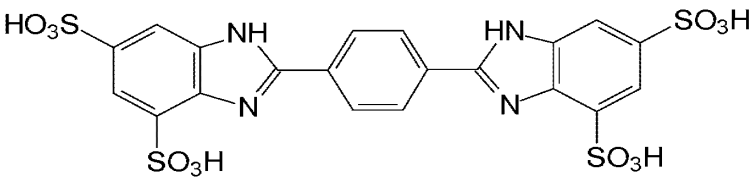
Zum Schutz der Haut wurden daher eine Reihe von Lichtschutzfiltersubstanzen entwickelt, die in kosmetischen Zubereitungen eingesetzt werden können. Diese UVA- und UVB-Filter sind in den meisten Industrieländern in Form von Positivlisten wie der Anlage 7 der Kosmetikverordnung zusammengefasst.

Die Vielzahl an kommerziell erhältlichen Sonnenschutzmitteln darf jedoch nicht darüber hinwegtäuschen, dass diese Zubereitungen des Standes der Technik eine Reihe von Nachteilen aufweisen:

NJOY Exhibit 1002.1074

Bei Sonnenschutzmitteln ist regelmäßig zu beobachten, dass die die Zubereitungen nicht sonderlich stabil sind. Einerseits sind eine Reihe von Inhaltsstoffen photolabil und zersetzen sich unter Lichteinwirkung (beispielsweise der Lichtschutzfilter 4-(tert.-Butyl)-4'-methoxydibenzoylmethan). Andererseits kommt es im Laufe der Zeit regelmäßig zu Inhomogenitäten (z.B. Ausfällungen, Phasentrennungen), welche das Produkt regelmäßig für eine kosmetische Anwendung unbrauchbar machen. Dieser Effekt wird zusätzlich durch die erheblichen Temperaturschwankungen (pralle Sonne am Strand, starke Kühlung beispielsweise beim Flug durch Transport in den Gepäckräumen) gefördert.

Ein vorteilhafter wasserlöslicher UV-Filter sind die Phenylen-1,4-bis-(2-benzimidazyl)-3,3'-5,5'-tetrasulfonsäure bzw. deren wasserlöslichen Salze, insbesondere das Tetranatriumsalz. Die Phenylen-1,4-bis-(2-benzimidazyl)-3,3'-5,5'-tetrasulfonsäure weist folgende chemische Struktur auf:



Nachteilig an dieser Substanz ist, dass sie bei Bestrahlung mit ultraviolettem Licht bläulich fluoresziert. Befinden sich noch Reste dieser Substanz auf der Haut, können bei Schwarzlichtbestrahlung, welche in Diskotheken und Bars oft angewandt wird, peinliche Leuchteffekte wahrgenommen werden.

Es war daher die Aufgabe der vorliegenden Erfindung, kosmetische Zubereitungen zu entwickeln, die eine erhöhte Stabilität bzw. einen verringerten bläulichen Eigenleuchteffekt aufweisen.

Überraschend gelöst werden die Aufgaben durch Wirkstoffkombinationen aus Phenylen-1,4-bis-(2-benzimidazyl)-3,3'-5,5'-tetrasulfonsäure und/oder Phenylen-1,4-bis-(2-benzimidazyl)-3,3'-5,5'-tetrasulfonsäuresalzen und niedermolekularen Phenolderivaten sowie kosmetische oder dermatologische Zubereitungen, diese Wirkstoffkombinationen enthaltend.

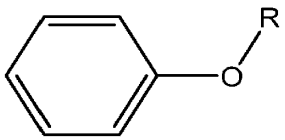
Erfindungsgemäß vorteilhafte Wirkstoffkombinationen sind solche, in denen Gewichtsverhältnisse der Gesamtmenge an Phenylen-1,4-bis-(2-benzimidazyl)-3,3'-5,5'-tetrasulfonsäure und/oder Phenylen-1,4-bis-(2-benzimidazyl)-3,3'-5,5'-tetrasulfonsäuresalzen zur Menge an

NJOY Exhibit 1002.1075

niedermolekularen Phenolen aus dem Bereich von 10 zu 1 bis 1 zu 10 gewählt werden, bevorzugt von 5 zu 1 bis 1 zu 5, insbesondere bevorzugt von 3 zu 1 bis 1 zu 3.

Zubereitungen, in denen niedermolekulare Phenolen in Gewichtskonzentrationen vorliegen, aus dem Bereich von 0,001 % bis 5% gewählt, bevorzugt von 0,01 bis 2 %, insbesondere bevorzugt von 0,1% bis 1% jeweils bezogen auf das Gesamtgewicht der Zubereitungen, sind ebenfalls besonders vorteilhafte Verkörperungen der vorliegenden Erfindung.

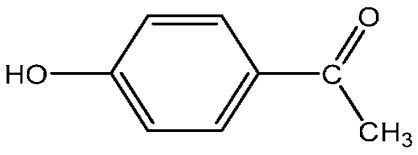
Das oder die niedermolekulare Phenolen werden gewählt aus der Gruppe der Verbindungen die folgendes Strukturelement enthalten:



R kann dabei ein Wasserstoffatom oder einen verzweigten oder unverzweigten Alkylrest von 1 bis 25 C-Atomen darstellen.

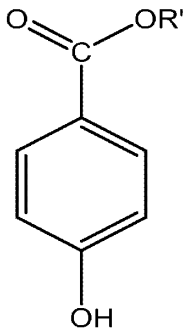
Eine vorteilhafte Verkörperung der Erfindung wird erhalten, wenn als niedermolekulares Phenolderivat das 4-Hydroxyacetophenon gewählt wird.

4-Hydroxyacetophenon stellt ein bekanntes und hochwirksames Antioxidans dar, welches *unter anderem* von der Gesellschaft Symrise unter der Handelsbezeichnung „SymSave® H“ verkauft wird. Es hat die CAS-Nr. 99-93-4 und zeichnet sich durch folgende chemische Struktur aus:



Eine weitere vorteilhafte Verkörperung der Erfindung wird erhalten, wenn das niedermolekulare Phenolderivat gewählt wird aus der Gruppe der Parabene.

NJOY Exhibit 1002.1076

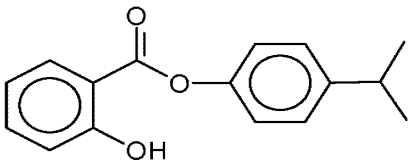


R‘ kann dabei ein Wasserstoffatom oder einen verzweigten oder unverzweigten Alkylrest von 1 bis 25 C-Atomen darstellen.

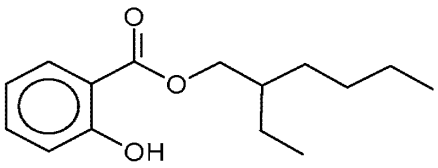
Insbesondere vorteilhaft ist dabei das Methylparaben (R‘ = Methyl).

Weitere vorteilhafte Verkörperungen der Erfindung wird erhalten, wenn die niedermolekularen Phenolderivate gewählt werden aus der Gruppe der Salicylsäurederivate, von denen einige Vertreter bekannt sind, welche ebenfalls UV-Strahlung absorbieren können.

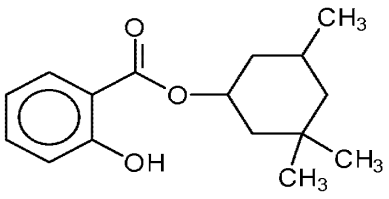
Bevorzugt sind:



(4-Isopropylbenzylsalicylat),



(2-Ethylhexylsalicylat, Octylsalicylat),



(Homomenthylsalicylat).

NJOY Exhibit 1002.1077

Aber auch Salicylsäure, Phenoxyethanol und Benzylalcohol sind vorteilhafte niedermolekulare Phenolderivate im Sinne der vorliegenden Erfindung.

Erfindungsgemäß wird die unerwünschte Fluoreszenz der Emulsionen, welche Phenylen-1,4-bis-(2-benzimidazyl)-3,3'-5,5'-tetrasulfonsäure bzw. Phenylen-1,4-bis-(2-benzimidazyl)-3,3'-5,5'-tetrasulfonsäuresalze enthalten, erheblich reduziert, wie die Fig. 1 eindrucksvoll demonstriert.

Zum Zweck der vergleichenden Messung wurden O/W-Emulsionen mit verschiedenen niedermolekularen Phenolderivaten, wie sie in den Beispielrezepturen 1, 2 und 3 exemplarisch aufgeführt sind, mit einer Schichtdicke von 1,3 mg/cm² auf PMMA-Täfelchen (5x5 cm Fläche, Rauheit WW5 (Schönberg, Hamburg)) ausgestrichen und die Fluoreszenz der Platten unter UV-Licht verglichen. Hierfür wurden die Täfelchen mit einer UV-Lampe bestrahlt (Lampe Vilber VL-8.LM, 312 nm und 365 nm) und die fluoreszierenden Täfelchen mit einer Digitalkamera abfotografiert.

Um die Täfelchen vergleichbar auszuwerten, wurden die Farbwerte der Fotos mit Hilfe der Mikroskopie-Auswertesoftware „analySIS start" (Version 5.0, Hersteller Olympus Soft Imaging Solutions GmbH) über eine Ebene des jeweiligen Täfelchens ausgelesen.

Weiterhin enthalten die Zubereitungen im Sinne der vorliegenden Erfindung vorzugsweise mindestens eine weitere UV-A-, UV-B- und/oder Breitbandfiltersubstanz. Die Formulierungen können, obgleich nicht notwendig, gegebenenfalls auch ein oder mehrere organische und/oder anorganische Pigmente als UV-Filtersubstanzen enthalten, welche in der Wasser- und/oder der Ölphase vorliegen können.

Die erfindungsgemäßen Zubereitungen können ferner vorteilhaft auch in Form von sogenannten ölfreien kosmetischen oder dermatologischen Emulsionen vorliegen, welche eine Wasserphase und mindestens eine bei Raumtemperatur flüssige UV-Filtersubstanz als weitere Phase enthalten.

Besonders vorteilhafte, bei Raumtemperatur flüssige UV-Filtersubstanzen im Sinne der vorliegenden Erfindung sind Homomenthylsalicylat (INCI: Homosalate), 2-Ethylhexyl-2-cyano-3,3-diphenylacrylat (INCI: Octocrylene), 2-Ethylhexyl-2-hydroxybenzoat (2-Ethylhexylsalicylat, Octylsalicylat, INCI: Octyl Salicylate) und Ester der Zimtsäure, vorzugsweise 4-Methoxyzimtsäure(2-ethylhexyl)ester (2-Ethylhexyl-4-methoxycinnamat, INCI: Octyl Methoxycinnamate)

NJOY Exhibit 1002.1078

und 4-Methoxyzimtsäureisopentylester (Isopentyl-4-methoxycinnamat, INCI: Isoamyl p-Methoxycinnamate).

Bevorzugte anorganische Pigmente sind Metalloxide und/oder andere in Wasser schwerlösliche oder unlösliche Metallverbindungen, insbesondere Oxide des Titans (TiO_2), Zinks (ZnO), Eisens (z. B. Fe_2O_3), Zirkoniums (ZrO_2), Siliciums (SiO_2), Mangans (z. B. MnO), Aluminiums (Al_2O_3), Cers (z. B. Ce_2O_3), Mischoxide der entsprechenden Metalle sowie Abmischungen aus solchen Oxiden sowie das Sulfat des Bariums ($BaSO_4$).

Die Pigmente können vorteilhaft im Sinne der vorliegenden Erfindung auch in Form kommerziell erhältlicher öliger oder wässriger Vordispersionen zur Anwendung kommen. Diesen Vordispersionen können vorteilhaft Dispergierhilfsmittel und/oder Solubilisationsvermittler zugesetzt sein.

Die Pigmente können erfindungsgemäß vorteilhaft oberflächlich behandelt („gecoatet") sein, wobei beispielsweise ein hydrophiler, amphiphiler oder hydrophober Charakter gebildet werden bzw. erhalten bleiben soll. Diese Oberflächenbehandlung kann darin bestehen, dass die Pigmente nach an sich bekannten Verfahren mit einer dünnen hydrophilen und/oder hydrophoben anorganischen und/oder organischen Schicht versehen werden. Die verschiedenen Oberflächenbeschichtungen können im Sinne der vorliegenden Erfindung auch Wasser enthalten.

Anorganische Oberflächenbeschichtungen im Sinne der vorliegenden Erfindung können bestehen aus Aluminiumoxid (Al_2O_3), Aluminiumhydroxid $Al(OH)_3$, bzw. Aluminiumoxidhydrat (auch: Alumina, CAS-Nr.: 1333-84-2), Natriumhexametaphosphat $(NaPO_3)_6$, Natriummetaphosphat $(NaPO_3)_n$, Siliciumdioxid (SiO_2) (auch: Silica, CAS-Nr.: 7631-86-9), oder Eisenoxid (Fe_2O_3). Diese anorganischen Oberflächenbeschichtungen können allein, in Kombination und/oder in Kombination mit organischen Beschichtungsmaterialien vorkommen.

Organische Oberflächenbeschichtungen im Sinne der vorliegenden Erfindung können bestehen aus pflanzlichem oder tierischem Aluminiumstearat, pflanzlicher oder tierischer Stearinsäure, Laurinsäure, Dimethylpolysiloxan (auch: Dimethicone), Methylpolysiloxan (Methicone), Simethicone (einem Gemisch aus Dimethylpolysiloxan mit einer durchschnittlichen Kettenlänge von 200 bis 350 Dimethylsiloxan-Einheiten und Silicagel) oder Alginsäure. Diese organischen Oberflächenbeschichtungen können allein, in Kombination und/oder in Kombination mit anorganischen Beschichtungsmaterialien vorkommen.

NJOY Exhibit 1002.1079

Erfindungsgemäß geeignete Zinkoxidpartikel und Vordispersionen von Zinkoxidpartikeln sind unter folgenden Handelsbezeichnungen bei den aufgeführten Firmen erhältlich:

Handelsname	**Coating**	**Hersteller**
Z- Cote HP1	2% Dimethicone	BASF
Z- Cote	/	BASF
ZnO NDM	5% Dimethicone	Symrise

Geeignete Titandioxidpartikel und Vordispersionen von Titandioxidpartikeln sind unter folgenden Handelsbezeichnungen bei den aufgeführten Firmen erhältlich:

Handelsname	**Coating**	**Hersteller**
MT-100TV	Aluminiumhydroxid / Stearinsäure	Tayca Corporation
MT-100Z	Aluminiumhydroxid / Stearinsäure	Tayca Corporation
Eusolex T-2000	Alumina / Simethicone	Merck KGaA
Titandioxid T805 (Uvinul TiO2)	Octyltrimethylsilan	Degussa
Tioveil AQ 10PG	Alumina / Silica	Solaveil / Uniquema
Eusolex T-aqua	Wasser/Alumina/Natriummeta-phosphat	Merck

Vorteilhafte UV-A-Filtersubstanzen im Sinne der vorliegenden Erfindung sind Dibenzoylmethanderivate, insbesondere das 4-(tert.-Butyl)-4'-methoxydibenzoylmethan (CAS-Nr. 70356-09-1), welches von Givaudan unter der Marke Parsol® 1789 und von Merck unter der Handelsbezeichnung Eusolex® 9020 verkauft wird.

Vorteilhafte weitere UV-Filtersubstanzen im Sinne der vorliegenden Erfindung sind sulfonierte, wasserlösliche UV-Filter, wie z. B.:

Phenylen-1,4-bis-(2-benzimidazyl)-3,3'-5,5'-tetrasulfonsäure und ihre Salze, besonders die entsprechenden Natrium-, Kalium- oder Triethanolammonium-Salze, insbesondere das Phenylen-1,4-bis-(2-benzimidazyl)-3,3'-5,5'-tetrasulfonsäure-bis-natriumsalz mit der INCI-Bezeichnung Bisimidazylate (CAS-Nr.: 180898-37-7), welches beispielsweise unter der Handelsbezeichnung Neo Heliopan® AP bei Symrise erhältlich ist.

NJOY Exhibit 1002.1080

Salze der 2-Phenylbenzimidazol-5-sulfonsäure, wie ihr Natrium-, Kalium- oder ihr Triethanolammonium-Salz sowie die Sulfonsäure selbst mit der INCI Bezeichnung Phenylbenzimidazole Sulfonsäure (CAS.-Nr. 27503-81-7), welches beispielsweise unter der Handelsbezeichnung Eusolex 232 bei Merck oder unter Neo Heliopan® Hydro bei Symrise erhältlich ist;

1,4-di(2-oxo-10-Sulfo-3-bornylidenmethyl)-Benzol (auch: 3,3'-(1,4-Phenylendimethylene)-bis-(7,7-dimethyl-2-oxo-bicyclo-[2.2.1]hept-1-ylmethan Sulfonsäure) und *dessen Salze* (besonders die entsprechenden 10-Sulfato-verbindungen, insbesondere das entsprechende Natrium-, Kalium- oder Triethanolammonium-Salz), das auch als Benzol-1,4-di(2-oxo-3-bornylidenmethyl-10-sulfonsäure) bezeichnet wird. Benzol-1,4-di(2-oxo-3-bornylidenmethyl-10-sulfonsäure) hat die INCI-Bezeichnung Terephtalidene Dicampher Sulfonsäure (CAS.-Nr. 90457-82-2) und ist beispielsweise unter dem Handelsnamen Mexoryl SX von der Fa. Chimex erhältlich;

Sulfonsäure-Derivate des 3-Benzylidencamphers, wie z. B. 4-(2-Oxo-3-bornylidenmethyl)benzolsulfonsäure, 2-Methyl-5-(2-oxo-3-bornylidenmethyl)sulfonsäure und deren Salze.

Vorteilhafte UV-Filtersubstanzen im Sinne der vorliegenden Erfindung sind ferner sogenannte Breitbandfilter, d.h. Filtersubstanzen, die sowohl UV-A- als auch UV-B-Strahlung absorbieren.

Vorteilhafte Breitbandfilter oder UV-B-Filtersubstanzen sind beispielsweise Triazinderivate, wie z. B.

Diethylhexylbutylamidotriazon (INCI: Diethylhexylbutamidotriazone), welches unter der Handelsbezeichnung UVASORB HEB bei Sigma 3V erhältlich ist;

4,4',4''-(1,3,5-Triazin-2,4,6-triyltriimino)-tris-benzoësäure-tris(2-ethylhexylester), auch: 2,4,6-Tris-[anilino-(p-carbo-2'-ethyl-1'-hexyloxy)]-1,3,5-triazin (INCI: Ethylhexyl Triazone), welches von der BASF Aktiengesellschaft unter der Warenbezeichnung UVINUL® T 150 vertrieben wird.

Vorteilhafter Breitbandfilter im Sinne der vorliegenden Erfindung ist ferner das 2-(2H-benzotriazol-2-yl)-4-methyl-6-[2-methyl-3-[1,3,3,3-tetramethyl-1-[(trimethylsilyl)oxy]disiloxanyl]propyl]-phenol (CAS-Nr.: 155633-54-8) mit der INCI-Bezeichnung Drometrizole Trisiloxane, welches unter der Handelsbezeichnung Mexoryl® XL bei der Fa. Chimex erhältlich ist.

Die weiteren UV-Filtersubstanzen können öllöslich oder wasserlöslich sein.

NJOY Exhibit 1002.1081

Vorteilhafte öllösliche UV-B- und/oder Breitband-Filtersubstanzen im Sinne der vorliegenden Erfindung sind z. B.:

3-Benzylidencampher-Derivate, vorzugsweise 3-(4-Methylbenzyliden)campher, 3-Benzylidencampher;

Zimtsäurederivate, vorzugsweise 2-Ethylhexylmethoxycinnamate (CAS-Nr.: 5466-77-3), welches unter der Handelsbezeichnung Parsol MCX bei der Firma Givaudan erhältlich ist.

4-Aminobenzoesäure-Derivate, vorzugsweise 4-(Dimethylamino)-benzoesäure(2-ethylhexyl)-ester, 4-(Dimethylamino)benzoesäureamylester;

Derivate des Benzophenons, vorzugsweise 2-Hydroxy-4-methoxybenzophenon, 2-Hydroxy-4-methoxy-4'-methylbenzophenon, 2,2'-Dihydroxy-4-methoxybenzophenon
sowie an Polymere gebundene UV-Filter.

3-(4-(2,2-bis Ethoxycarbonylvinyl)-phenoxy)propenyl)-methoxysiloxan/Dimethylsiloxan – Copolymer welches beispielsweise unter der Handelsbezeichnung Parsol® SLX bei DSM erhältlich ist.

Vorteilhafte wasserlösliche Filtersubstanzen sind z. B.:

Sulfonsäure-Derivate des 3-Benzylidencamphers, wie z. B. 4-(2-Oxo-3-bornylidenmethyl)benzolsulfonsäure, 2-Methyl-5-(2-oxo-3-bornylidenmethyl)sulfonsäure und deren Salze.

Eine weitere erfindungsgemäß vorteilhaft zu verwendende Lichtschutzfiltersubstanz ist das Ethylhexyl-2-cyano-3,3-diphenylacrylat (Octocrylene), welches von BASF unter der Bezeichnung Uvinul® N 539T erhältlich ist.

Besonders vorteilhafte Zubereitungen im Sinne der vorliegenden Erfindung, die sich durch einen hohen bzw. sehr hohen UV-A- und/oder UV-B-Schutz auszeichnen, enthalten neben der oder den erfindungsgemäßen Filtersubstanz(en) bevorzugt ferner weitere UV-A- und/oder Breitbandfilter, insbesondere Dibenzoylmethanderivate [beispielsweise das 4-(tert.-Butyl)-4'-methoxydibenzoylmethan], Phenylen-1,4-bis-(2-benzimidazyl)-3,3'-5,5'-tetrasulfonsäure und/oder ihre Salze, das 1,4-di(2-oxo-10-Sulfo-3-bornylidenmethyl)-Benzol und/oder dessen Salze, jeweils einzeln oder in beliebigen Kombinationen miteinander.

NJOY Exhibit 1002.1082

Die Liste der genannten UV-Filter, die im Sinne der vorliegenden Erfindung eingesetzt werden können, soll selbstverständlich nicht limitierend sein.

Vorteilhaft enthalten die erfindungsgemäßen Zubereitungen die Substanzen, die UV-Strahlung im UV-A- und/oder UV-B-Bereich absorbieren, in einer Gesamtmenge von z. B. 0,1 Gew.-% bis 30 Gew.-%, vorzugsweise 0,5 bis 20 Gew.-%, insbesondere 1,0 bis 15,0 Gew.-%, jeweils bezogen auf das Gesamtgewicht der Zubereitungen, um kosmetische Zubereitungen zur Verfügung zu stellen, die das Haar bzw. die Haut vor dem gesamten Bereich der ultravioletten Strahlung schützen.

Die erfindungsgemäßen kosmetischen und dermatologischen Zubereitungen können kosmetische Hilfsstoffe enthalten, wie sie üblicherweise in solchen Zubereitungen verwendet werden, z.B. Konservierungsmittel, Bakterizide, Parfüme, Substanzen zum Verhindern des Schäumens, Farbstoffe, Pigmente, die eine färbende Wirkung haben, Verdickungsmittel, anfeuchtende und/oder feuchthaltende Substanzen, Fette, Öle, Wachse, Emulgatoren oder andere übliche Bestandteile einer kosmetischen oder dermatologischen Formulierung wie Alkohole, Polyole, Polymere, Schaumstabilisatoren, Elektrolyte, organische Lösungsmittel oder Silikonderivate.

Ein zusätzlicher Gehalt an Antioxidantien ist im Allgemeinen bevorzugt. Erfindungsgemäß können als günstige Antioxidantien alle für kosmetische und/oder dermatologische Anwendungen geeigneten oder gebräuchlichen Antioxidantien verwendet werden.

Vorteilhaft werden die Antioxidantien gewählt aus der Gruppe bestehend aus Aminosäuren (z.B. Glycin, Histidin, Tyrosin, Tryptophan) und deren Derivate, Imidazole (z.B. Urocaninsäure) und deren Derivate, Peptide wie D,L-Carnosin, D-Carnosin, L-Carnosin und deren Derivate (z.B. Anserin), Carotinoide, Carotine (z.B. α-Carotin, β-Carotin, Lycopin) und deren Derivate, Chlorogensäure und deren Derivate, Liponsäure und deren Derivate (z.B. Dihydroliponsäure), Aurothioglucose, Propylthiouracil und andere Thiole (z.B. Thioredoxin, Glutathion, Cystein, Cystin, Cystamin und deren Glycosyl-, N-Acetyl-, Methyl-, Ethyl-, Propyl-, Amyl-, Butyl- und Lauryl-, Palmitoyl-, Oleyl-, γ-Linoleyl-,Cholesteryl- und Glycerylester) sowie deren Salze, Dilaurylthiodipropionat, Distearylthiodipropionat, Thiodipropionsäure und deren Derivate (Ester, Ether, Peptide, Lipide, Nukleotide, Nukleoside und Salze) sowie Sulfoximinverbindungen (z.B. Buthioninsulfoximine, Homocysteinsulfoximin, Buthioninsulfone, Penta-, Hexa-, Heptathioninsulfoximin) in sehr geringen verträglichen Dosierungen (z.B. pmol bis µmol/kg), ferner (Metall)-Chelatoren (z.B. α-Hydroxyfettsäuren, Palmitinsäure, Phytinsäure, Lactoferrin), α-Hydro-

NJOY Exhibit 1002.1083

xysäuren (z.B. Citronensäure, Milchsäure, Apfelsäure), Huminsäure, Gallensäure, Gallenextrakte, Bilirubin, Biliverdin, EDTA, EGTA und deren Derivate, ungesättigte Fettsäuren und deren Derivate (z.B. γ-Linolensäure, Linolsäure, Ölsäure), Folsäure und deren Derivate, Ubichinon und Ubichinol und deren Derivate, Vitamin C und Derivate (z.B. Ascorbylpalmitat, Mg-Ascorbylphosphat, Ascorbylacetat), Tocopherole und Derivate (z.B. Vitamin-E-acetat), Vitamin A und Derivate (Vitamin-A-palmitat) sowie Koniferylbenzoat des Benzoeharzes, Rutinsäure und deren Derivate, α-Glycosylrutin, Ferulasäure, Furfurylidenglucitol, Carnosin, Butylhydroxytoluol, Butylhydroxyanisol, Nordihydroguajakharzsäure, Nordihydroguajaretsäure, Trihydroxybutyrophenon, Harnsäure und deren Derivate, Mannose und deren Derivate, Zink und dessen Derivate (z.B. ZnO, $ZnSO_4$) Selen und dessen Derivate (z.B. Selenmethionin), Stilbene und deren Derivate (z.B. Stilbenoxid, Trans-Stilbenoxid) und die erfindungsgemäß geeigneten Derivate (Salze, Ester, Ether, Zucker, Nukleotide, Nukleoside, Peptide und Lipide) dieser genannten Wirkstoffe.

Die Menge der vorgenannten Antioxidantien (eine oder mehrere Verbindungen) in den Zubereitungen beträgt vorzugsweise 0,001 bis 30 Gew.-%, besonders bevorzugt 0,05 - 20 Gew.-%, insbesondere 1 - 10 Gew.-%, bezogen auf das Gesamtgewicht der Zubereitung.

Sofern Vitamin E und/oder dessen Derivate das oder die Antioxidantien darstellen, ist vorteilhaft, deren jeweilige Konzentrationen aus dem Bereich von 0,001 - 10 Gew.-%, bezogen auf das Gesamtgewicht der Formulierung, zu wählen.

Sofern Vitamin A, bzw. Vitamin-A-Derivate, bzw. Carotine bzw. deren Derivate das oder die Antioxidantien darstellen, ist vorteilhaft, deren jeweilige Konzentrationen aus dem Bereich von 0,001 - 10 Gew.-%, bezogen auf das Gesamtgewicht der Formulierung, zu wählen.

Die Lipidphase der erfindungsgemäßen Zubereitungen mit einem Gehalt an einer oder mehreren erfindungsgemäßen lichtschutzwirksame Verbindungen des Aluminiums, welche das Strukturmotiv des Dibenzoylmethans enthalten kann vorteilhaft gewählt werden aus folgender Substanzgruppe:

- Mineralöle, Mineralwachse
- Öle, wie Triglyceride der Caprin- oder der Caprylsäure, vorzugsweise aber Rizinusöl;
- Fette, Wachse und andere natürliche und synthetische Fettkörper, vorzugsweise Ester von Fettsäuren mit Alkoholen niedriger C-Zahl, z.B. mit Isopropanol, Propylenglykol oder Glycerin, oder Ester von Fettalkoholen mit Alkansäuren niedriger C-Zahl oder mit Fettsäuren;

NJOY Exhibit 1002.1084

- Alkylbenzoate;
- Silikonöle wie Dimethylpolysiloxane, Diethylpolysiloxane, Diphenylpolysiloxane sowie Mischformen daraus.

Die folgenden Beispiele sollen die Verkörperungen der vorliegenden Erfindungen verdeutlichen. Die Angaben beziehen sich stets auf Gewichts-%, sofern nicht andere Angaben gemacht werden.

O/W Creme

Beispielrezeptur 1	**Gew.-%**
Cetylstearylalkohol	2
Caprylsäure/Caprinsäuretriglyceride	4
Dicaprylylcarbonat	2
Dicaprylylether	4
Phenylen-1,4-bis-(2-benzimidazyl)-3,3'-5,5'-tetrasulfonsäure Dinatriumsalz (z.B. Neo Heliopan AP®)	1
Phenolderivat: 4-Hydroxyacetophenon	1
Natriumstearoylglutamat	0,3
Ammonium Polyacryldimethyltaurid/Vinylformamid-copolymer (Aristoflex AVC®)	0,4
Xanthan Gum	0,1
Acrylates/C10-30 Alkyl Acrylate Crosspolymer	0,25
Glycerin	7
Konservierung	q.s.
Natronlauge (pH 7 eingestellt)	q.s.
Wasser 100%	ad 100

NJOY Exhibit 1002.1085

Beispielrezeptur 2	**Gew.-%**
Cetylstearylalkohol	2
Caprylsäure/Caprinsäuretriglyceride	4
Dicaprylylcarbonat	2
Dicaprylylether	4
Phenylen-1,4-bis-(2-benzimidazyl)-3,3'-5,5'-tetrasulfonsäure Dinatriumsalz (z.B. Neo Heliopan AP®)	1
Phenolderivat: Salicylsäure	1
Natriumstearoylglutamat	0,3
Ammonium Polyacryldimethyltaurid/Vinylformamid-copolymer (Aristoflex AVC®)	0,4
Xanthan Gum	0,1
Acrylates/C10-30 Alkyl Acrylate Crosspolymer	0,25
Glycerin	7
Konservierung	q.s.
Natronlauge (pH 7 eingestellt)	q.s.
Wasser 100%	ad 100

NJOY Exhibit 1002.1086

Beispielrezeptur 3	**Gew.-%**
Cetylstearylalkohol	2
Caprylsäure/Caprinsäuretriglyceride	4
Dicaprylylcarbonat	2
Dicaprylylether	4
Phenylen-1,4-bis-(2-benzimidazyl)-3,3'-5,5'-tetrasulfonsäure Dinatriumsalz (z.B. Neo Heliopan AP®)	1
Phenolderivat: Methylparaben	1
Natriumstearoylglutamat	0,3
Ammonium Polyacryldimethyltaurid/Vinylformamid-copolymer (Aristoflex AVC®)	0,4
Xanthan Gum	0,1
Acrylates/C10-30 Alkyl Acrylate Crosspolymer	0,25
Glycerin	7
Konservierung	q.s.
Natronlauge (pH 7 eingestellt)	q.s.
Wasser 100%	ad 100

NJOY Exhibit 1002.1087

Beispielrezeptur 4	**Gew.-%**
Glycerylstearatcitrat	2
Cetylalkohol	3
C12-15 Alkylbenzoat	3
Ethylhexyltriazon	1
Ethylhexylsalicylat	4
Cyclomethicone	2
Dimethicon	1
Phenylen-1,4-bis-(2-benzimidazyl)-3,3'-5,5'-tetrasulfonsäure Dinatriumsalz (z.B. Neo Heliopan AP®)	1
Carrageen	0,3
Carbomer	0,1
Kreatin	0,1
4-Hydroxyacetophenon	0,5
Glycerin	8
EDTA	0,2
Parfüm	0,3
Natronlauge (pH 7 eingestellt)	q.s.
Wasser	ad 100

NJOY Exhibit 1002.1088

Beispielrezeptur 5	**Gew.-%**
Stearylalkohol	2
Cetylalkohol	2
Cetearylglucosid	2
Ethlyhexylmethoxycinnamat	3
2,4-Bis-{[4-(2-ethyl-hexyloxy)-2-hydroxy]-phenyl}-6-(4-methoxyphe-nyl)-1,3,5-triazin (Tinosorb® S)	2
Phenylen-1,4-bis-(2-benzimidazyl)-3,3'-5,5'-tetrasulfonsäure Dinatri-umsalz (z.B. Neo Heliopan AP®)	2
Myristylmyristat	1
Macadamiaöl	0,5
Octyldodecanol	2
Phenoxyethanol	0,6
Polyacrylsäure	0,1
4-Hydroxyacetophenon	0,4
Ubichinon	0,05
Glycerin	9
EDTA	0,1
Parfum	0,3
Tocopherylacetat	0,5
Ubiquinon (Q10)	0,03
Methylpropandiol	4
Natronlauge (pH 7 eingestellt)	q.s.
Wasser	ad 100

NJOY Exhibit 1002.1089

O/W-Emulsion

Beispielrezeptur 6	**Gew.-%**
Caprylsäure/Caprinsäuretriglyceride	3
Sorbitanstearat	1
Stearylalkohol	1
Polyglyceryl-3 Methylglucosedistearat	3
Cyclomethicon	4
Phenylen-1,4-bis-(2-benzimidazyl)-3,3'-5,5'-tetrasulfonsäure Dinatriumsalz (z.B. Neo Heliopan AP®)	0,5
Butyl Methoxydibenzoylmethane	2
Ethylhexyl-2-cyano-3,3-diphenylacrylat	5
4-Hydroxyacetophenon	0,25
Dimethicon	2
C_{12-15} Alkylbenzoat	2
Dicaprylylether	2
Carrageen	0,1
C10-30 Alkylacrylat Crosspolymer	0,1
Glycerin	8
EDTA	0,2
Licochalkon A	0,02
Ethylhexylglycerin	0,4
Citronensäure, Natriumsalz (pH 7)	q.s.
Wasser	ad 100

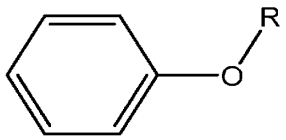
NJOY Exhibit 1002.1090

Patentansprüche

1. Lichtschutzwirksame Wirkstoffkombinationen aus Phenylen-1,4-bis-(2-benzimidazyl)-3,3'-5,5'-tetrasulfonsäure und/oder Phenylen-1,4-bis-(2-benzimidazyl)-3,3'-5,5'-tetrasulfonsäuresalzen und einem oder mehreren niedermolekularen Phenolderivaten.

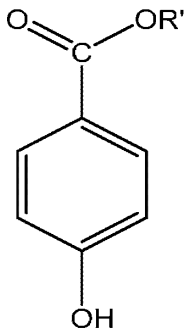
2. Wirkstoffkombinationen nach Anspruch 1, dadurch gekennzeichnet, dass als Phenylen-1,4-bis-(2-benzimidazyl)-3,3'-5,5'-tetrasulfonsäuresalz das Phenylen-1,4-bis-(2-benzimidazyl)-3,3'-5,5'-tetrasulfonsäuretetranatriumsalz eingesetzt wird.

3. Wirkstoffkombinationen nach Anspruch 1 oder 2, dadurch gekennzeichnet, dass das oder die niedermolekularen Phenolderivate gewählt wird oder werden aus der Gruppe der Verbindungen die folgendes Strukturelement enthalten:



wobei R dabei ein Wasserstoffatom oder einen verzweigten oder unverzweigten Alkylrest von 1 bis 25 C-Atomen darstellen kann.

4. Wirkstoffkombinationen nach einem der vorstehenden Ansprüche, dadurch gekennzeichnet, dass das oder die niedermolekularen Phenolderivate gewählt wird oder werden aus der Gruppe 4-Hydroxyacetophenon, der Gruppe der Parabene, mit der Formel



wobei R' dabei ein Wasserstoffatom oder einen verzweigten oder unverzweigten Alkylrest von 1 bis 25 C-Atomen darstellt, aus der Gruppe der Salicylsäurederivate, beispielsweise Salicylsäure, 4-Isopropylbenzylsalicylat, 2-Ethylhexylsalicylat, Homomenthylsalicylat.

NJOY Exhibit 1002.1091

5. Wirkstoffkombinationen nach einem der vorstehenden Ansprüche, in denen Gewichtsverhältnisse der Gesamtmenge an Phenylen-1,4-bis-(2-benzimidazyl)-3,3'-5,5'-tetrasulfonsäure und/oder Phenylen-1,4-bis-(2-benzimidazyl)-3,3'-5,5'-tetrasulfonsäuresalzen zur Menge an 4-Hydroxyacetophenon aus dem Bereich von 10 zu 1 bis 1 zu 10 gewählt werden, bevorzugt von 5 zu 1 bis 1 zu 5, insbesondere bevorzugt von 3 zu 1 bis 1 zu 3.

6. Kosmetische oder dermatologische Zubereitungen, enthaltend Wirkstoffkombinationen nach einem der vorstehenden Ansprüche.

7. Zubereitungen nach Anspruch 6, in denen das oder die niedermolekularen Phenolderivate in Gewichtskonzentrationen vorliegt oder vorliegen aus dem Bereich von 0,001 % bis 5% gewählt, bevorzugt von 0,01 bis 2 %, insbesondere bevorzugt von 0,1% bis 1%, jeweils bezogen auf das Gesamtgewicht der Zubereitungen.

NJOY Exhibit 1002.1092

Fig. 1

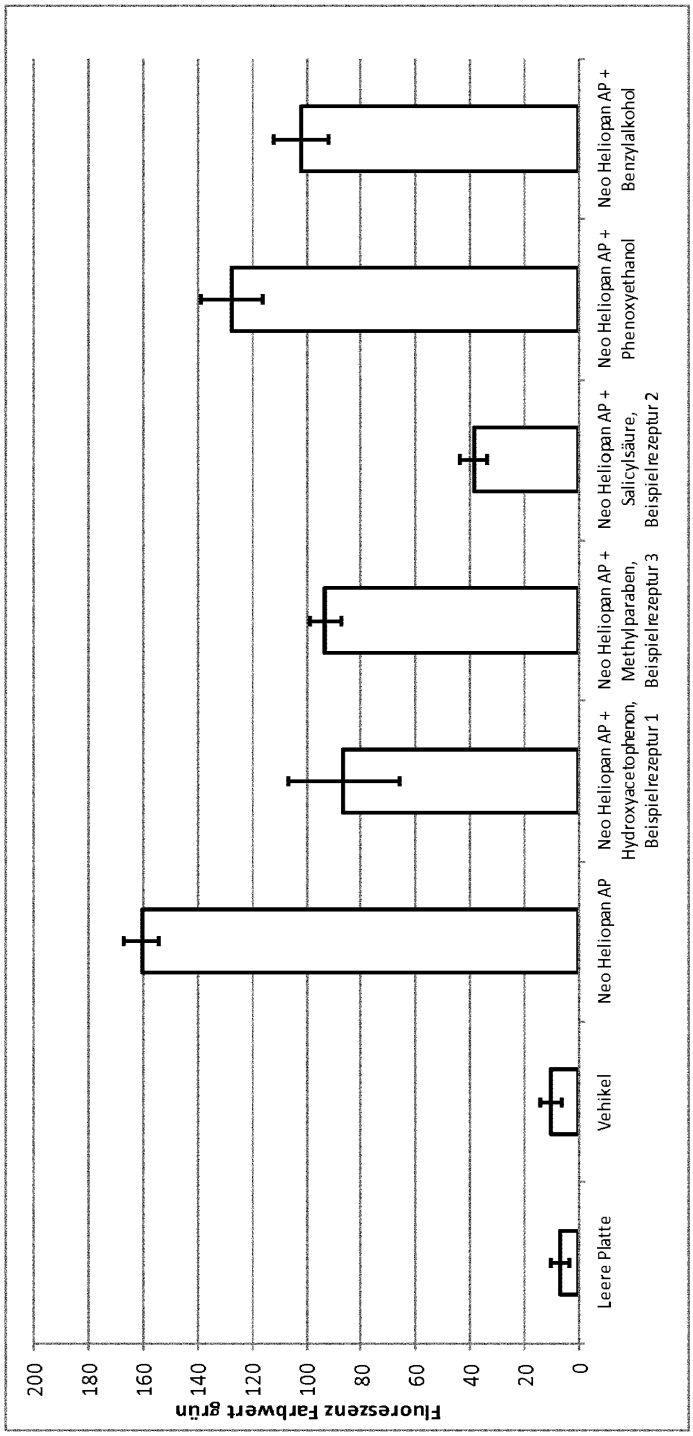


Fig. 1. Fluoreszenz von Neo Heliopan AP in O/W-Emulsionen, gemindert durch verschiedene niedermolekulare Phenolderivate. Anregungswellenlänge: 365 nm. Farbwert „grün", aus der Fotographie ausgewertet.

NJOY Exhibit 1002.1093

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2015/051546

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61K8/34 A61K8/49 A61Q17/04
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A61K A61Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	Anonymous: "GNPD - Sun Cream", , 1 August 2001 (2001-08-01), XP055177116, Retrieved from the Internet: URL:http://www.gnpd.com/sinatra/recordpage /109200/from_search/u7ku23xdGJ/ [retrieved on 2015-03-17]	1-4,6
Y	the whole document	5,7
	----- -/--	

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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Date of the actual completion of the international search	Date of mailing of the international search report
25 March 2015	09/04/2015

Name and mailing address of the ISA/
European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer
Heller, Dorothée

1

Form PCT/ISA/210 (second sheet) (April 2005)

NJOY Exhibit 1002.1094

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	Anonymous: "GNPD - Sun Protect SPF 30 Day Cream", , 1 September 2013 (2013-09-01), XP055177143, Retrieved from the Internet: URL:http://www.gnpd.com/sinatra/recordpage/2179673/from_search/gNiDUmdtKB/ [retrieved on 2015-03-17]	1-4,6
Y	the whole document	5,7
X	Anonymous: "GNPD - Sun Cream SPF50+ PA+++", , 1 July 2013 (2013-07-01), XP055177145, Retrieved from the Internet: URL:http://www.gnpd.com/sinatra/recordpage/2122952/from_search/gNiDUmdtKB/ [retrieved on 2015-03-17]	1-4,6
Y	the whole document	5,7
X	Anonymous: "GNPD - Sun Protect BB Base SPF 50 PA+++", , 1 June 2012 (2012-06-01), XP055177147, Retrieved from the Internet: URL:http://www.gnpd.com/sinatra/recordpage/1820206/from_search/gNiDUmdtKB/ [retrieved on 2015-03-17]	1-4,6
Y	the whole document	5,7
X	Anonymous: "GNPD - Sun Milk SPF 30", , 1 October 2012 (2012-10-01), XP055177149, Retrieved from the Internet: URL:http://www.gnpd.com/sinatra/recordpage/1896378/from_search/gNiDUmdtKB/ [retrieved on 2015-03-17]	1-4,6
Y	the whole document	5,7
X	Anonymous: "GNPD - Hand Cream SPF 15", , 1 April 2013 (2013-04-01), XP055177151, Retrieved from the Internet: URL:http://www.gnpd.com/sinatra/recordpage/2005313/from_search/gNiDUmdtKB/ [retrieved on 2015-03-17]	1-4,6
Y	the whole document	5,7

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NJOY Exhibit 1002.1095

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	Anonymous: "GNPD - Gold Label Premium Blemish Base SPF 45/PA+++", , 1 June 2013 (2013-06-01), XP055177153, Retrieved from the Internet: URL:http://www.gnpd.com/sinatra/recordpage/2104968/from_search/gNiDUmdtKB/ [retrieved on 2015-03-17]	1-4,6
Y	the whole document	5,7

X	Anonymous: "GNPD - Cream SPF 50+", , 1 July 2013 (2013-07-01), XP055177156, Retrieved from the Internet: URL:http://www.gnpd.com/sinatra/recordpage/2131714/from_search/gNiDUmdtKB/ [retrieved on 2015-03-17]	1-4,6
Y	the whole document	5,7

X	EP 1 222 914 A1 (BEIERSDORF AG [DE]) 17 July 2002 (2002-07-17)	1-7
Y	paragraphs [0001], [0029], [0032] - [0044]; claims; examples 1-4	5

X	DE 10 2007 017439 A1 (BEIERSDORF AG [DE]) 16 October 2008 (2008-10-16)	1-4,6,7
Y	paragraphs [0001], [0006], [0008], [0012], [0024], [0062]; claims; examples 2,11	5

X	EP 2 266 527 A2 (HENKEL AG & CO KGAA [DE]) 29 December 2010 (2010-12-29)	1-4,6,7
Y	paragraphs [0001], [0009], [0015]; claims; tables S. 3,12, 15	5

X	EP 2 545 896 A2 (HENKEL AG & CO KGAA [DE]) 16 January 2013 (2013-01-16)	1-4,6,7
Y	paragraphs [0001], [0019], [0028], [0109]; claims; examples	5

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NJOY Exhibit 1002.1096

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2015/051546

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1222914 A1	17-07-2002	AT 347348 T	15-12-2006
		DE 10100721 A1	11-07-2002
		EP 1222914 A1	17-07-2002
		ES 2276860 T3	01-07-2007
DE 102007017439 A1	16-10-2008	NONE	
EP 2266527 A2	29-12-2010	DE 102009027105 A1	30-12-2010
		EP 2266527 A2	29-12-2010
EP 2545896 A2	16-01-2013	DE 102011079237 A1	17-01-2013
		EP 2545896 A2	16-01-2013

NJOY Exhibit 1002.1097

INTERNATIONALER RECHERCHENBERICHT

Internationales Aktenzeichen
PCT/EP2015/051546

A. KLASSIFIZIERUNG DES ANMELDUNGSGEGENSTANDES
INV. A61K8/34 A61K8/49 A61Q17/04
ADD.

Nach der Internationalen Patentklassifikation (IPC) oder nach der nationalen Klassifikation und der IPC

B. RECHERCHIERTE GEBIETE

Recherchierter Mindestprüfstoff (Klassifikationssystem und Klassifikationssymbole)
A61K A61Q

Recherchierte, aber nicht zum Mindestprüfstoff gehörende Veröffentlichungen, soweit diese unter die recherchierten Gebiete fallen

Während der internationalen Recherche konsultierte elektronische Datenbank (Name der Datenbank und evtl. verwendete Suchbegriffe)
EPO-Internal, WPI Data

C. ALS WESENTLICH ANGESEHENE UNTERLAGEN

Kategorie*	Bezeichnung der Veröffentlichung, soweit erforderlich unter Angabe der in Betracht kommenden Teile	Betr. Anspruch Nr.
X	Anonymous: "GNPD - Sun Cream", , 1. August 2001 (2001-08-01), XP055177116, Gefunden im Internet: URL:http://www.gnpd.com/sinatra/recordpage /109200/from_search/u7ku23xdGJ/ [gefunden am 2015-03-17]	1-4,6
Y	das ganze Dokument	5,7
	----- -/--	

[X] Weitere Veröffentlichungen sind der Fortsetzung von Feld C zu entnehmen [X] Siehe Anhang Patentfamilie

* Besondere Kategorien von angegebenen Veröffentlichungen :
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"&" Veröffentlichung, die Mitglied derselben Patentfamilie ist

Datum des Abschlusses der internationalen Recherche	Absendedatum des internationalen Recherchenberichts
25. März 2015	09/04/2015

Name und Postanschrift der Internationalen Recherchenbehörde	Bevollmächtigter Bediensteter
Europäisches Patentamt, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Heller, Dorothée

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Formblatt PCT/ISA/210 (Blatt 2) (April 2005)

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C. (Fortsetzung) ALS WESENTLICH ANGESEHENE UNTERLAGEN

Kategorie*	Bezeichnung der Veröffentlichung, soweit erforderlich unter Angabe der in Betracht kommenden Teile	Betr. Anspruch Nr.
X	Anonymous: "GNPD - Sun Protect SPF 30 Day Cream", , 1. September 2013 (2013-09-01), XP055177143, Gefunden im Internet: URL:http://www.gnpd.com/sinatra/recordpage/2179673/from_search/gNiDUmdtKB/ [gefunden am 2015-03-17]	1-4,6
Y	das ganze Dokument	5,7
X	Anonymous: "GNPD - Sun Cream SPF50+ PA+++", , 1. Juli 2013 (2013-07-01), XP055177145, Gefunden im Internet: URL:http://www.gnpd.com/sinatra/recordpage/2122952/from_search/gNiDUmdtKB/ [gefunden am 2015-03-17]	1-4,6
Y	das ganze Dokument	5,7
X	Anonymous: "GNPD - Sun Protect BB Base SPF 50 PA+++", , 1. Juni 2012 (2012-06-01), XP055177147, Gefunden im Internet: URL:http://www.gnpd.com/sinatra/recordpage/1820206/from_search/gNiDUmdtKB/ [gefunden am 2015-03-17]	1-4,6
Y	das ganze Dokument	5,7
X	Anonymous: "GNPD - Sun Milk SPF 30", , 1. Oktober 2012 (2012-10-01), XP055177149, Gefunden im Internet: URL:http://www.gnpd.com/sinatra/recordpage/1896378/from_search/gNiDUmdtKB/ [gefunden am 2015-03-17]	1-4,6
Y	das ganze Dokument	5,7
X	Anonymous: "GNPD - Hand Cream SPF 15", , 1. April 2013 (2013-04-01), XP055177151, Gefunden im Internet: URL:http://www.gnpd.com/sinatra/recordpage/2005313/from_search/gNiDUmdtKB/ [gefunden am 2015-03-17]	1-4,6
Y	das ganze Dokument	5,7

-/--

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NJOY Exhibit 1002.1099

INTERNATIONALER RECHERCHENBERICHT

Internationales Aktenzeichen
PCT/EP2015/051546

C. (Fortsetzung) ALS WESENTLICH ANGESEHENE UNTERLAGEN

Kategorie*	Bezeichnung der Veröffentlichung, soweit erforderlich unter Angabe der in Betracht kommenden Teile	Betr. Anspruch Nr.
X	Anonymous: "GNPD - Gold Label Premium Blemish Base SPF 45/PA+++", , 1. Juni 2013 (2013-06-01), XP055177153, Gefunden im Internet: URL:http://www.gnpd.com/sinatra/recordpage/2104968/from_search/gNiDUmdtKB/ [gefunden am 2015-03-17]	1-4,6
Y	das ganze Dokument	5,7

X	Anonymous: "GNPD - Cream SPF 50+", , 1. Juli 2013 (2013-07-01), XP055177156, Gefunden im Internet: URL:http://www.gnpd.com/sinatra/recordpage/2131714/from_search/gNiDUmdtKB/ [gefunden am 2015-03-17]	1-4,6
Y	das ganze Dokument	5,7

X	EP 1 222 914 A1 (BEIERSDORF AG [DE]) 17. Juli 2002 (2002-07-17)	1-7
Y	Absätze [0001], [0029], [0032] - [0044]; Ansprüche; Beispiele 1-4	5

X	DE 10 2007 017439 A1 (BEIERSDORF AG [DE]) 16. Oktober 2008 (2008-10-16)	1-4,6,7
Y	Absätze [0001], [0006], [0008], [0012], [0024], [0062]; Ansprüche; Beispiele 2,11	5

X	EP 2 266 527 A2 (HENKEL AG & CO KGAA [DE]) 29. Dezember 2010 (2010-12-29)	1-4,6,7
Y	Absätze [0001], [0009], [0015]; Ansprüche; Tabellen S. 3,12, 15	5

X	EP 2 545 896 A2 (HENKEL AG & CO KGAA [DE]) 16. Januar 2013 (2013-01-16)	1-4,6,7
Y	Absätze [0001], [0019], [0028], [0109]; Ansprüche; Beispiele	5

1

NJOY Exhibit 1002.1100

INTERNATIONALER RECHERCHENBERICHT

Angaben zu Veröffentlichungen, die zur selben Patentfamilie gehören

Internationales Aktenzeichen
PCT/EP2015/051546

Im Recherchenbericht angeführtes Patentdokument	Datum der Veröffentlichung	Mitglied(er) der Patentfamilie	Datum der Veröffentlichung
EP 1222914 A1	17-07-2002	AT 347348 T	15-12-2006
		DE 10100721 A1	11-07-2002
		EP 1222914 A1	17-07-2002
		ES 2276860 T3	01-07-2007
DE 102007017439 A1	16-10-2008	KEINE	
EP 2266527 A2	29-12-2010	DE 102009027105 A1	30-12-2010
		EP 2266527 A2	29-12-2010
EP 2545896 A2	16-01-2013	DE 102011079237 A1	17-01-2013
		EP 2545896 A2	16-01-2013

NJOY Exhibit 1002.1101

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(19) World Intellectual Property Organization
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WIPO | PCT

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WO 2016/059000 A1

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A24F 47/00 (2006.01)

(21) International Application Number:
PCT/EP2015/073580

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(25) Filing Language: English

(26) Publication Language: English

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14189197.8 16 October 2014 (16.10.2014) EP

(71) Applicant: **FONTEM HOLDINGS 2 B.V.** [NL/NL]; 12th Floor, Barbara Strozzilaan 101, NL-1083 HN Amsterdam (NL).

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(54) Title: ELECTRONIC SMOKING DEVICE AND ATOMIZER

(57) Abstract: It is provided an electronic smoking device (1) with a housing (2) including an atomizer (6) and a liquid reservoir (4). The atomizer (6) comprises a heating wire (8) and at least a first contact finger (9) adapted to supply a first electrical potential to the heating wire (8). The first contact finger (9) is adapted to contact the heating wire (8) at a plurality of different contact portions (P1, P2, P3, P4) thereby altering the heating characteristics of the atomizer (6) which vaporizes liquid (5) supplied from the reservoir (4) to generate an aerosol (7).

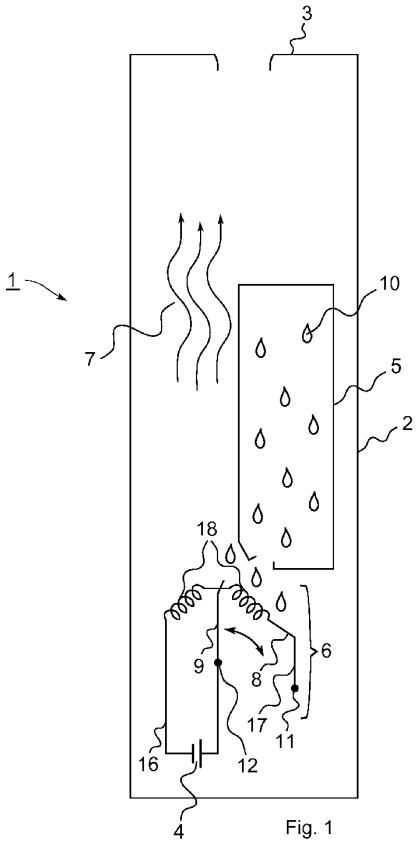


Fig. 1

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ELECTRONIC SMOKING DEVICE AND ATOMIZER

An electronic smoking device, e.g. designed as an electronic cigarette, generally has a housing containing an electric power source (usually a single use battery or a rechargeable battery), and an electrically operable atomizer. The atomizer vaporizes or atomizes liquid supplied from a reservoir (usually a capsule) and provides vaporized or atomized liquid as an aerosol. Control electronics controls activation of the atomizer. In many electronic cigarettes, a puff detector is provided within the electronic smoking device which detects a user puffing on the device (e.g., by sensing an under-pressure or an air flow pattern through the device). The puff detector indicates or signals the puff to the control electronics. Alternatively, a button may be used to switch on the electronic smoking device to generate a puff of favour. When a puff is detected, the control electronics supplies electrical power to the atomizer thereby creating vaporized liquid as an aerosol.

The heating wire may be required to provide different heating characteristics e.g. when different liquids are to be vaporized by a user. The heating wire may degrade due to repeated use.

SUMMARY OF THE INVENTION

In one aspect of the present invention, an atomizer is disclosed that is adapted to be used in an electronic smoking device. The atomizer comprises a heating wire and at least a one contact finger for supplying an electrical potential to the heating wire. The contact finger is adapted to contact the heating wire at a plurality of different contact portions thereby enabling a user to adjust the heating characteristics of the heating wire.

An advantage of the atomizer for an electronic smoking device according to the present invention is that a resistance of a heating wire can be easily adjusted by a user. Furthermore a worn portion of the heating wire can be easily replaced by changing a portion at which the contact finger electrically connects the heating wire to a power source such as a rechargeable battery.

The characteristics, features and advantages of this invention and the manner in which they are obtained as described above, will become more apparent and be more clearly

understood in connection with the following description of exemplary embodiments, which are explained with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings, same element numbers indicate same elements in each of the views:

Figure 1 is a schematic cross sectional view of an electronic smoking device according to a first embodiment of the present invention,

Figure 2a is a schematic view of an atomizer of a second embodiment according to the present invention,

Figure 2b is a schematic view of the atomizer shown in Figure 2a where the contact finger is located in a different contact portion,

Figure 2c is a schematic view of the atomizer shown in Figure 2a where the contact finger is located in a different contact portion,

Figure 3 is a schematic cross sectional view of an electronic smoking device according to a third embodiment of the present invention,

Figure 4a is a schematic view of an atomizer of a fourth embodiment according to the present invention where two contact fingers are provided,

Figure 4b is a schematic view of the atomizer shown in Figure 4a where the contact fingers are located in a different contact portion,

Figure 5 is a schematic cross sectional view of an electronic smoking device according to a fifth embodiment of the present invention,

Figure 6 is a schematic cross sectional view of an electronic smoking device according to a sixth embodiment of the present invention, and

Figure 7 is a schematic cross sectional view of an electronic smoking device according to a seventh embodiment of the present invention.

DETAILED DESCRIPTION OF THE DRAWINGS

Figure 1 shows a schematic cross sectional view of an electronic smoking device according to a first embodiment of the present invention. The electronic smoking device 1 is designed as an electronic cigarette and comprises a mouthpiece 3 which is attached to the housing 2.

In this embodiment the mouthpiece 3 has a tubular shape with a tapered portion and is attached to the housing 2 of the electronic smoking device 1 which has a substantially cylindrical shape. The housing 2 accommodates an atomizer 6 with a heating wire 8 and a reservoir 5 for storing a liquid 10 therein, wherein the atomizer 6 is adapted to vaporize the liquid 10 supplied from the reservoir 5.

The reservoir 5 comprises a capsule which is arranged adjacent to the atomizer 6 and which is filled with a liquid 10. However, the reservoir 5 also may be realized as any other kind of receptacle that can have an arbitrary form or shape and also be located in another position inside the housing 2. In this embodiment of the present invention, the liquid 10 exemplarily comprises a mixture of glycerol and a vanilla extract. However, the liquid 10 is not limited thereto and it is possible to realize electronic smoking devices 1 with other liquids e.g. propylene glycol, triethylene glycol, polyhydric alcohol, tetraethylene glycol, aliphatic ester of carboxylic acid, such as methyl stearate, dimethyl dodecanedioate, dimethyl tetradecanedioate, water and the like.

In addition, flavoured materials may be added to the liquid 10, for example esters, such as isoamyl acetate, linalyl acetate, isoamyl propionate, linalyl butyrate and the like or natural essential oils as plant essential oils, such as spearmint, peppermint, cassia, jasmine and the like or animal essential oils, such as musk, amber, civet, castor and the like or simple flavouring materials, such as anethole, limonene, linalool, eugenol and the like or hydrophilic flavour components such as a leaf tobacco extract or natural plant flavouring materials such as licorice, St. John's wort, a plum extract, a peach extract and the like or acids such as a malic acid, tartaric acid, citric acid and the like or sugars such as glucose, fructose, isomerized sugar and the like or polyhydric alcohols such as propylene glycol, glycerol, sorbitol and the like. It is also possible to combine different flavoured materials as mentioned above into new flavoured materials. Moreover, it is possible to adsorb any

flavour onto a solid material and to use this material as flavoured material within an electronic smoking device 1 according to the present invention.

When triggered by a user of the electronic smoking device 1, liquid 10 is drawn from the reservoir 5 by capillary action and provided to the atomizer 6 where it is atomized or vaporized. However, the present invention is not limited to such vaporized liquids and it is possible to realize other embodiments of the electronic smoking device 1 which e.g. generate an aerosol from a solid material.

The electronic smoking device 1 comprises a flow path located inside the housing 2 extending from the heating element 6 to the mouthpiece 3. In this first embodiment of the present invention, an opening is arranged at an upper portion of the housing 2 which represents an outlet for vaporized liquid 7 towards the mouthpiece 3. The housing 2 may accommodate one or more guiding elements such as a separation wall or a deflection member which define or determine the course of the flow path inside the housing 2 of the electronic smoking device 1. Such guiding elements may be positioned between an outlet of the reservoir 5 and the opening of the housing 2 and are adapted to guide the vaporized liquid 7 to stream along a predefined flow path. In this sense, the opening of the housing 2 also functions as a guiding element which determines the course of the flow path inside the housing 2.

In this embodiment, the atomizer 6 comprises a heating wire 8 which is formed of two heating coils 18. A wick may be embedded inside the heating wire. The heating wire 8 extends from a first terminal end 16 which is electrically connected to a positive pole of a battery 4 functioning as a power source to a second terminal end 17 which is connected to a floating potential 11. In this embodiment, the floating potential 11 is formed as a terminal wire which is electrically insulated from surrounding components. However, the present invention is not limited to such a floating potential 11 and it is possible to realize other embodiments of the atomizer 6 with a floating potential 11 that differs from the embodiment shown in the Figure 1. For example, the floating potential 11 may be formed as a resistor with a high electrical resistance that is connected to the housing 2. Alternatively, the floating potential 11 may be connected to an adjustable power source for supplying a predetermined electrical potential to the second terminal end 17 of the heating wire 8.

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In this embodiment, an wire is provided having a straight section as part of the heating wire 8 thereby forming a first contact portion P1 between a first heating coil 18 which faces towards the first terminal end 16 and a second heating coil 18 which faces towards the second terminal end 17. Another straight section of the wire 8 is provided thereby forming a second contact portion P2 between the second heating coil 18 and the second terminal end 17. Each of the straight sections protrudes upwards from a plane in which the heating coils 18 are located (illustrated by the paper plane).

In this embodiment, the atomizer 6 further comprises a contact finger 9 which is formed as a longish rotatable pin such as a metal rod. The contact finger 9 is adapted to rotate around its rotation axis 12 which extends perpendicularly to said plane in which the heating coils 18 are located. The rotation axis 12 may extend in parallel with a longitudinal axis of the housing 2. A terminal portion of the contact finger 9 located at the rotation axis 12 is electrically connected to a negative pole of the battery 4. A rotation plane of the contact finger 9 is elevated above the heating coils 18 such that the contact finger 9 does not contact the heating coils 18 when rotating around axis 12. That is, the contact finger 9 overflies the heating coils 18 when rotating around the axis 12 without electrically or mechanically contacting the heating coils 18. An opposite terminal portion of the contact finger 9 facing away from the rotation axis 12 however mechanically contacts the protruding (i.e. elevated) straight sections of the wire 8 at the contact portions P1 and P2 when rotating into the respective direction. Due to the mechanical (and accordingly also electrical) contact between the contact finger 9 and the heating wire 8 at one of the contact portions P1 and P2, an electrical current flows through the heating wire 8 provided that a potential difference is applied to the heating wire 8 between the first terminal end 16 and the respective contact portion P1, P2. In this embodiment, the contact portions P1, P2 are formed as straight sections of the wire 8 and the contact finger 9 is formed as longish rotatable pin. However, the present invention is not limited to such contact portions P1, P2 and such a contact finger 9 and it is possible to realize other embodiments of the atomizer 6 with contact portions/ contact finger that differ from the embodiment shown in the Figure 1. For example, the contact portions P1, P2 may be formed to have any suitable shape such as a plate or the like. Furthermore, the contact finger 9 may be formed to have any suitable shape such as a hook or the like.

In the embodiment of Figure 1, the contact finger 9 mechanically and electrically contacts the first contact portion P1 and accordingly a current only flows through the first heating coil 18 which is arranged between the first contact portion P1 and the first terminal end 16

of the heating wire 8. Accordingly, the amount of coiled heating wire is less compared to a position of the contact finger 9 in which it contacts the second contact portion P2. That is, the resistance of the heating wire 8 can be altered by rotation of the contact finger 9. In the present embodiment, a resistance of the heating wire 8 is greater in a position of the contact finger 9 contacting the second contact portion P2 compared to a position of the contact finger 9 contacting the first contact portion P1. In other words, the heating wire 8 will become hotter in a position of the contact finger 9 contacting the first contact portion P1 compared to a position of the contact finger 9 contacting the second contact portion P2. According to the present invention, a user can control the position of the contact finger 9 thereby adjusting the heating characteristics of the atomizer 6. Alternatively, a position of the contact finger 9 can be controlled by means of control electronics of an electronic smoking device.

A further advantage of the atomizer 6 for an electronic smoking device 1according to the present invention is that it can be used with an electronic smoking device with a invariable power source while providing different heating characteristics. That is, conventional atomizers require to control a voltage applied to a heating wire for controlling (varying) the heating characteristics. However, the electronic smoking device according to the present invention does not need to control the amount of a voltage applied to a heating wire because it allows an adjustment of the heating characteristics by a relative movement of the contact finger and the heating wire which result in different contact positions.

In this embodiment, the atomizer 6 comprises two contact portions P1, P2 and two heating coils 18. However, the present invention is not limited to such an atomizer 6 and it is possible to realize other embodiments of the atomizer 6 with a different number of contact portions and heating coils. Furthermore, the number of contact portions can differ from the number heating coils. In the same way, the arrangement of the contact portions and the heating coils can differ from the embodiment shown in Figure 1.
In this embodiment, the contact finger 9 is adapted to rotate with respect to the heating coils 18 that are fixed to the housing 2, however, the present invention is not limited to such a rotatable contact finger 9 and it is possible to realize other embodiments where the contact finger 9 is fixed with respect to the housing 2 while the plurality of heating coils 18 are adapted to rotate with respect to the fixed contact finger 9. It would also be possible that both, the contact finger 9 and the heating coils 18 are adapted to rotate with respect to each other.

Figures 2a to 2c are schematic views of an atomizer of a second embodiment according to the present invention having three different contact positions P1, P2 and P3. In Figure 2a, the contact finger 9 which is connected to a negative pole of a power source contacts the first contact portion P1 which is located between two adjacent heating coils 18. Furthermore a positive pole of the power source is connected to a first terminal end 16 of the heating wire 8 which comprises three heating coils 18 and four different contact portions P1, P2 and P3 while a second terminal end 17 is connected to a floating potential (e.g. grounded). Therefore a current flows through one heating coil 18 during operation of the atomizer.

In Figure 2b, the contact finger 9 contacts the second contact portion P2 which is also located between two adjacent heating coils 18. Therefore a current flows through two heating coils 18 during operation of the atomizer.

In Figure 2c, the contact finger 9 contacts the third contact portion P3 which is located between an outermost heating coil 18 facing away from the first terminal end 16 and the second terminal end 17. Therefore a current flows through three heating coils 18 during operation of the atomizer. It becomes clear that the position of the contact finger 9 alters the number of heating coils 18 through which a current flows during operation thereby adjusting the temperature of the heating element. In this second embodiment, the contact finger 9 may be laterally moved for contacting different contacting portions P1, P2 and P3.

Increasing the number of used coils 18 (or resistance) for a fixed voltage supply will reduce power thereby reducing the heat generated and reducing the amount of vapour. That is, the user can control the amount of vapour by controlling the position of the contact finger 9.

According to a preferred embodiment of the present invention, a wire diameter is uniform along the whole heating wire 8, however, the present invention is not limited to such an arrangement of the heating wire 8. It is possible to realize other embodiments where the wire diameter of the heating wire 8 changes from one heating coil 18 (coiled section) to the next heating coil 18, offering different resistance/surface area ratios which provide a further opportunity for controlling the amount of vapour by the user.

Figure 3 is a schematic cross sectional view of an electronic smoking device according to a third embodiment of the present invention. Similarly to the second embodiment shown in

Figures 2a to 2c, the heating wire 8 comprises three heating coils 18. However, the number and arrangement of heating coils 18 is not limited thereto. The third embodiment of the present invention is substantially identical to the second embodiment of the electronic smoking device 1 as shown in Figures 2a to 2c and as described hereinbefore. However, some of the components of the second embodiment of the present invention differ from the respective components with the same reference signs of the first embodiment of the present invention. Therefore, the differences of the second embodiment in comparison to the second embodiment will be described hereinafter.

In this third embodiment of the present invention, the heating coils 18 are not arranged along a straight line but the heating coils 18 are circularly arranged within the housing 2 of the electronic smoking device. That is, the contact finger 9 has a rotation axis 12 which extends along a central portion of a cross section of the housing 2. The heating coils 18 are circularly arranged close to an inner wall of the housing 2. In this case, however, the complete heating wire 8 is electrically insulated from the housing 2. A length extension of the contact finger 9 is smaller than half a diameter of the cross section of the housing 2. A length extension of the contact finger 9 may range between 20 and 45% of the diameter of the cross section of the housing 2. Similarly to Figures 2a to 2c, the contact finger 9 is connected to a negative pole of a power source and contacts the first contact portion P1 which is located between two adjacent heating coils 18. Furthermore a positive pole of the power source is connected to a first terminal end 16 while a second terminal end 17 is connected to a floating potential. The position of the contact finger 9 alters the number of heating coils 18 through which a current flows thereby adjusting the temperature of the heating wire 8.

Each of the plurality of different contact portions P1, P2 and P3 may have the same or substantially the same distance from the first rotation axis 12 due to their circular arrangement. That is, linear relative movement between the heating wire 8 and the contact finger 9 can be avoided. Further, a size of the contact portions P1, P2 and P3 can be reduced while simultaneously assuring firm contact between the contact finger 9 and the respective contact portion. The plurality of contact portions P1, P2 and P3 may furthermore be equidistantly spaced apart from one another which facilitates changing the position of the contact finger 9 from one contact portion to another contact portion due to the fact that a required rotation angle remains constant.

Figures 4a to 4b are schematic views of an atomizer of a fourth embodiment according to the present invention having four different contact portions P1, P2, P3 and P4. Similarly to the second embodiment shown in Figures 2a to 2c, the heating wire 8 comprises three heating coils 18 for the sake of illustration. However, the number and arrangement of heating coils 18 is not limited thereto. The fourth embodiment of the present invention is partly identical to the second embodiment of the electronic smoking device 1 as shown in Figures 2a to 2c and as described hereinbefore. However, some of the components of the second embodiment of the present invention differ from the respective components with the same reference signs of the first embodiment of the present invention. Therefore, the differences of the fourth embodiment in comparison to the second embodiment will be described hereinafter.

In Figure 4a, a first contact finger 9 and a second contact finger 14 are provided. The first contact finger 9 is connected to a positive pole of a power source and contacts the first contact portion P1 which is located between the first terminal end 16 and a heating coil 18 located next to the first terminal end 16. The second contact finger 14 is connected to a negative pole of a power source and contacts the second contact portion P2 which is located between two adjacent heating coils 18 one of which being located next to the first terminal end 16. That is, the second contact finger 14 supplies a second electrical potential to the heating wire 8 that differs from the first electrical potential supplied by the first contact finger 9. Furthermore, each of the first terminal end 16 and the second terminal end 17 is connected to a resistor 13 which is fixed to the housing 2. In this embodiment, both resistors 13 are electrically insulated from one another. Furthermore, both contact fingers 9, 14 are electrically insulated from one another. For avoiding a short circuit, the second contact finger 14 contacts the heating wire 8 at a contact portion P2 being different to a contact portion P1 at which the first contact finger 9 contacts the heating wire 8. It becomes clear that the position of both contact fingers 9, 14 defines the number of heating coils 18 through which a current flows thereby adjusting the temperature of the heating wire 8.

A further advantage of the atomizer for an electronic smoking device according to this embodiment of the present invention is that different portion (i.e. different heating coils 18) of the heating wire 8 can be used and accordingly a lifetime of the atomizer can be increased. That is, a user can simultaneously rotate the contact fingers 9, 14 when a currently used portion of the heating wire 8 (i.e. one or more succeeding heating coils 18) is worn out. Even if the user does not want to alter the heating characteristics, i.e.

maintain the number of the used coils 18, it is possible to substitute the currently used portion (one or more succeeding heating coils 18 implemented between the contact fingers 9, 14) when rotating the contact fingers 9, 14 and maintaining an angle between them. Alternatively, the electronic smoking device according may comprise control means for substituting a used portion of the heating wire 8 depending on the degree of deterioration of the respective portion (one or more succeeding heating coils 18). The degree of deterioration can be measured by an increase in wire resistance. Therefore an automatic detection of a worn out coil 18 may comprise means for detecting an electrical resistance of the heating wire 8 and means for substituting a currently used portion when the detected electrical resistance of the heating wire 8 is greater than a predetermined value.

In Figure 4b, the first contact finger 9 contacts the third contact portion P3 which is located between two adjacent heating coils 18 one of which being located next to the second terminal end 17. The second contact finger 14 contacts the fourth contact portion P4 which is located next to the second terminal end 17. Similarly to Figure 4a, current flows through one heating coil 18 during operation of the atomizer. Nevertheless, different coils 18 can be used by rotation of the contact fingers 9, 14 which allows altering the used portion until all configurations are used up. It is also possible to alter the heating temperature by changing the number of used heating coils 18. In such a case it is preferred to provide control means for balancing a degree of deterioration of all portions to be equal or substantially equal. In other words, if a deterioration degree of a certain portion (one or more succeeding heating coils 18 implemented between the contact fingers 9, 14) exceeds a predetermined value, this portion shall be discarded while heating operation is performed using the residual portions that underrun said predetermined value. In this way it is assured that the atomizer reaches a maximum lifetime under the given heating requirements. In a still more preferred embodiment, the used portions are altered in a predetermined recurring manner (even if not exceeding said predetermined value) thereby advantageously allowing regeneration and preventing overheating.

For adjusting the position of the contact finger 9 or the contact fingers 9 and 14, respectively, the atomizer 6 may be split into two sections, one located above the other and connected by a central axis connecting pin. The two sections are locked together (e.g. using a spring, a magnet or a mechanical interlock) during operation of the atomizer 6. For changing the orientation of the contact finger(s) 9(, 14) with respect to the contact

portions P1, P2, P3(,P4), the two sections are pulled apart by a user so that they can rotate around the axis of the connecting pin which may coincide with the rotation axis 12 or at least one of rotation axes 12, 15. The rotation causes the contact finger(s) 9(, 14) to land on a different contact portions P1, P2, P3(,P4) of the heating wire 8. This applies both, atomizers where there is only one contact finger 9 (Fig. 1 to 3 and 7) or to atomizers with two contact fingers 9, 14 for moving said contact fingers 9, 14 from a used wire section to an unused wire section (Fig. 4 to 6).

Figure 5 is a schematic cross sectional view of an electronic smoking device according to a fifth embodiment of the present invention. Similarly to the third embodiment shown in Figures 3, the heating wire 8 comprises three heating coils 18 for the sake of illustration. However, the number and arrangement of heating coils 18 is not limited thereto. The fifth embodiment of the present invention is partly identical to the third embodiment of the electronic smoking device 1 as shown in Figure 3 and as described hereinbefore. However, some of the components of the fifth embodiment of the present invention differ from the respective components with the same reference signs of the third embodiment of the present invention. Therefore, the differences of the fifth embodiment in comparison to the third embodiment will be described hereinafter.

In this fifth embodiment of the present invention, the heating wire 8 does not comprise a single contact finger 9 but comprises a first contact finger 9 and a second contact finger 14. Both contact fingers 9, 14 are formed as rotatable pins, wherein each pin is formed as an elongated metal rod. Furthermore, the heating coils 18 are not arranged along a straight line but the heating coils 18 are circularly arranged within the housing 2 of the electronic smoking device. Both fingers 9, 14 have their respective rotation axes 12, 15 arranged to extend along a central portion of a cross section of the housing 2. Both rotation axes 12, 15 are located close to one another, however, the contact fingers 9, 14 are electrically insulated from one another. In more particular, a distance between the first rotation axis 12 and the second rotation axis 15 is smaller than a distance between adjacent heating coils 18. The housing 2 of the electronic smoking device comprises an elongated shape and a longitudinal axis of the housing 2 is parallel to both, the first rotation axis 12 of the first contact finger 9 and the second rotation axis 15 of the second contact finger 14. A length extension of each of the contact fingers 9, 14 is smaller than half a diameter of the cross section of the housing 2. A length extension of each of the contact fingers 9, 14 may range between 20 and 45% of the diameter of the cross section of the housing 2.

Similarly to Figures 4a and 4b, the first contact finger 9 is connected to a positive pole of a power source, the second contact finger 14 is connected to a negative pole of a power source and each of the first terminal end 16 and the second terminal end 17 is connected to a resistor. The first contact finger 9 contacts the second contact portion P2 which is located between two adjacent heating coils 18 one of which being located next to the first terminal end 16. Furthermore, the second contact finger 14 contacts the third contact portion P3 which is located between two adjacent heating coils 18 one of which being located next to the second terminal end 17. Similarly to Figures 4a and 4b, current flows through one heating coil 18 during operation of the atomizer. Nevertheless, a different heating coil 18 is used compared to Figures 4a and 4b thereby enhancing the overall lifetime of the atomizer.

Figure 6 is a schematic cross sectional view of an electronic smoking device according to a sixth embodiment of the present invention. Similarly to the fifth embodiment shown in Figure 5, the heating wire 8 comprises three heating coils 18 for the sake of illustration. However, the number and arrangement of heating coils 18 is not limited thereto. The sixth embodiment of the present invention is partly identical to the fifth embodiment of the electronic smoking device 1 as shown in Figure 5 and as described hereinbefore. However, in this sixth embodiment, the heating coils 18 are not electrically (physically) connected to each other. In this embodiment the angle between the contact fingers 9, 14 is fixed such that current flows through one heating coil 18. The angle between the contact fingers 9, 14 may be constant at all times of operation. In Figure 6, the first contact finger 9 contacts the first contact portion P1 and the second contact finger 14 contacts the second contact portion P2. For expanding the overall lifetime of the atomizer however, the contact fingers 9, 14 may mutually be rotated when the currently used heating coil 18 malfunctions such that the first contact finger 9 contacts the third contact portion P3 and the second contact finger 14 contacts the fourth contact portion P4 or such that the first contact finger 9 contacts the fifth contact portion P5 and the second contact finger 14 contacts the sixth contact portion P6.

Figure 7 is a schematic cross sectional view of an electronic smoking device according to a seventh embodiment of the present invention. Similarly to the sixth embodiment shown in Figure 6, the heating coils 18 are separated from one another, i.e. they are not electrically (and also not physically) connected to each other. The seventh embodiment of the present invention is partly identical to the sixth embodiment of the electronic smoking

device 1 as shown in Figure 6 and as described hereinbefore. However, in this seventh embodiment, only one contact finger 9 is used instead of two different contact fingers used in the sixth embodiment. In this embodiment, a positive pole of the power source is connected to a first terminal end 16 of each heating wire 8, where each heating wire 8 comprises one contact portion, i.e. the left heating wire 8 comprises a first contact portion P1, the middle heating wire 8 comprises a second contact portion P2 and the right heating wire 8 comprises a third contact portion P3. Furthermore each heating wire 8 comprises a second terminal end 17 being connected to a floating potential (e.g. grounded). Therefore a current flows through one heating coil 18 during operation of the atomizer where the heating coil 18 to be used is selected by the position of the contact finger 9. For expanding the overall lifetime of the atomizer, the contact finger 9 may be rotated (either automatically or by a user) when the currently used heating coil 18 malfunctions (or is worn out) such that the first contact finger 9 contacts another contact portion, e.g. the second contact portion P2 or the third contact portion P3 thereby selecting a new heating coil 18.

In the previous embodiments, the heating coils 18 have been positioned in sequence to one another; however, the present invention is not limited to such an arrangement of the heating coils 18. It is possible to realize other embodiments where the heating coils 18 are vertically stacked one above another, wherein the contact fingers 9, 14 are formed as vertically sliding contact fingers 9, 14.

In the previous embodiments, the contact fingers 9, 14 are adapted to rotate (or laterally move or move otherwise) with respect to the heating coils 18 that are fixed to the housing 2, however, the present invention is not limited to such a rotatable contact fingers 9, 14 and it is possible to realize other embodiments where the contact fingers 9, 14 are fixed with respect to the housing 2 while the plurality of heating coils 18 are adapted to rotate with respect to the fixed contact finger 9 (or laterally move or move otherwise). It would also be possible that both, the contact fingers 9, 14 and the heating coils 18 are adapted to rotate (or laterally move or move otherwise) with respect to each other.

Although in the above embodiments electronic smoking devices have been described in which liquid is atomised by being heated by a heating wire, it will be appreciated that in other embodiments other means for generating a vapour such as piezoelectric elements could be used instead of a heating wire. Such of piezoelectric elements may be adapted to generate an aerosol by vibrating the liquid to produce small droplets.

It will also be appreciated that although in some embodiments a puff detector for detecting a user puffing on a device could be provided and the puff detector could be arranged to initiate the activation of an atomizer when a user puffed on the device, in some embodiments the puff detector could be replaced by a push button and a user could be cause an atomizer to activate by pressing on the button. In other embodiments other means for activating the device could be provided.

While this invention has been described in connection with what is presently considered to be practical exemplary embodiments, it is to be understood that the present invention is not limited to the disclosed embodiments, but, on the contrary, is intended to cover various modifications and equivalent arrangements included within the scope of the appended claims.

LIST OF REFERENCE SIGNS

1	electronic smoking device
2	housing
3	mouthpiece
4	battery / power source
5	reservoir
6	atomizer
7	aerosol
8	heating wire
9	first contact finger
10	material to be vaporized
11	floating potential
12	rotation axis of first contact finger
13	resistor
14	second contact finger
15	rotation axis of second contact finger
16	first terminal portion of heating wire
17	second terminal portion of heating wire
18	heating coil

P1	first portion of heating wire
P2	second portion of heating wire
P3	third portion of heating wire
P3	fourth portion of heating wire
P5	fifth portion of heating wire
P6	sixth portion of heating wire

CLAIMS

1. An atomizer (6) for an electronic smoking device (1) being operable in use to generate an aerosol (7), comprising:
a heating wire (8), and
at least a first contact finger (9) adapted to supply a first electrical potential to the heating wire (8),
wherein the first contact finger (9) is adapted to contact the heating wire (8) at a plurality of different contact portions (P1, P2, P3, P5).

2. The atomizer (6) of claim 1, wherein the first contact finger (9) is formed as a rotatable pin adapted to rotate around a first rotation axis (12).

3. The atomizer (6) of claim 3, wherein the plurality of different contact portions (P1, P2, P3, P5) is equidistantly spaced apart from the first rotation axis (12).

4. The atomizer (6) of any of the preceding claims, wherein the heating wire (8) comprises a plurality of separate heating coils (18) being sequentially arranged along the heating wire (8), wherein each of the contact portions (P1, P2, P3, P5) is formed between adjacent heating coils (18).

5. The atomizer (6) of claim 4, wherein each of the contact portions (P1, P2, P3, P5) protrudes from a connecting line between adjacent heating coils (18).

6. The atomizer (6) of any of the preceding claims, wherein each of the contact portions (P1, P2, P3, P5) is formed as a straight section of the heating wire (8).

7. The atomizer (6) of any of claims 2 to 6, wherein plurality of contact portions (P1, P2, P3, P5) are circularly arranged around the first rotation axis (12) and equidistantly spaced apart from each other.

8. The atomizer (6) of any of the preceding claims, further comprising a second contact finger (14) adapted to supply a second electrical potential to the heating wire (8) that differs from the first electrical potential.

9. The atomizer (6) of claim 8, wherein the second contact finger (14) is adapted to contact the heating wire (8) at a plurality of different contact portions (P2, P3, P4, P6),

wherein the contact portion (Fig. 5, P2) of the first contact finger (9) differs from the contact portion (Fig. 5, P3) of the second contact finger (14).

10. The atomizer (6) of any of claims 8 and 9, wherein the second contact finger (14) is formed as a rotatable pin adapted to rotate around a second rotation axis (15).

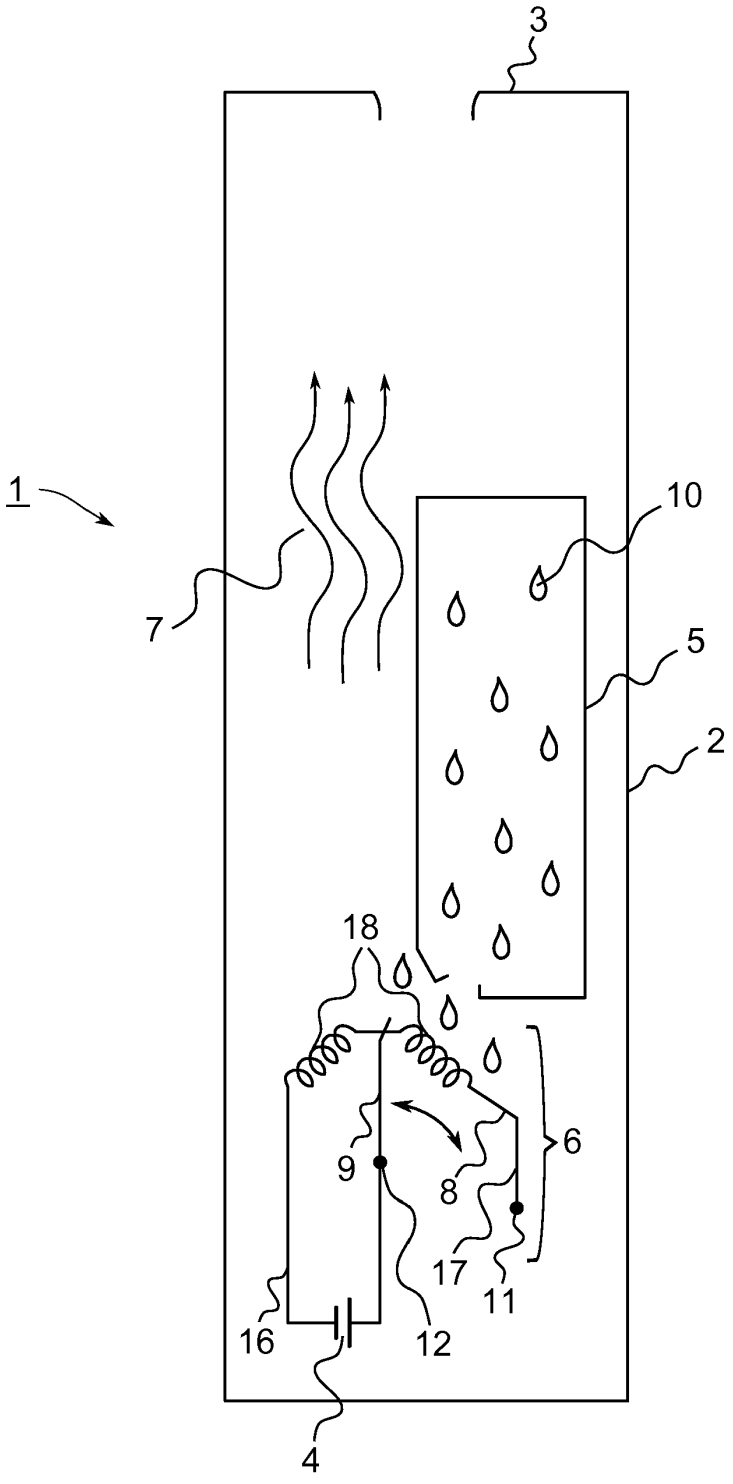
11. The atomizer (6) of claim 10, wherein the plurality of different contact portions (P1, P2, P3, P4) are equidistantly spaced apart from the second rotation axis (15).

12. The atomizer (6) of any of claims 10 and 11, wherein a distance between the first rotation axis (12) and the second rotation axis (15) is smaller than a distance between adjacent heating coils (18).

13. The atomizer (6) of any of the preceding claims, wherein a wick is embedded inside the heating wire (8).

14. An electronic smoking device (1) comprising:
a mouthpiece (3),
an atomizer (6) of any of the preceding claims,
a reservoir (5), wherein the atomizer (6) is adapted to vaporize a liquid (10) supplied from the reservoir (5) to generate an aerosol (7), and
a housing (2) accommodating the atomizer (6) and the reservoir (5).

15. The electronic smoking device (1) of claim 14, the housing (2) comprises an elongated shape and a longitudinal axis of the housing (2) is parallel to the first rotation axis (12) of the first contact finger (9).



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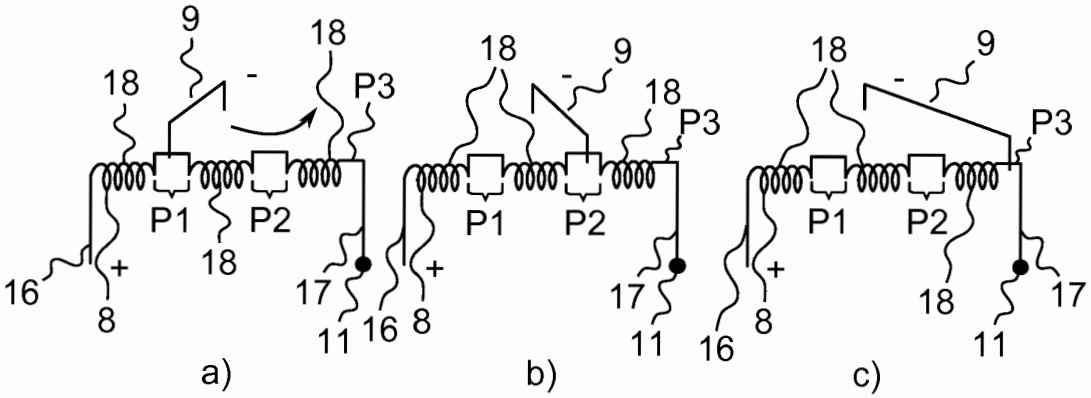


Fig. 2

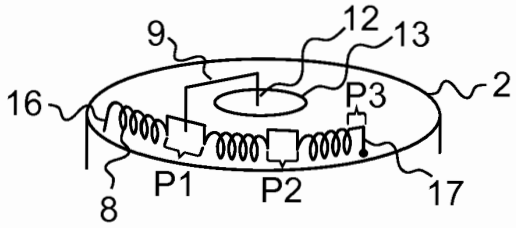


Fig. 3

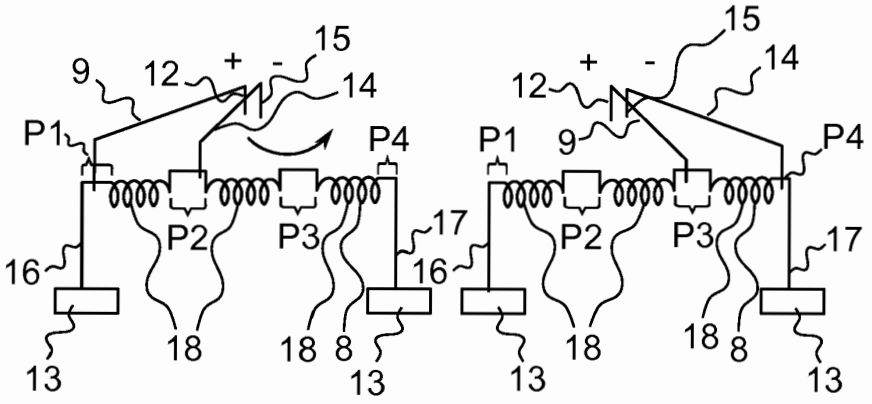
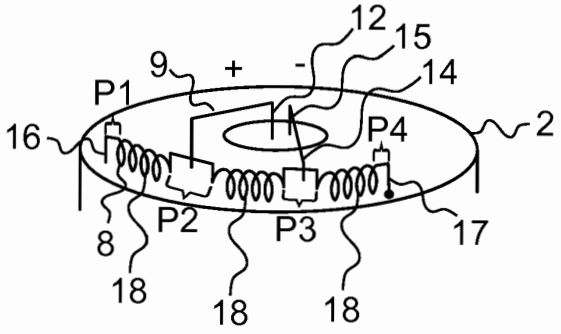


Fig. 4



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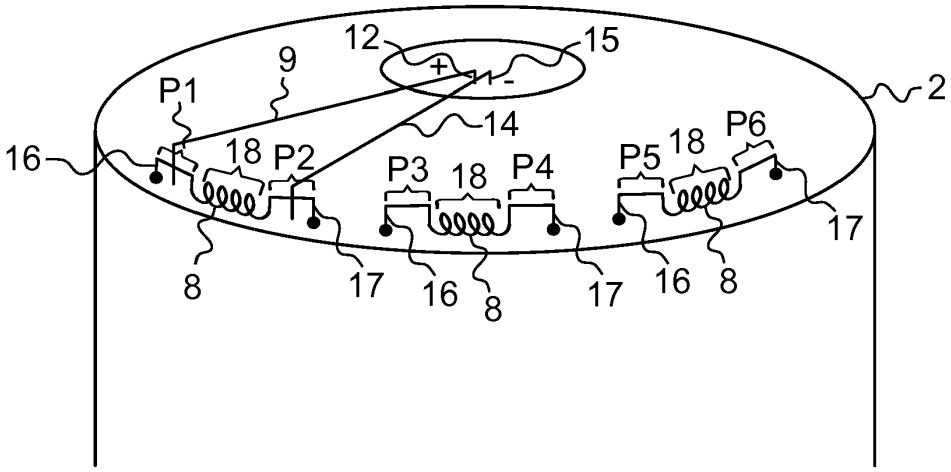


Fig. 6

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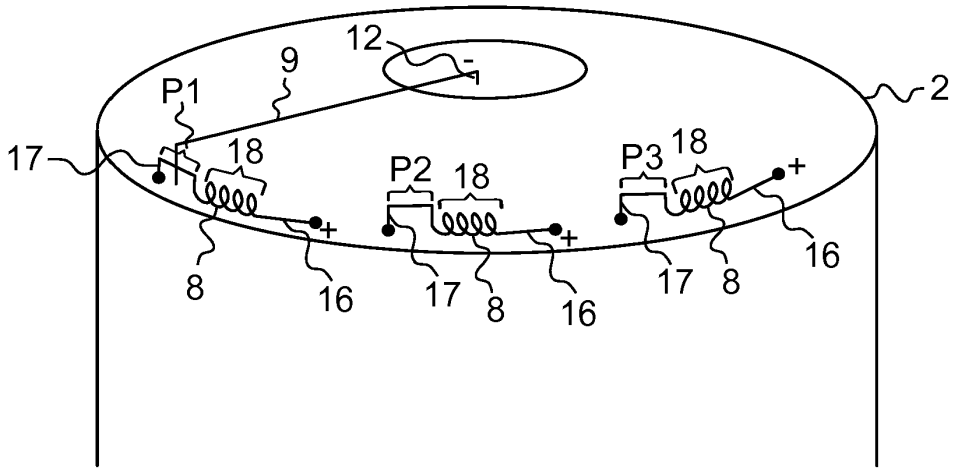


Fig. 7

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INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2015/073580

A. CLASSIFICATION OF SUBJECT MATTER
INV. A24F47/00
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A24F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 488 488 A1 (PHILIP MORRIS [US] PHILIP MORRIS PROD [US]) 3 June 1992 (1992-06-03) column 4, line 11 - line 31; figures 1,2 column 8, line 51 - column 10, line 27; figures 7G-7K	1-15
A	US 2008/092912 A1 (ROBINSON JOHN HOWARD [US] ET AL) 24 April 2008 (2008-04-24) paragraph [0110] - paragraph [0114]; figures	1-15
A	US 2014/209105 A1 (SEARS STEPHEN BENSON [US] ET AL SEARS STEVEN BENSON [US] ET AL) 31 July 2014 (2014-07-31) paragraph [0017] - paragraph [0018]; figures paragraph [0051]	1-15

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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Date of the actual completion of the international search	Date of mailing of the international search report
22 January 2016	01/02/2016

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Marzano Monterosso

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INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2015/073580

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 203 378 562 U (LIU QIUMING) 8 January 2014 (2014-01-08) abstract; figures -----	1-15

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2015/073580

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		WO 2014120479 A1	07-08-2014
CN 203378562 U	08-01-2014	NONE	

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(12) 按照专利合作条约所公布的国际申请

(19) 世界知识产权组织
国 际 局

(43) 国际公布日
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(25) 申请语言: 中文

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(30) 优先权:
201620272810.7 2016 年 4 月 5 日 (05.04.2016) CN

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(81) 指定国 (除另有指明，要求每一种可提供的国家保护): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW。

(84) 指定国 (除另有指明，要求每一种可提供的地区保护): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), 欧亚 (AM, AZ, BY, KG, KZ, RU, TJ, TM), 欧洲 (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG)。

[见续页]

(54) **Title**: E-LIQUID CARTRIDGE AND ELECTRONIC CIGARETTE CARRYING SAME

(54) **发明名称**: 烟弹及带有该烟弹的电子烟

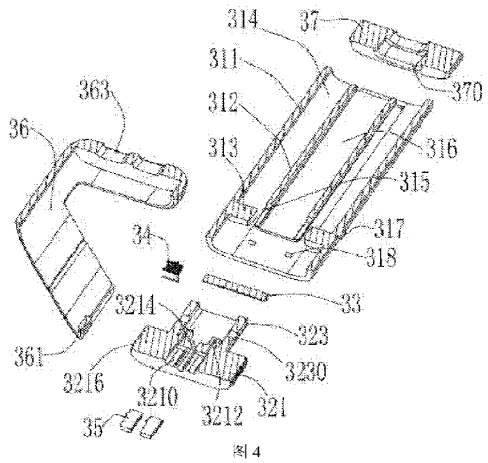


图 4

(57) **Abstract**: An e-liquid cartridge and an electronic cigarette carrying the same, comprising an e-liquid cartridge housing (31), an atomizing base (32) and an e-liquid guide (33). The e-liquid cartridge housing (31) is provided therein with an e-liquid storage chamber (314), and an e-liquid inlet (315) which is used for e-liquid to flow through is formed on the e-liquid storage chamber (314); the atomizing base (32) comprises an insertion portion (323) on which the e-liquid guide (33) is provided; the insertion portion(323) is movably accommodated in the e-liquid cartridge housing (31) and moves to a first position with respect to the e-liquid inlet (315) under an external force; the insertion portion (323) closes the inlet (315), and the e-liquid guide (33) is staggered from the e-liquid inlet (315) to prevent the e-liquid from leaking when the e-liquid cartridge is transported or not in use for a long period of time.

(57) **摘要**: 一种烟弹以及带有该烟弹的电子烟，包括烟弹壳体(31)、雾化座(32)以及导液件(33)，烟弹壳体(31)内设置有储液腔(314)，储液腔(314)上形成有供烟液流通的进液口(315)；雾化座(32)包括插入部(323)，导液件(33)设置于插入部(323)上；插入部(323)可移动地收容于烟弹壳体(31)内并在外力作用下相对于进液口(315)移动至第一位置时，插入部(323)封闭进液口(315)，导液件(33)与进液口(315)错开，防止烟弹在运输过程中或长期不使用时烟液泄漏。

WO 2017/173951 A1

NJOY Exhibit 1002.1128

根据细则 4.17 的声明:

— 关于申请人有权要求在先申请的优先权(细则 4.17(iii))

本国际公布:

— 包括国际检索报告(条约第 21 条(3))。

NJOY Exhibit 1002.1129

烟弹及带有该烟弹的电子烟

技术领域

[0001] 本发明涉及电子烟领域，特别涉及一种烟弹及带有该烟弹的电子烟。

背景技术

[0002] 现有的电子烟包括烟弹及供电组件，烟弹包括储液腔、导液件及发热件，导液件将储液腔内的烟液引导至发热件，发热件在电驱动下加热烟液使其雾化供用户使用。

[0003] 然而，由于储液腔可以通过导液件与外界连通，因此，烟弹及其电子烟在运输过程中或长期不使用时存在漏液风险，并且也容易受到外界污染。

发明内容

[0004] 基于此，有必要提供一种有效防止烟液泄露的烟弹。

[0005] 还有必要提供一种带有该烟弹的电子烟。

[0006] 一种烟弹，用于电子烟，其包括烟弹壳体、雾化座以及导液件，所述烟弹壳体内设置有储液腔，所述储液腔上形成有供烟液流通的进液口；所述雾化座包括插入部，所述导液件设置于所述插入部上；所述插入部可移动地收容于所述烟弹壳体内并在外力作用下相对于所述进液口移动至第一位置时，所述插入部封闭所述进液口，所述导液件与所述进液口错开。

[0007] 在其中一个实施例中，所述插入部在外力作用下相对于所述进液口移动至与所述第一位置不同的第二位置时，所述导液件伸入所述进液口并与所述储液腔连通。

[0008] 在其中一个实施例中，所述烟弹壳体包括两组相对的侧壁、沿垂直所述烟弹壳体长度方向间隔排列并沿所述烟弹壳体的长度方向连接于其中两个相对的侧壁之间的两条连接壁以及两个阻挡凸台，所述阻挡凸台凸出设置于与所述连接壁相对的所述侧壁的内表面上，并与对应的所述连接壁以及对应的所述侧壁共同界定形成两个所述储液腔，两条所述连接壁界定形成位于两个所述储液腔之间的烟道，所述进液口的个数是两个，所述进液口是所述阻挡凸台与对应的所述连接壁末端之间的间隔。

[0009] 在其中一个实施例中，所述插入部相对的两侧贯穿设置有安装孔，所述导液件穿设于所述安装孔内并与所述烟道连通；当所述插入部收容于所述烟弹壳体内并移动至所述第一位置时，所述插入部收容于所述阻挡凸台之间且顶端抵接于两条所述连接壁的末端，所述导液件位于两个所述进液口下方；当所述插入部由所述第一位置继续移动至所述第二位置时，

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所述插入部的顶端挤压于两条所述连接壁上，所述导液件移动并伸入两侧的两个所述进液口内。

[0010] 在其中一个实施例中，所述雾化座还包括座体，所述插入部设置于所述座体上；所述座体的外壁面上开设有若干防滑槽，所述烟弹壳体内凸出设置有与所述防滑槽卡设的限位凸台。

[0011] 在其中一个实施例中，所述座体上开设有安装槽以及引线孔，所述烟弹还包括发热件及电极接触件；所述电极接触件收容于所述安装槽内，所述发热件绕设于所述导液件上并通过设置于所述引线孔内的引线与所述电极接触件电性连接。

[0012] 在其中一个实施例中，所述座体内设置有贯穿所述座体底部的进气孔，所述进气孔连通于外界与所述插入部之间。

[0013] 在其中一个实施例中，所述烟弹还包括外盖与内盖，所述外盖设置于所述烟弹壳体上，所述内盖设置于所述外盖与所述烟弹壳体之间；所述内盖上开设有与所述烟道连通的第一出烟孔，所述外盖上开设有与所述第一出烟孔连通的第二出烟孔。

[0014] 在其中一个实施例中，所述外盖上设置有卡钩，所述烟弹壳体上设置有与所述卡钩配合的凸起。

[0015] 在其中一个实施例中，所述雾化座由橡胶或硅胶制成。

[0016] 电子烟包括供电装置及烟弹，所述烟弹为上述所述的烟弹，所述烟弹与所述供电装置可拆卸地连接。

[0017] 在其中一个实施例中，所述供电装置包括带有容置腔的电池壳体，所述电池壳体的内壁面上凸出设置有卡扣，所述烟弹壳体上与所述卡扣对应位置设置有卡槽，所述烟弹通过所述卡扣与所述卡槽可拆卸地收容于所述容置腔内。

[0018] 在其中一个实施例中，：所述供电装置还包括收容于所述容置腔内的供电组件，所述烟弹与所述供电组件电性连接。

[0019] 本发明中当电子烟中烟弹未使用时，烟弹中的插入部在外力作用下被推至第一位置，导液件卡在阻挡凸台之间且与进液口错开，插入部挡住储液腔上的进液口，使得导液件与储液腔内的烟液无法接触，从而有效防止烟弹在运输过程中或长期不使用时烟液泄露。

附图说明

[0020] 图 1 为本发明中电子烟的结构示意图；

图 2 为图 1 所示电子烟的分解示意图；

NJOY Exhibit 1002.1131

图 3 为图 1 所示电子烟中烟弹的分解示意图；

图 4 为图 3 所示电子烟中烟弹的剖视图；

图 5 为图 3 所示电子烟中烟弹的第一使用状态图；

图 6 为图 3 所示电子烟中烟弹的第二使用状态图。

电子烟 100	供电装置 10	容置腔 110	卡扣 112
烟弹 30	烟弹壳体 31	卡槽 3101	侧壁 311
连接壁 312	阻挡凸台 313	储液腔 314	进液口 315
烟道 316	凸起 317	限位凸台 318	雾化座 32
座体 321	安装槽 3210	引线孔 3212	进气孔 3214
防滑槽 3216	插入部 323	导液件 33	发热件 34
电极接触件 35	外盖 36	第二出烟孔 363	内盖 37
第一出烟孔 370	电池壳体 11	卡钩 361	安装孔 3230

具体实施方式

[0021] 为了便于理解本发明，下面将参照相关附图对本发明进行更全面的描述。附图中给出了本发明的较佳实施例。但是，本发明可以以许多不同的形式来实现，并不限于本文所描述的实施例。相反地，提供这些实施例的目的是使对本发明的公开内容的理解更加透彻全面。

[0022] 需要说明的是，当元件被称为“固定于”另一个元件，它可以直接在另一个元件上或者也可以存在居中的元件。当一个元件被认为是“连接”另一个元件，它可以是直接连接到另一个元件或者可能同时存在居中元件。

[0023] 除非另有定义，本文所使用的所有的技术和科学术语与属于本发明的技术领域的技术人员通常理解的含义相同。本文中在本发明的说明书中所使用的术语只是为了描述具体的实施例的目的，不是旨在于限制本发明。本文所使用的术语“及 / 或”包括一个或多个相关的所列项目的任意的和所有的组合。

[0024] 请参看图 1 与图 2，本发明一较佳实施例中，电子烟 100 包括供电装置 10 及用于储存烟液的烟弹 30。供电装置 10 包括带有容置腔 110 的电池壳体 11 以及收容于容置腔 110 内的供电组件（图未示）。烟弹 30 可拆卸地收容于电池壳体 11 的容置腔 110 内并与供电组件电连接，以将烟液加热并雾化。在本具体实施例中，电池壳体 11 的内壁面上凸出设置有卡扣 112，烟弹 30 上与卡扣 112 对应位置设置有卡槽 3101。如此，烟弹 30 与供电装置 10 通

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过卡槽 3101 与卡扣 112 可拆卸地连接。可以理解地，在其它一些实施例中，供电装置 10 与烟弹 30 的配合结构可以根据需要而定，只需实现两者可拆卸配合即可，例如可设置为相互钩挂的两个卡钩等，在此不作限定。

[0025] 请结合参看图 3 与图 4，烟弹 30 包括烟弹壳体 31、雾化座 32、导液件 33、发热件 34 以及电极接触件 35。其中，卡槽 3101 设置于烟弹壳体 31 的外壁面上，用以通过与卡扣 112 的配合实现烟弹壳体 31 与电池壳体 11 的可拆卸连接。雾化座 32 收容于烟弹壳体 31 的一端。发热件 34 绕设于导液件 33 上，并与导液件 33 一同设置于雾化座 32 的顶部。电极接触件 35 设置于雾化座 32 的底部，并电性连接于供电组件与发热件 34 之间，以使得发热件 34 在电驱动下加热并雾化由导液件 33 引导至发热件 34 上的烟液。

[0026] 具体地，请参看图 4，烟弹壳体 31 为两端连通的中空长方体柱状，其包括两组相对的侧壁 311、连接壁 312 以及阻挡凸台 313。连接壁 312 沿烟弹壳体 31 长度方向连接于烟弹壳体 31 的其中两个相对的侧壁 311 之间，阻挡凸台 313 凸出设置于与连接壁 312 相对的侧壁 311 靠近雾化座 32 一端的内表面上，并与连接壁 312 及侧壁 311 共同界定形成用于储存烟液的储液腔 314。阻挡凸台 313 与连接壁 312 的末端之间保留一定间隔，并形成与储液腔 314 连通的进液口 315。在本具体实施例中，连接壁 312 的数量是两条，两条连接壁 312 沿垂直烟弹壳体 31 长度方向间隔排列，相应地，阻挡凸台 313、进液口 315 的数量均是两个，且每个进液口 315 是阻挡凸台 313 与对应的连接壁 312 末端之间的间隔。如此，两个阻挡凸台 313 分别与对应的连接壁 312 以及对应的侧壁 311 共同界定形成两个储液腔 314。两条连接壁 312 将位于两个储液腔 314 之间的空间界定形成两端贯通的烟道 316。可以理解地，在其它一些实施例中，储液腔 314 的数量以及与烟道 316 的相对位置可以根据需要而定，同时储液腔 314 亦可由两条连接壁 312 与阻挡凸台 313 围设形成，或者直接由烟弹壳体 31 相对两侧的侧壁 311 围设形成亦可，即只需形成用于储存烟液的空间便可，在此不作限定。

[0027] 进一步地，烟弹 30 还包括外盖 36 及内盖 37。其中，外盖 36 设置于烟弹壳体 31 远离阻挡凸台 313 的一端，内盖 37 设置于外盖 36 与烟弹壳体 31 之间。具体地，外盖 36 上设置有卡钩 361，烟弹壳体 31 上与卡钩 361 对应位置设置有凸起 317，用以加固外盖 36 与烟弹壳体 31 之间的配合，可有效防止位于烟弹壳体 31 与外盖 36 之间的内盖 37 由烟弹壳体 31 上脱落。

[0028] 进一步地，内盖 37 上开设有与烟道 316 连通的第一出烟孔 370，外盖 36 上开设有两

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个与第一出烟孔 370 连通的第二出烟孔 363（请参看图 4），以供由发热件 34 雾化后的烟雾由烟道 316 经第一出烟孔 370 与第二出烟孔 363 流出。

[0029] 雾化座 32 大致呈 T 字型，其可移动地收容于烟弹壳体 31 内。具体地，雾化座 32 包括座体 321 及设置于座体 321 上的插入部 323。

[0030] 座体 321 内开设有安装槽 3210 以及引线孔 3212。其中，安装槽 3210 设于座体 321 的底部并贯穿座体 321 的底部，电极接触件 35 收容于安装槽 3210 内并与供电装置 10 内的供电组件电连接，以为发热件 34 提供雾化电源。引线孔 3212 设置于安装槽 3210 靠近插入部 323 的一端并与安装槽 3210 连通，用以收容与电极接触件 35 和发热件 34 电连接的引线（图未示）。

[0031] 插入部 323 可移动地插接于烟弹壳体 31 内。发热件 34 绕设于导液件 33 上并与导液件 33 一同设置于插入部 323 上。具体地，当插入部 323 插接于烟弹壳体 31 内并在外力作用下相对于进液口 315 移动至第一位置时，插入部 323 封闭所述进液口 315，导液件 33 与进液口 315 错开。当插入部 323 插接于烟弹壳体 31 内并在外力作用下相对于进液口 315 移动至第二位置时，导液件 33 卡入进液口 315 并与储液腔 314 连通。

[0032] 在本具体实施例中，插入部 323 为中空长方形柱状，其由座体 321 的一侧垂直延伸而成。插入部 323 沿平行于座体 321 方向的两侧贯穿开设有安装孔 3230，导液件 33 沿横向穿设于安装孔 3230 内，发热件 34 绕设于导液件 33 上并通过设置于引线孔 3212 内的引线与电极接触件 35 电性连接，以加热并雾化经导液件 33 引导的烟液。

[0033] 进一步地，座体 321 内设置有贯穿其底部的进气孔 3214，进气孔 3214 连通于外界与插入部 323 之间，用以为设置于插入部 323 内的发热件 34 提供雾化气流。

[0034] 进一步地，座体 321 的外壁面上开设有若干防滑槽 3216，烟弹壳体 31 内凸出设置有与防滑槽 3216 卡设的限位凸台 318，以当雾化座 32 收容于烟弹壳体 31 内时将雾化座 32 固定于烟弹壳体 31 上。

[0035] 在本具体实施例中，雾化座 32 由具有一定弹性形变能力的材质制成，如，橡胶或硅胶，如此，在外力作用下，防滑槽 3216 与限位凸台 318 脱离，插入部 323 的顶端受力变形由进液口 315 滑入储液腔 314 内，并继续向前运动，从而使得插入部 323 由第一位置移动至第二位置。同时，导液件 33 由多孔材料制成，以引导并吸收位于储液腔 314 内的烟液。

[0036] 在电子烟 100 未使用时，插入部 323 插接于阻挡凸台 313 之间且顶端抵接于两条连接壁 312 的末端，此时插入部 323 挡住位于储液腔 314 上的进液口 315，且导液件 33 位于

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两个进液口 315 下方而与储液腔 314 内的烟液无法接触（即上述提及的第一位置）；同时座体 321 通过防滑槽 3216 与限位凸台 318 配合，使得雾化座 32 无法由烟弹壳体 31 内拔出。当需要使用电子烟 100 时，进一步推进雾化座 32 使插入部 323 由第一位置继续移动至第二位置，由于雾化座 32 具有一定的弹性，此时插入部 323 的顶端挤压于两条连接壁 312 上，使导液件 33 继续向前移动并伸入两侧的两个进液口 315 内与储液腔 314 内的烟液接触；当雾化座 32 通过电极接触件 35 与供电组件电性连接时，发热件 34 加热由导液件 33 引导而来的烟液并使其雾化后经烟道 316 由第一出烟孔 370 与第二出烟孔 363 排出。

[0037] 本发明中当电子烟 100 未使用时，烟弹 30 中的插入部 323 在外力作用下被推至第一位置，导液件 33 卡在阻挡凸台 313 之间且与进液口 315 错开，插入部 323 挡住储液腔 314 上的进液口 315，使得导液件 33 与储液腔 314 内的烟液无法接触，从而有效防止烟弹 30 在运输过程中或长期不使用时烟液泄露。

[0038] 以上所述实施例仅表达了本发明的几种实施方式，其描述较为具体和详细，但并不能因此而理解为对本发明专利范围的限制。应当指出的是，对于本领域的普通技术人员来说，在不脱离本发明构思的前提下，还可以做出若干变形和改进，这些都属于本发明的保护范围。因此，本发明专利的保护范围应以所附权利要求为准。

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1. 一种烟弹，用于电子烟，其特征在于：包括烟弹壳体、雾化座以及导液件，所述烟弹壳体内设置有储液腔，所述储液腔上形成有供烟液流通的进液口；所述雾化座包括插入部，所述导液件设置于所述插入部上；所述插入部可移动地收容于所述烟弹壳体内并在外力作用下相对于所述进液口移动至第一位置时，所述插入部封闭所述进液口，所述导液件与所述进液口错开。

2. 如权利要求 1 所述的烟弹，其特征在于：所述插入部在外力作用下相对于所述进液口移动至与所述第一位置不同的第二位置时，所述导液件伸入所述进液口并与所述储液腔连通。

3. 如权利要求 2 所述的烟弹，其特征在于：所述烟弹壳体包括两组相对的侧壁、沿垂直所述烟弹壳体长度方向间隔排列并沿所述烟弹壳体的长度方向连接于其中两个相对的侧壁之间的两条连接壁以及两个阻挡凸台，所述阻挡凸台凸出设置于与所述连接壁相对的所述侧壁的内表面上，并与对应的所述连接壁以及对应的所述侧壁共同界定形成两个所述储液腔，两条所述连接壁界定形成位于两个所述储液腔之间的烟道，所述进液口的个数是两个，所述进液口是所述阻挡凸台与对应的所述连接壁末端之间的间隔。

4. 如权利要求 3 所述的烟弹，其特征在于：所述插入部相对的两侧贯穿设置有安装孔，所述导液件穿设于所述安装孔内并与所述烟道连通；当所述插入部收容于所述烟弹壳体内并移动至所述第一位置时，所述插入部收容于所述阻挡凸台之间且顶端抵接于两条所述连接壁的末端，所述导液件位于两个所述进液口下方；当所述插入部由所述第一位置继续移动至所述第二位置时，所述插入部的顶端挤压于两条所述连接壁上，所述导液件移动并伸入两侧的两个所述进液口内。

5. 如权利要求 1 所述的烟弹，其特征在于：所述雾化座还包括座体，所述插入部设置于所述座体上；所述座体的外壁面上开设有若干防滑槽，所述烟弹壳体内凸出设置有与所述防滑槽卡设的限位凸台。

6. 如权利要求 5 所述的烟弹，其特征在于：所述座体上开设有安装槽以及引线孔，所述烟弹还包括发热件及电极接触件；所述电极接触件收容于所述安装槽内，所述发热件绕设于所述导液件上并通过设置于所述引线孔内的引线与所述电极接触件电性连接。

7. 如权利要求 5 所述的烟弹，其特征在于：所述座体内设置有贯穿所述座体底部的进气孔，所述进气孔连通于外界与所述插入部之间。

8. 如权利要求 3 所述的烟弹，其特征在于：所述烟弹还包括外盖与内盖，所述外盖设置于所述烟弹壳体上，所述内盖设置于所述外盖与所述烟弹壳体之间；所述内盖上开设有与所述

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烟道连通的第一出烟孔，所述外盖上开设有与所述第一出烟孔连通的第二出烟孔。

9. 如权利要求 8 所述的烟弹，其特征在于：所述外盖上设置有卡钩，所述烟弹壳体上设置有与所述卡钩配合的凸起。

10. 如权利要求 1 所述的烟弹，其特征在于：所述雾化座由橡胶或硅胶制成。

11. 一种电子烟，其特征在于：包括供电装置及烟弹，所述烟弹为上述权利要求 1 至 10 中任意一项权利要求所述的烟弹，所述烟弹与所述供电装置可拆卸地连接。

12. 如权利要求 11 所述的电子烟，其特征在于：所述供电装置包括带有容置腔的电池壳体，所述电池壳体的内壁面上凸出设置有卡扣，所述烟弹壳体上与所述卡扣对应位置设置有卡槽，所述烟弹通过所述卡扣与所述卡槽可拆卸地收容于所述容置腔内。

13. 如权利要求 12 所述的电子烟，其特征在于：所述供电装置还包括收容于所述容置腔内的供电组件，所述烟弹与所述供电组件电性连接。

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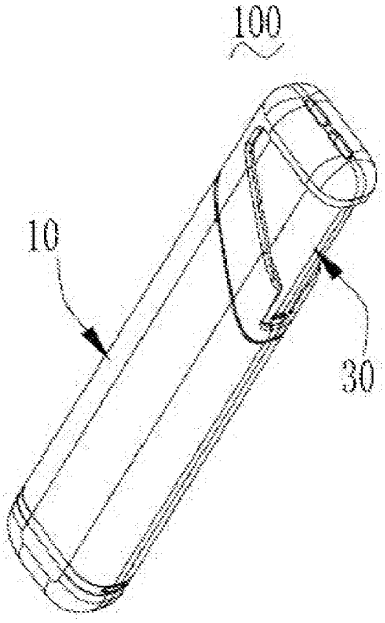


图 1

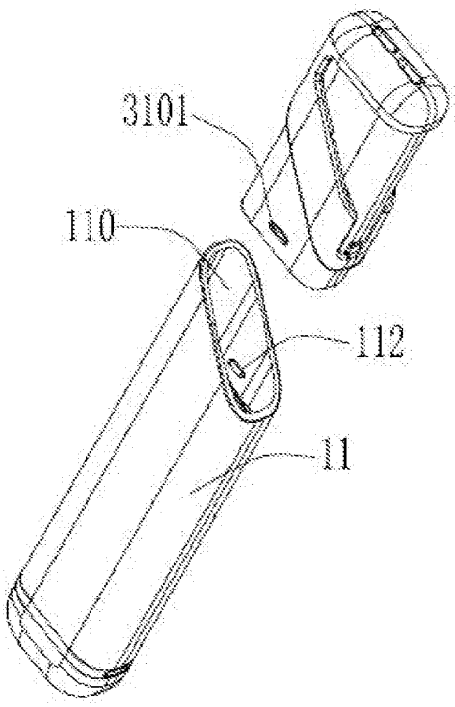


图 2

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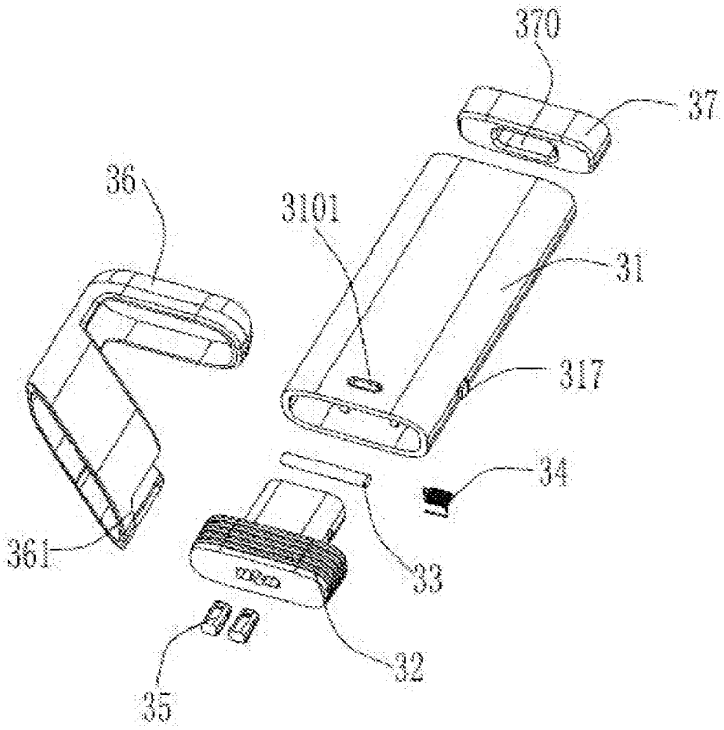


图 3

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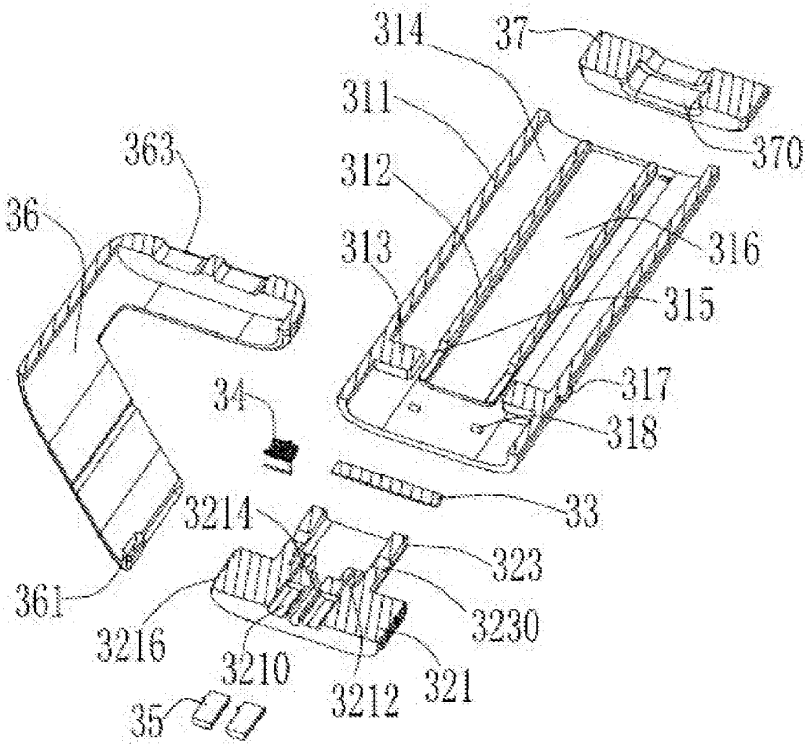


图 4

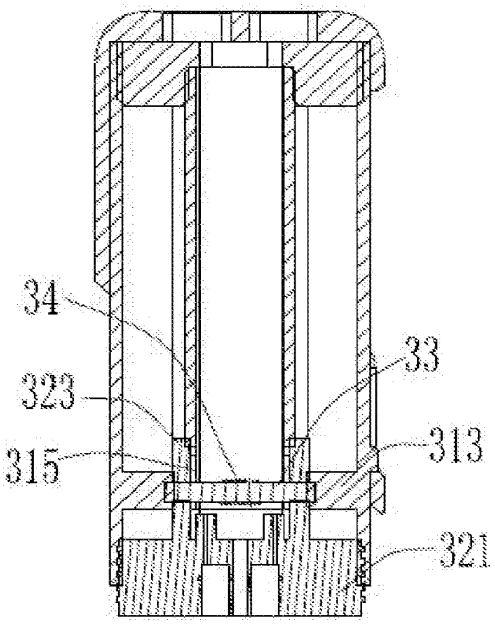


图 5

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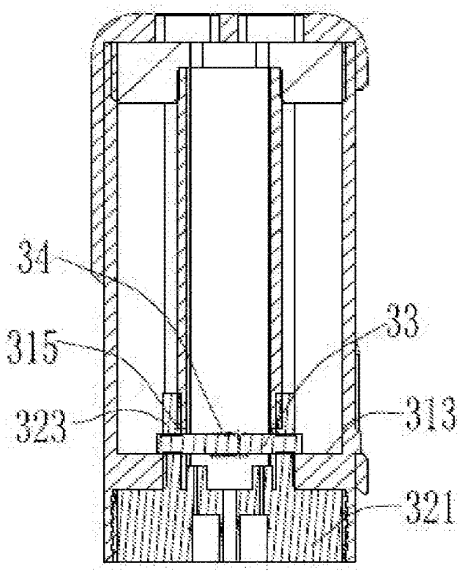


图 6

NJOY Exhibit 1002.1141

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2017/078800

A. CLASSIFICATION OF SUBJECT MATTER

A24F 47/00 (2006.01) i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A24F 47/-

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNABS CNTXT VEN CNKI GOOGLE: electronic cigarette, smoke capsule, extension, shift, liquid guide, electronic, cigarette, cigar, tobacco, smok+, atomiz+, vaporiz+, aerosol, cartridge, leak+, insert+, seal+, induct+

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 205695704 U (JOYETECH EUROPE HOLDING GMBH), 23 November 2016 (23.11.2016), claims 1-13, description, paragraphs [0006]-[0018] and [0030]-[0043], and figures 1-6	1-13
X	CN 203040683 U (JOYETECH (CHANGZHOU) ELECTRONICS CO., LTD.), 10 July 2013 (10.07.2013), description, paragraphs [0013] and [0023]-[0029], and figures 1-3	1-13
A	CN 203435687 U (JOYETECH (CHANGZHOU) ELECTRONICS CO., LTD.), 19 February 2014 (19.02.2014), the whole document	1-13
A	CN 104055223 A (SHENZHEN SMOORE TECHNOLOGY LIMITED), 24 September 2014 (24.09.2014), the whole document	1-13
A	CN 104382237 A (SHENZHEN SMOORE TECHNOLOGY LIMITED), 04 March 2015 (04.03.2015), the whole document	1-13
A	CN 204132390 U (SHENZHEN BEISIDING TECHNOLOGY CO., LTD.), 04 February 2015 (04.02.2015), the whole document	1-13
A	EP 2949226 A1 (SHENZHEN SMOORE TECHNOLOGY LTD.), 02 December 2015 (02.12.2015), the whole document	1-13

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:

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"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
14 June 2017 (14.06.2017)	**07 July 2017 (07.07.2017)**
Name and mailing address of the ISA/CN: State Intellectual Property Office of the P. R. China No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088, China Facsimile No.: (86-10) 62019451	Authorized officer **ZHOU, Honghui** Telephone No.: (86-10) **62089913**

Form PCT/ISA/210 (second sheet) (July 2009)

NJOY Exhibit 1002.1142

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2017/078800

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
CN 205695704 U	23 November 2016	None	
CN 203040683 U	10 July 2013	None	
CN 203435687 U	19 February 2014	EP 2862458 A3	22 July 2015
		EP 2862458 A2	22 April 2015
		US 2015059787 A1	05 March 2015
CN 104055223 A	24 September 2014	None	
CN 104382237 A	04 March 2015	None	
CN 204132390 U	04 February 2015	None	
EP 2949226 A1	02 December 2015	EP 2949227 A1	02 December 2015
		US 2015342258 A1	03 December 2015
		CN 104114050 A	22 October 2014
		WO 2015180370 A1	03 December 2015
		US 2015342257 A1	03 December 2015
		US 2015342256 A1	03 December 2015
		EP 2949228 B1	10 May 2017
		EP 2949228 A3	02 March 2016
		EP 2949228 A2	02 December 2015
		WO 2015180167 A1	03 December 2015

NJOY Exhibit 1002.1143

国际检索报告

国际申请号
PCT/CN2017/078800

A. 主题的分类

A24F 47/00(2006.01)i

按照国际专利分类(IPC)或者同时按照国家分类和IPC两种分类

B. 检索领域

检索的最低限度文献(标明分类系统和分类号)

A24F47/-

包含在检索领域中的除最低限度文献以外的检索文献

在国际检索时查阅的电子数据库(数据库的名称，和使用的检索词（如使用））

CNABS CNTXT VEN CNKI GOOGLE: 电子烟，雾化，气溶胶，烟弹，插，伸，移，泄漏，封闭，导液，electronic, cigarette, cigar, tobacco, smok+, atomiz+, vaporiz+, aerosol, cartridge, leak+, insert+, seal+, induct+

C. 相关文件

类 型*	引用文件，必要时，指明相关段落	相关的权利要求
PX	CN 205695704 U（卓尔悦欧洲控股有限公司）2016年 11月 23日 (2016-11-23) 权利要求1-13，说明书[0006]-[0018]、[0030]-[0043]段，图1-6	1-13
X	CN 203040683 U（卓尔悦常州电子科技有限公司）2013年 7月 10日 (2013-07-10) 说明书[0013]、 [0023]- [0029]段，图1-3	1-13
A	CN 203435687 U（卓尔悦常州电子科技有限公司）2014年 2月 19日 (2014-02-19) 全文	1-13
A	CN 104055223 A（深圳市麦克韦尔科技有限公司）2014年 9月 24日 (2014-09-24) 全文	1-13
A	CN 104382237 A（深圳市麦克韦尔科技有限公司）2015年 3月 4日 (2015-03-04) 全文	1-13
A	CN 204132390 U（深圳市贝斯鼎科技有限公司）2015年 2月 4日 (2015-02-04) 全文	1-13
A	EP 2949226 A1 (SHENZHEN SMOORE TECHNOLOGY LTD) 2015年 12月 2日 (2015-12-02) 全文	1-13

☐ 其余文件在C栏的续页中列出。

☑ 见同族专利附件。

* 引用文件的具体类型：

"A" 认为不特别相关的表示了现有技术一般状态的文件

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"X" 特别相关的文件，单独考虑该文件，认定要求保护的发明不是新颖的或不具有创造性

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"&" 同族专利的文件

国际检索实际完成的日期	国际检索报告邮寄日期
2017年 6月 14日	2017年 7月 7日
ISA/CN的名称和邮寄地址 中华人民共和国国家知识产权局(ISA/CN) 中国北京市海淀区蓟门桥西土城路6号 100088 传真号 (86-10)62019451	受权官员 周宏卉 电话号码 (86-10)62089913

表 PCT/ISA/210 (第2页) (2009年7月)

NJOY Exhibit 1002.1144

国际检索报告
关于同族专利的信息

国际申请号
PCT/CN2017/078800

检索报告引用的专利文件			公布日（年/月/日）	同族专利			公布日（年/月/日）
CN	205695704	U	2016年 11月 23日	无			
CN	203040683	U	2013年 7月 10日	无			
CN	203435687	U	2014年 2月 19日	EP	2862458	A3	2015年 7月 22日
				EP	2862458	A2	2015年 4月 22日
				US	2015059787	A1	2015年 3月 5日
CN	104055223	A	2014年 9月 24日	无			
CN	104382237	A	2015年 3月 4日	无			
CN	204132390	U	2015年 2月 4日	无			
EP	2949226	A1	2015年 12月 2日	EP	2949227	A1	2015年 12月 2日
				US	2015342258	A1	2015年 12月 3日
				CN	104114050	A	2014年 10月 22日
				WO	2015180370	A1	2015年 12月 3日
				US	2015342257	A1	2015年 12月 3日
				US	2015342256	A1	2015年 12月 3日
				EP	2949228	B1	2017年 5月 10日
				EP	2949228	A3	2016年 3月 2日
				EP	2949228	A2	2015年 12月 2日
				WO	2015180167	A1	2015年 12月 3日

表 PCT/ISA/210（同族专利附件）（2009年7月）

NJOY Exhibit 1002.1145

Comparative Design 13:

[11] Grant Announcement No: WOD079112-0010 [45] Date of Grant Announcement: December 21, 2012

[22] Filing date: June 21, 2012 [21] Filing No.: WOD079112-0010 Classification No.: 27-99

[72] Designer(s): No. 1. 2. 3. 4. 5. 6. 7. 8.
13. 14: Aaron Abroff, [30] Priority: December 23, 2011 Document No.: WOD079112-0010
117… EM 001307656
PHILIP MORRIS PRODUCTS

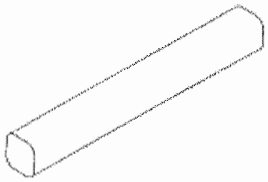
[73] Patentee: S. A.,Quai
Jeanrenaud … Address:

[74] Patent agency: Agent:

[57] Brief description:

[54] Title of Product using the Design: Hand-held aerosol generators/Atomiseurs de poche/Atomizadores de bolsillo

Note: 1. Part of the Bibliographic Data is not shown owing to limitations of space.
2. The views are not shown to scale for the sake of illustrative clarity.



000001



000002



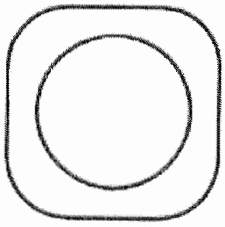
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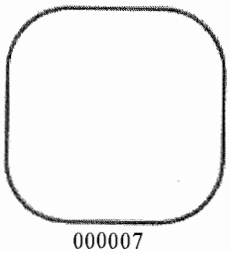
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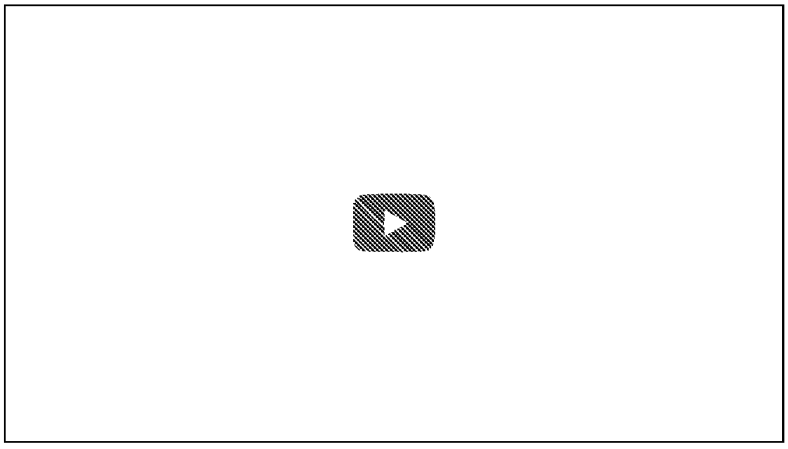
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AtmosRX Optimus 510 Vaporizer Review

Vaporizers Reviewed

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65,416 views

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Published on Oct 10, 2013

The first pen I ever used probably saved my life. This pen makes that look like child's play.

Beware of knockoffs, always get your Atmos pens from an Authorized retailer!

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COMMENTS • 37

Add a public comment...

Top comments

Brandon Cropper 3 years ago
im lookin at gettin into the vapes. would you recommend this as a beginner vape?
Reply • 1

Moe 4 years ago
How do I know when its fully charged ? thanks
Reply •

Michael Mcloughlin 4 years ago
How do you clean the tube so you can put a different oil in it?
Reply • 1
View 2 replies

R17ygr1t 1 month ago (edited)
can use dab oil right
Reply •

Vaporizers Reviewed 5 years ago

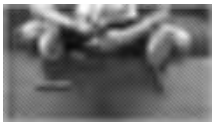
Up next Autoplay



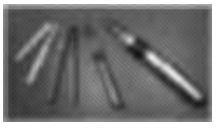
Herbal Vaporizers: Tips To Get The Best Performance
The Vape Critic
247,245 views



VICE International S1 • E28
China's Vape Industry Is Just Getting Started
VICE
1,691,817 views



Using Atmos Raw Rx to Combust Dry Herb Effectively (Atmos /
Vape Vet Store
187,185 views



Introduction to Vaping and E-Cigarettes
Gear Obsession
690,364 views



When you're all out of E-Liquid...
DashVapes
814,917 views



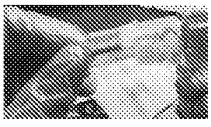
The Negative Side Effects of Vaping!
IndoorSmokers
925,511 views



Best Portable Vaporizers of 2015 (OLD)
The Vape Critic
644,245 views



How to make your own E-Liquid - DIY Tutorial
New Amsterdam Vape
1,779,000 views



How to refill JUUL pods + Tips to extend pod life and prevent
Forman's Basement
774,131 views



Arizer Solo Vaporizer Review
Vaporizers Reviewed
353,356 views



Atmos Raw Rx Dry Herb Vape Review: Portable Dry Herb &
Vape Vet Store
91,205 views

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Watch Trevor, you have just shown me your cardid as proof you are 18, or can prove it...then google will do the rest.

Reply ·

Search

Sign in

Endless Garage 5 years ago
If you order it online do you have to sign something saying that your 18 when usps comes
Reply ·

Endless Garage 5 years ago
Where do you get the liquid
Reply ·

Vaporizers Reviewed 5 years ago
Not in anyway whatsoever. Nothing but liquids. Atmos makes a version called the RAW...for leaves and flowers, but it combusts. I don;t like it.
Reply ·

DROPGUN50 5 years ago
Can it handle dry herbs?
Reply ·

Nick Cirincione 5 years ago
There is a full kit which includes a dry herb cartridge. does this mean I am able to use dry herb with this?
Reply ·

mph seti 3 years ago
Thanks for the review. I just ordered this a few days ago (found it online for 29.95) I think it's the same model; I don't know the # but it looks identical, and is called 'Atmos Optimus'. I want to transition from cigs to this. I hope it works. I have vaped before, but never owned one.
Reply ·

Abraham Trujillo 5 years ago
I just got this but I don't know how to remove the battery or cartomizer can you please help me? I tried unscrewing it but it doesn't work.
Reply ·

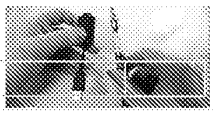
Aj Ganey 3 years ago
hi can u send me a sample tank that works i just have a battery
Reply ·

Ameroooo 5 years ago
Anyone know if any standard sized replacement heads fit this attachment? CE3, 4, or 5 maybe?
Reply ·

Britt Cedillo 4 years ago
Hi, just got this vape pen today and can't get my oil cartridge to work at all but the wax attachment works fine.
Any ideas of to what happened or how to fix?
And no i did not get oil in the center piece.
Reply ·

Rey Mascara 6 months ago
Does ejuice work with it
Reply ·

Alex Smith 5 years ago
What a solid, black and white review. Well done.
Reply · 1


How to Set Up and Use the eGo w/ CE4
MyFreedomSmokes
3,143,335 views



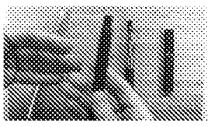
Vaping vs Smoking | 10 Reasons to Switch to Vaporizing | Sneaky
Sneaky Pete Vaporizers
594,934 views


The Real Negative Side Effects of Vaping -IndoorSmokers
IndoorSmokers
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Review: The Atmos Raw (Rx) Vaporizer
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REAL -vs- FAKE "Dank Vape" Comparison!
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Iolite Origional Vaporizer Review
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The Vape Critic
343,875 views

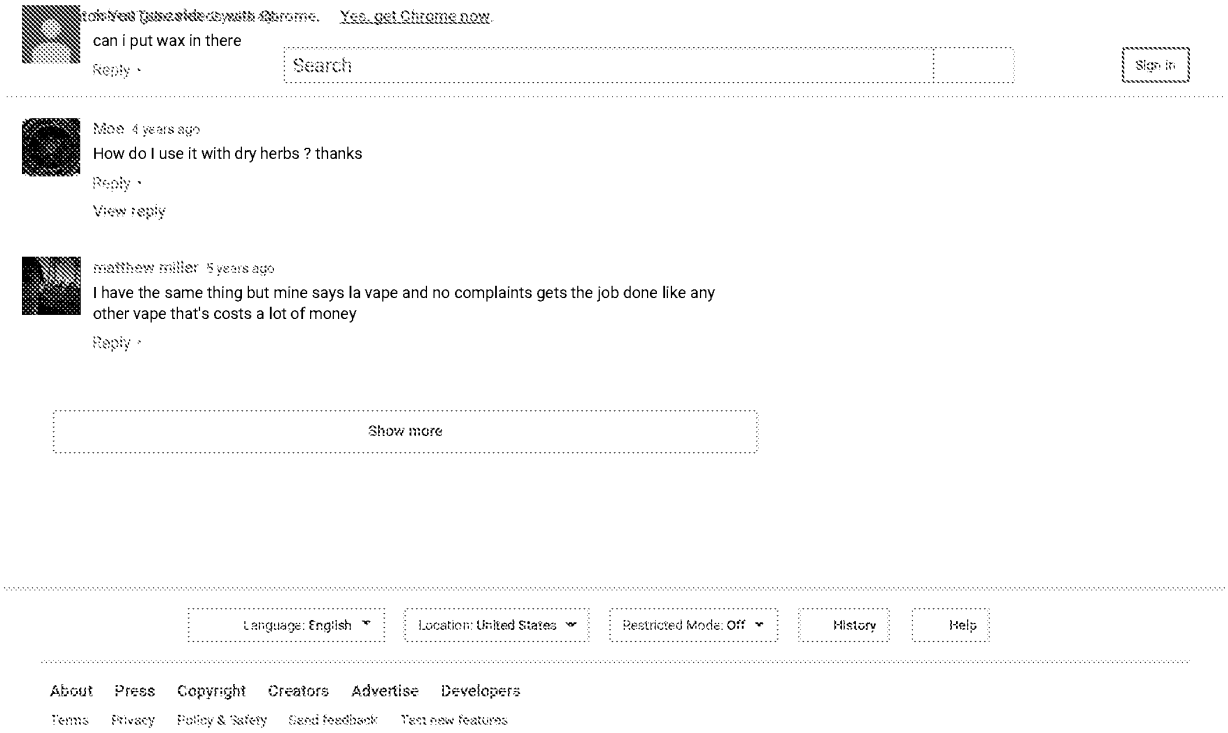

Atmos Orbit and Transporter Vaporizer Review - True Dry Herb
Vape Vet Store
41,739 views

Atmos RAW Pen Review Part 2 by The Vape Critic
The Vape Critic
308,960 views

7 43

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NJOY Exhibit 1002.1148



NJOY Exhibit 1002.1149

Baumgartens Single-Hole Trap Door Pencil Sharpener with Eraser

1 Hole(s) - 2.6" Height - Assorted



Product Number: BAU19550

$4.06 / EA	$3.86 / EA	$2.90 / EA
1 EA minimum you save $1.25 (24%)	61 minimum	Bulk Price Click here

Qty 1 Add to Cart

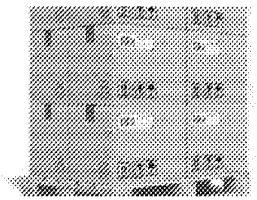
Allow 1-3 Business days for delivery

Free Shipping on orders over $45

Ships in 1-2 Bus Days

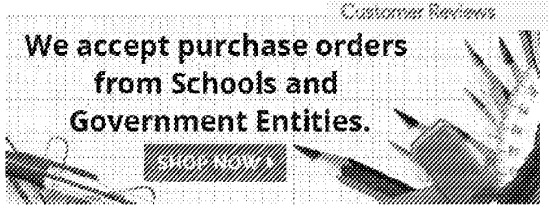
Print | Email | Favorite

4.5 ★★★★★ Google Customer Reviews









NJOY Exhibit 1002.1150

Pencil sharpener features a built-in handy eraser, honed steel blades and a built-in dust-proof receptacle. Made for use with standard-sized pencils. Dust-proof receptacle allows you to take it with you wherever you need to go without the risk of spilling the shavings. Pencil sharpener meets or exceeds standard for RoHS compliance for lead, mercury, bromine, chrome and cadmium.

- **Handheld, single-hole design; precision-honed steel blade**
- **Built-in eraser and receptacle to hold pencil shavings**
- **Assorted colors**
- **Height: 2-5/8"**
- **Made in Germany**

Product Details

General Information

Manufacturer	Baumgartens
Manufacturer Part Number	19550
Manufacturer Website Address	http://www.b3.net
Brand Name	Baumgartens
Product Name	Single-Hole Trap Door Pencil Sharpener with Eraser
Packaged Quantity	1 Each
Product Type	Manual Pencil Sharpener

Product Information

Holes	1
Cutter Material	Steel
Application/Usage	Pencil
Features	• Dust Proof • Built-in Eraser



Baumgartens Dual Hole Wave Sharpener with Receptacle

Handheld - 2 Hole(s) - 2.1" Height - Assorted

Item #: BAU19080

Price: **$4.20 EA**

Bulk Price: $3.18



CLI Cone Receptacle Pencil Sharpener

Plastic - Assorted

Item #: LEO80730

Price: **$0.84 PK**

Bulk Price: $0.49

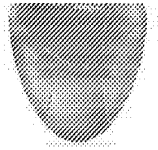
NJOY Exhibit 1002.1151

Physical Characteristics

Color	Assorted
Height	2.6"
Weight (Approximate)	1.12 oz

Miscellaneous

Recycled	No
Assembly Required	No
Environmentally Friendly	Yes
Environmental Certification	RoHS
Country of Origin	Germany
UPC	085288195501
UNSPC	44121619
Catalog Page Number	BRA

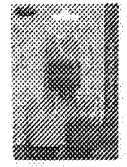


Helix 2-hole Pencil Sharpener

2 Hole(s) - Plastic - Transparent, Assorted

Item #: HLX63475STA

Price: **$1.40 EA**



BULK Carton Dome Pencil Sharpeners in a 3 Pack of

Dome Pencil Sharpeners in a 3 Count of Assorted Colors. Priced individually, sold in full case

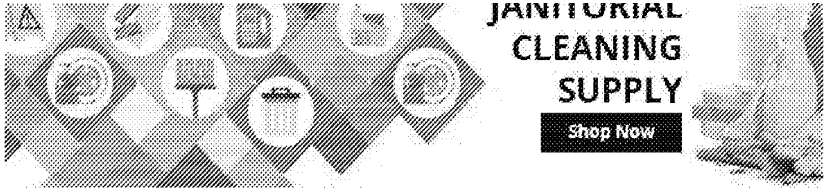
Item #: FCS02109-BULK

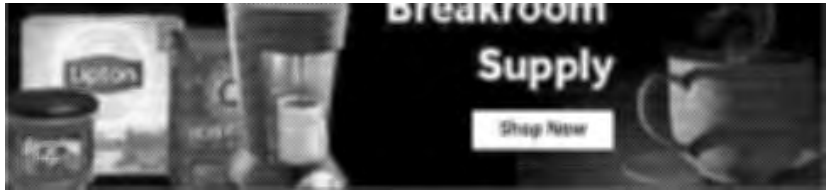
Price: **$1.09 PK**

Volume Pricing: $0.99

b

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Website Store by Logicblock

NJOY Exhibit 1002.1153

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E-Cigarettes: how it works (blu Premium E-Cig Social Kit review) MUST SEE!!

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Published on Mar 14, 2012

This is truly a new innovative and amazing technology that helps smokers quit smoking cigarettes. In this review I take a look at the newly redesigned blu Premium E-Cig Starter Kit in white. I discuss the technology involved in this product and also put it to the test as a former smoker that successfully quit.

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COMMENTS · 146

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Top comments

Andrew Gillespie 5 years ago

Ok, This video had some very good points and some of your information WAS correct but honestly MOST of it was totally wrong, Blucigs DO NOT contain Propylene Glycol they use Vegetable Glycerin instead of "PG" because it is less harmful, and they do not come in "light, ultra light " and whatever else you said, but they come in different nicotine levels Read more

Reply · 3

MCL771 1 day ago

Watching in 2019, system seems old now that the pod system hit the market

Reply ·

Jake Barrett 5 years ago

Buy a joytech eroll of you want a good ecig.

Reply ·

mytaredom 4 years ago

Jan 22 2015 made one year cigarette free thanks man

Reply · 2

Minigamers Alliance 5 years ago

Get Grammarly

Ad www.grammarly.com

It's Free!

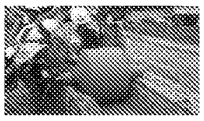
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Blu Starter Pack Review - Electronic Cigarette - Tobacco, Menthol, and Cherry

DansVapeReview

296,458 views



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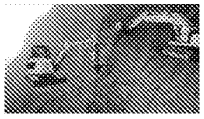
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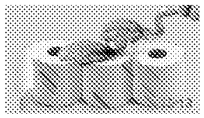
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E-Cigarettes : Welcome Back, Big Tobacco - the fifth estate

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Watch Didn't hear you say anything about strength levels (maybe you did but I didnt hear) they have 3 high(16mg) medium(8mg) and low(4mg) then none for just vapors but Good video. Also the different strengths dont cost anymore or less then none nicotine cartridges.

Reply ·

Asha White 5 years ago
My mom works for the doctor that created this
Reply · 1

Sergio Sorrentino 4 years ago
nels?
Reply ·

Alec Mattu 5 years ago
Is this a premium 100?
Reply · 1
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cesar052 5 years ago
On top of that blu does NOT have propylene glycol ever since its revision years ago idk where this guy got that from
Reply ·

NightBot 5 years ago
buy smoktech one battery charge will last for day and the juice is refillable buy juice its cheap & buy extra battery total cost would be under $120
Reply ·

Chris A 5 years ago
Blu sucks tho, too expensive waste of money. Try halocigs or greensmoke. Halocigs are my fav - the G6 for going out, the Triton for at home. Refillable, great selection of flavors and better price.
Reply ·

Chris A 5 years ago
Smells like nothing.
Reply ·

Saad Alqadeeb 5 years ago
I am in Washington and I want falvor for blu E ceggarit can you help me ?
Reply ·

creativekams 5 years ago
Does the smoke have a stink to it like the real ones?
Reply ·

MasterBaine 5 years ago
this thing sucks, batteries last 3 hours max if you're lucky and their flavors are terribad and the cartridges are overpriced!!
Reply ·

Joseph Bernardo 5 years ago
I have been using E-cigs for 2 years and I finally found good quality USA made Electronic Cigarette, Tank System and Premium E-liquids at ECIGARKIT . com Best Starter Kits you will ever found at ECIGARKIT . com Check out their Promotions. The destruction judges the ugliest direction. How does the adjustment fabricate the military request? The Read more
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SolarEcho 5 years ago
My Blu charging pack stopped working after just a week.... cheap overpriced junk.
Reply ·

Komisgirl79 5 years ago



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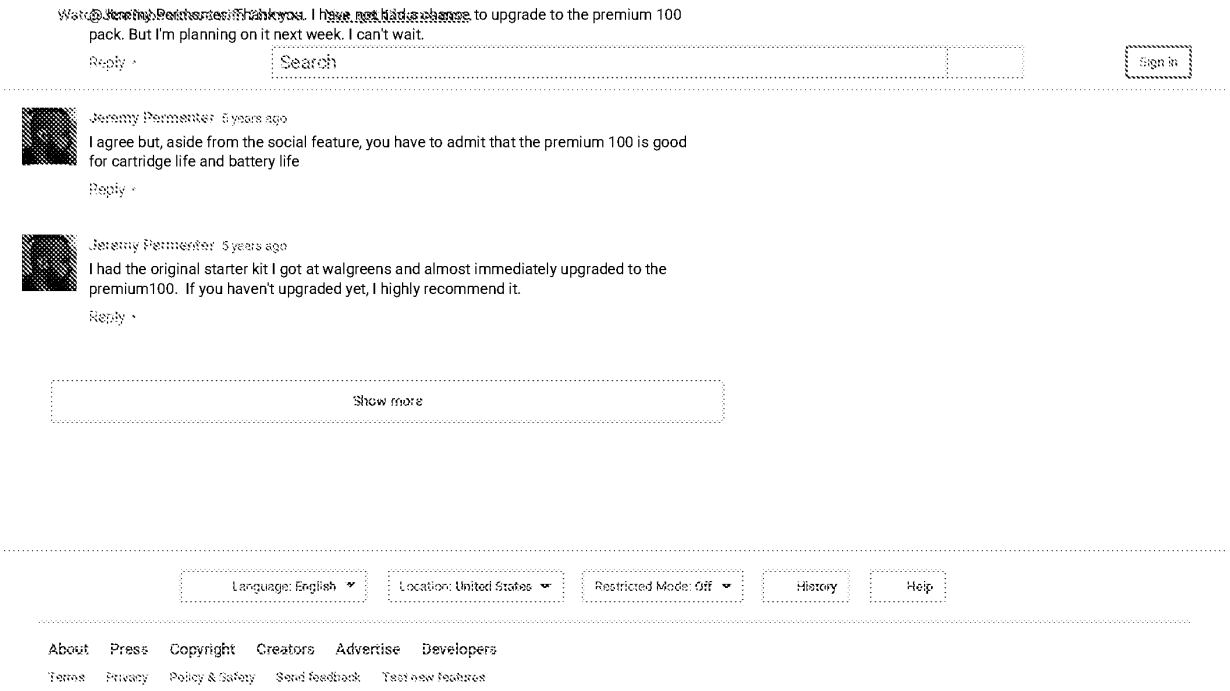
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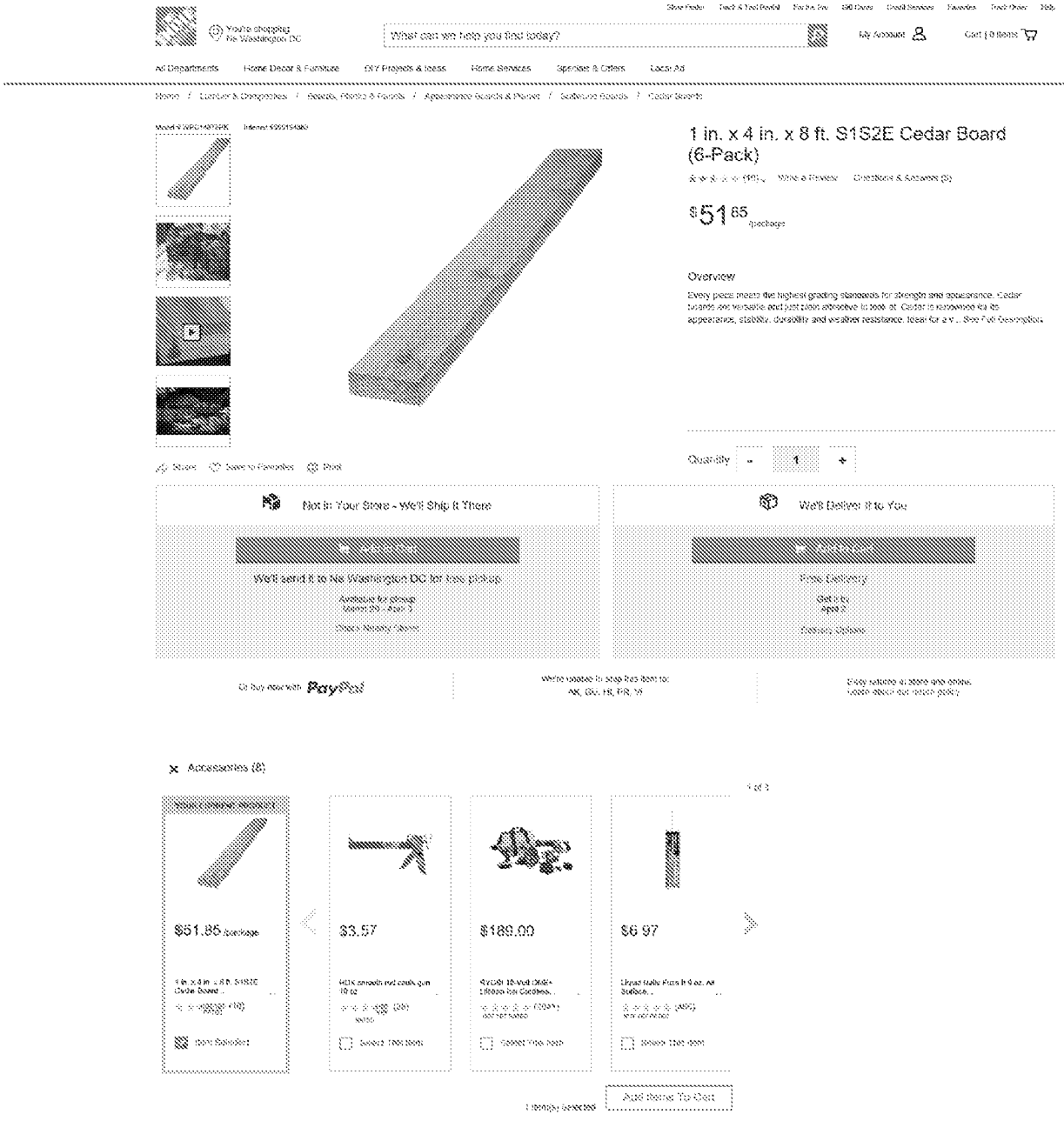
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NJOY Exhibit 1002.1156



NJOY Exhibit 1002.1157

		Current Product		
Brand				
Name	1 in. x 4 in. x 8 ft. Knotty Cedar Tongue and Groove Siding (5-Pack)	1 in. x 4 in. x 8 ft. S4S Cedar Board (5-Pack)	1 in. x 6 in. x 8 ft. Pattern Stock Cedar Tongue and Groove Siding (5-Pack)	Pattern Stock 1 in. x 8 in. x 8 ft. Cedar STK Shiplap Siding (5-Pack)
Price	$43.23/package	$51.85/package	$100.88/package	$123.05/package
Ratings	☆☆☆☆☆ (0)	☆☆☆☆☆ (10)	☆☆☆☆☆ (0)	☆☆☆☆☆ (10)
	View Product	View Product	View Product	View Product

Specifications

Dimensions

Actual Product Length (ft.)	8	Nominal Product Length (ft.)	8
Actual Product Thickness (in.)	.75	Nominal Product Thickness (in.)	1
Actual Product Width (in.)	3.5	Nominal Product Width (in.)	4
Coverage Area (sq. ft.)	2.08		

Details

Appearance Board Type	Softwood Boards	Material	Cedar

☆☆☆☆☆

Description says "green pallets & light with few knots" and "Each piece of this lumber meets the highest quality grading standards for strength and appearance"
Of the 30 boards + bought, one could be said to have few knots. The others all were very heavily knotted. One board (photo attached) had one knot that had split the board making it useless for any purpose.
One other board was a gouge out of the finished face that was 1/8 deep, 6 inches long and about 2-1/2 inches wide. It even had red numbers spray painted on this board but it obviously was kept, quietly and could be selected for sale.
The only saving grace for this purchase was the thickness of the board. This is what I needed. **Read More**

Was this helpful? 15 0

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Local store prices may vary from those displayed. Products shown as available are normally stocked but availability cannot be guaranteed.
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Will G 4 years ago
the pause at the beginning lmao
Reply • 5

JIMBO 5 years ago
no clouds
Reply • 1

Marc Loya 5 years ago
Any thoughts on Micro g pen from Grenco? BTW thanks for reminding me to listen to coheed and cambria. If i am lucky, Cali will have the same pot laws as Colorado in 2 years. Yeah, we'll see...
Reply • 1

Buena Vista Drive 5 years ago
Dude coming to Denver in April need your take on the scene thanks ahead!!!
Reply •

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would u consider this to be the best vape pen?

Reply

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Matthew Borell 4 years ago

can you use flowers with the cloud vape pen?

Reply



Lauren Frost 5 years ago

you're soo hot

Reply



Andrew Numya 5 years ago

Your over loading it man. You should only put a small dab directly on the heating coil. About the size of a seed. You will wear out your atomizer faster by over loading it.

Reply



andola jackson 5 years ago

ty man i subbed you like 2 years ago, just picked one up yesterday you have insured me how to not f up my own pen and be liable for its destruction.....let alone how to load it correctly, the use of shatter or high qual wax is essential the kind i have is soft and after 1 rip it runs around the ring and away from the atomizer, this is the most essential part of

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Reply



Vape Oregon 5 years ago

you will love this bro! :)

Reply



KittenPwn 5 years ago

ceramic actually. no plastic involved in the heating chamber

Reply



Justlivin00 5 years ago

I just ordered one of these today and i cant wait. Thanks for the video it was very informative

Reply



MrSlapAPice1000 5 years ago

Awesome video you did a really great job. i was just wondering if the vapor you exhaled gives off any smoke?

Reply



3m0_Wr3ck 5 years ago

Is there a pen for flowers?

Reply



Cloud OTK 5 years ago

dope

Reply



Red Foreman 5 years ago

really on the site it has a dry herb atomizer.

Reply



joe SD 5 years ago

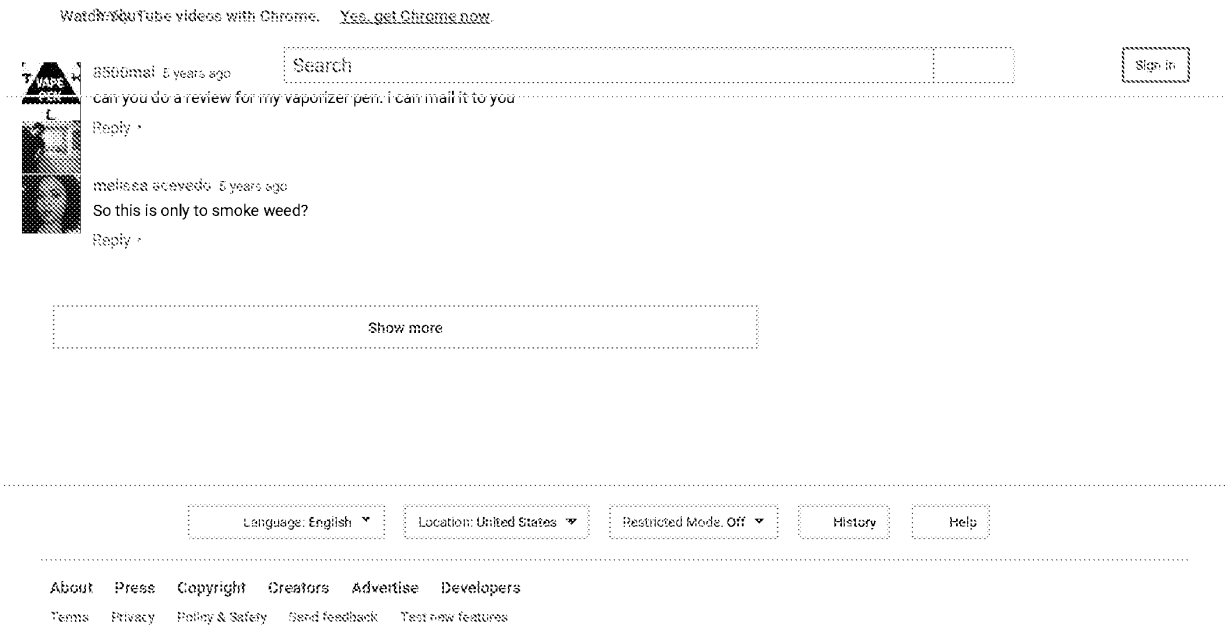
great review. i had no idea clouds were made for oil!!!

Reply

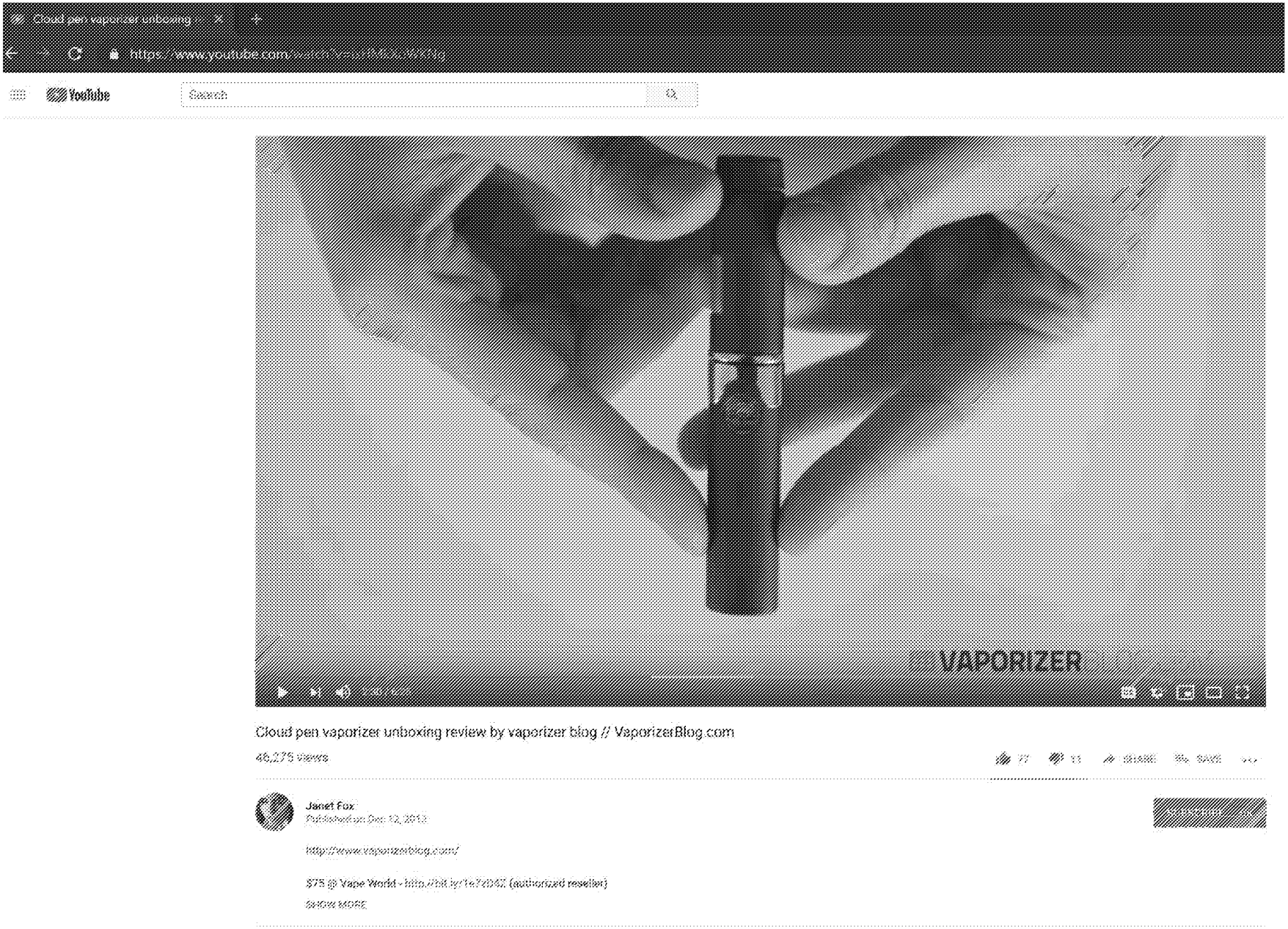
Vidal Cortes 5 years ago

MAN NICE T SHIRT

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NJOY Exhibit 1002.1161



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Janet Fox
Published on Dec 12, 2013

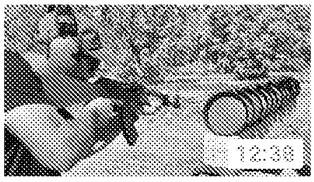
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http://www.vaporizerblog.com/

$75 @ Vape World - http://bit.ly/1e7zD4Z (authorized reseller)

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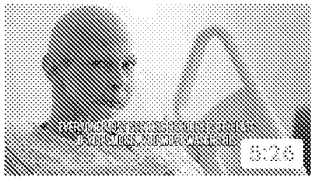
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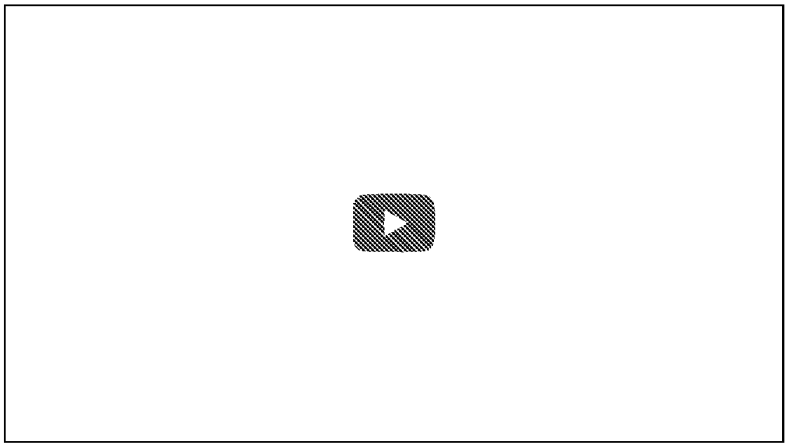
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Bill Prater

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Fielderfarms 6 years ago

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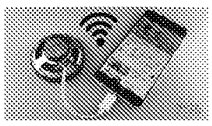
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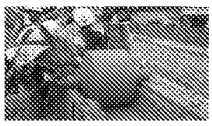
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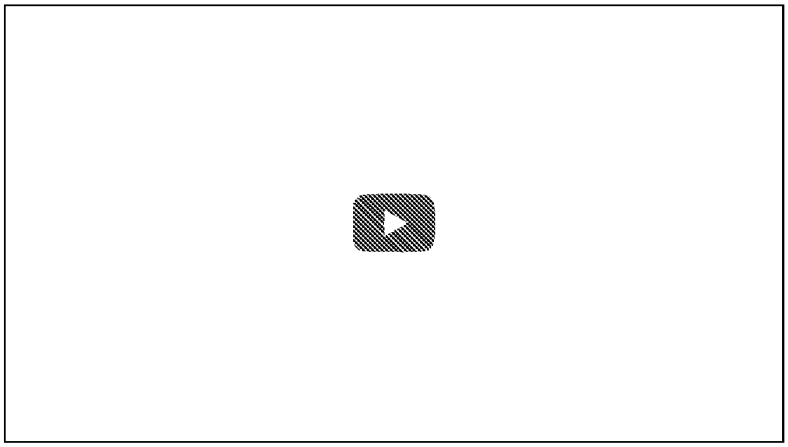
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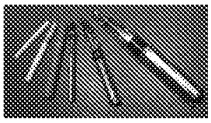
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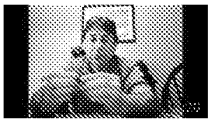
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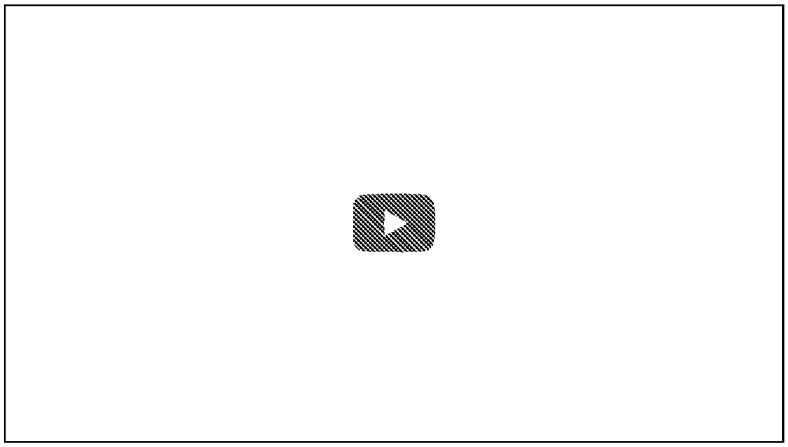
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Juul is the e-cig that will finally stop me from smoking (I hope)



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I started smoking at 13. To be honest, I can't even pin the blame on peer pressure. Maybe it was my teenage desire to rebel; maybe I just wanted to look cool. I'm not sure why I started, but I know that I've never been able to stop. And I haven't had a day without a cigarette in at least 14 years. I've owned four e-cigarettes over the past three years, and despite my efforts to transition to vaping full-time, none of them have been able to replace tobacco for me. They have nonetheless been a good supplement, filling in when I'm unable, either due to social niceties or because it's forbidden, to smoke the real thing. Enter Pax Labs, the company behind the excellent loose-leaf

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vaporizer of the same name, which claims it's solved all my e-cigarette issues with its first attempt, the $50 Juul.

Gallery: Pax Juul e-cigarette | 11 Photos

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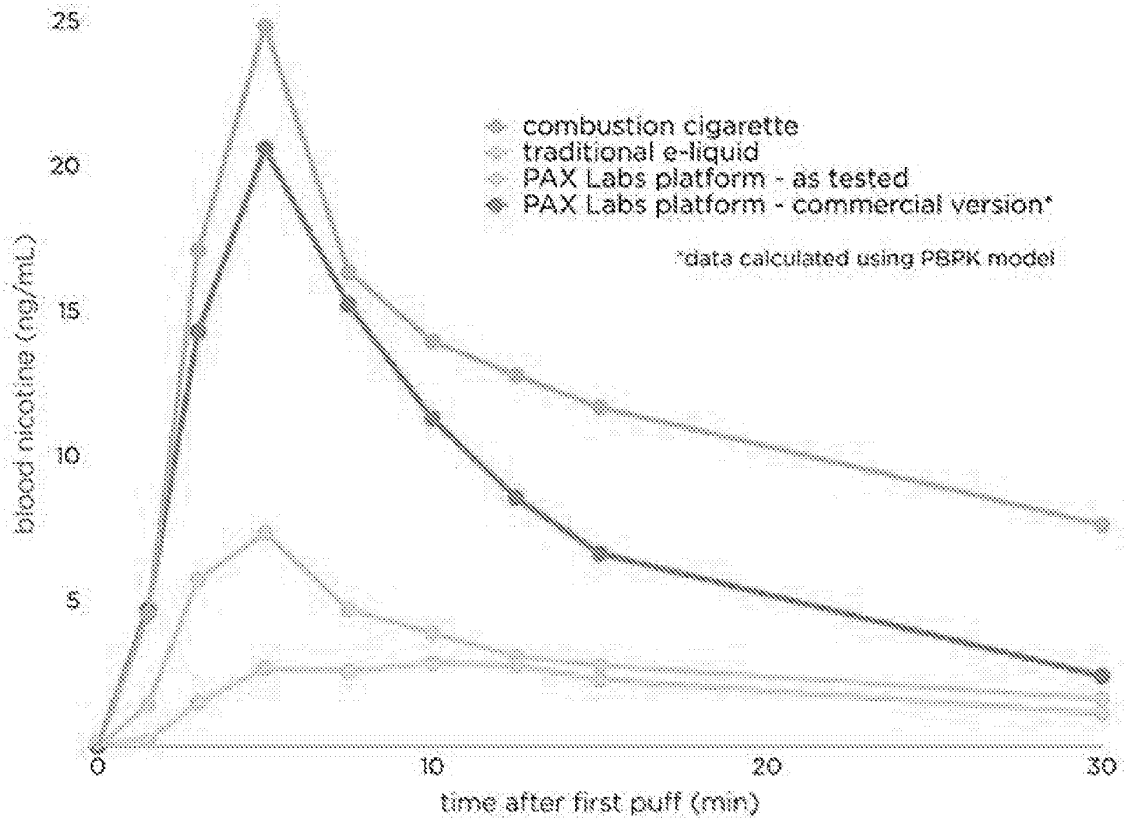
There are a few things stopping me from vaping full-time, things that Juul (pronounced "jewel") has to fix to win my affection. First, there's the fact that it isn't *exactly* like the real thing. Vaping feels more like smoking a hookah (water pipe), and the nicotine "high," for lack of a better word, never reaches the altitude of a Marlboro or Lucky Strike. An e-cig can only ever hold me over. A few hours without a cigarette and, no matter how much I've vaped, I'm itching to light one up. Second, it's all a massive hassle: unscrewing the battery to charge it, drip-feeding juice into the chamber. I've spilled that juice on my hands numerous times (I'm a clumsy person), once making myself ridiculously dizzy in the process. There's also the image thing. I'm not massively vain, but sucking down on a giant whistle is never going to be cool. As proved by its first ad, Juul is trying very hard to be cool.

Pax's entrant into what is becoming an increasingly crowded market is familiar, but nonetheless unique. The company's CEO, James Monsees, says this design, and Juul's existence, came about after it decided current products weren't up to scratch. "E-cigs have fallen short because they haven't delivered consumer satisfaction," he posits.

Juul, he believes, is better than smoking. Not just analogous, but *better*. It's definitely unique. It looks less like an e-cigarette and more like a USB drive; an incredibly light, rectangular prism with a hole for a capsule (which also acts as a mouthpiece) at one end. Everything feels precisely machined, right down to the neat little charging dock that plugs into your USB port, meaning you won't need to disassemble or even stop using Juul to charge it; just drop it into the dock, and the magnetic charging pins do the rest. Like the NJOYs and Blus generally reviled by more "serious" vapers, rather than pushing a button, you just toke on the capsule-end of Juul to draw vapor.

Starting this week, Pax is offering Juul capsules ("JuulPods") in a choice of four autocorrect-hating flavors -- Tabaac (tobacco), Miint (mint), Fruut (fruit) and Bruule (crème brûlée). They're available in a four-pack for $15.99, with each roughly equating to one pack of cigarettes in terms of nicotine content. More flavors are coming, based primarily on user feedback -- I'd really like a less-sweet tobacco option -- but for now they're all palatable. Each capsule has an enclosed heating element and wick that prevent overheating and ensure there's no drop-off when they're almost empty. But that's not really the selling point -- it's what's inside the capsules that's special.

Juice currently on the market uses freebase nicotine, but that's not how nicotine exists in the real world. "Nicotine in nature is a compound that wants to form and join with the organic acids and salts you find in tobacco leaves," Monsees explains. To that end, Pax developed a juice that's blended with nicotine salts, which supposedly delivers the drug to you in a more similar fashion to combustible cigarettes.



A study showing the rate that nicotine is absorbed into and stays in test subject's blood.

The image above is from a study (paid for by Pax, but carried out independently) that shows how the salts work. The "projection" you see on the diagram (based on the increase in nicotine from the initial test to what's in the final capsules) is more or less what I experienced: a nicotine hit almost indistinguishable from a cigarette. And it really does work -- whereas regular e-cigs only keep back my cravings for a few hours at a time, Juul almost entirely replaced my smoking. Sadly, I've run out of capsules, but until that happened I had gone from smoking 20 to 30 cigarettes per day to smoking 11 over five days. Sure, its vapor isn't as thick as that produced by some of

the mod boxes you can buy, but it's very similar to regular cigarettes, and the feeling you get from it is superior to that of its contemporaries.

Pax, obviously, wants to sell Juul to everyone who's currently smoking or vaping something else. I think it's unlikely to win over those who have agonizingly tinkered to find their perfect e-cigarette, although I'd guess it'll at least get an inquisitive few to try. Its real target is the millions that buy e-cigs from their local store, or just want to stop smoking. Its founders argue they offer a better experience than anything else on the market. For me, they've found the balance -- it gives me the hit I need, with none of the fiddly drawbacks I associate with e-cigs. Well, apart from one: I discovered halfway through my week of testing that plugging the Juul into the left port of my MacBook Air puts the laptop into sleep mode. Apparently, the magnets in the charger are too strong and trigger the sensor telling it that its lid is closed. It's not a huge deal, and Pax says it's giving users guidance on the matter, but it does limit me to plugging it into the right-side port.

Nespresso won me over, and so has Juul.

An analogy I fell upon for where Juul fits in is the dreaded Nespresso machine. Laughed at by those who obsess over their "real" espresso machines and high-tech presses, it delivers a consistently good experience, way better than you'd get with a spoonful of Folgers instant in the morning, and way more convenient than a full-blown pump. That's Juul in a nutshell -- a beautifully designed system that gets close enough to the real thing for me to settle for the convenience. Nespresso begrudgingly won me over years ago, and Juul has won me over in just a week. I hope I can stick with it and finally kick the habit.

Source: Juul
In this article: e-cigarette, e-cigarettes, juul, pax, pax-labs, ploom, uk-feature, vaping
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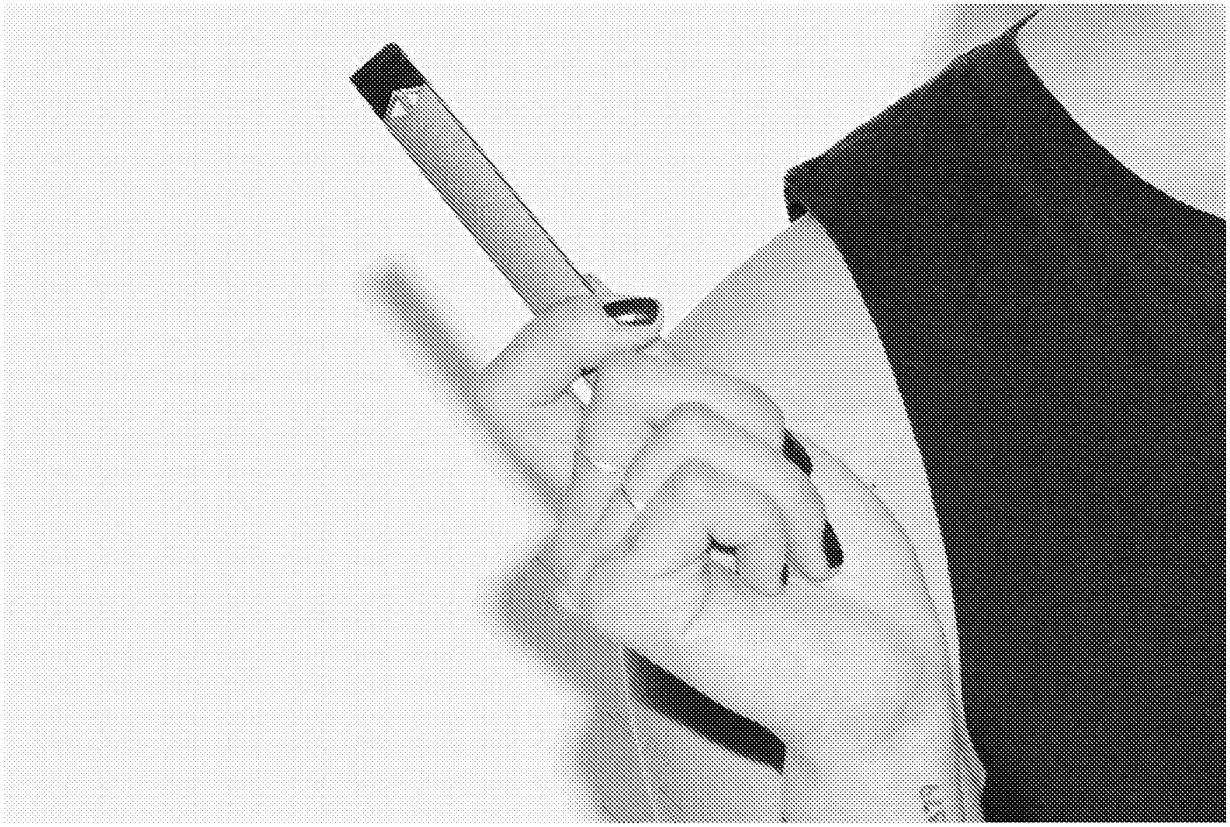
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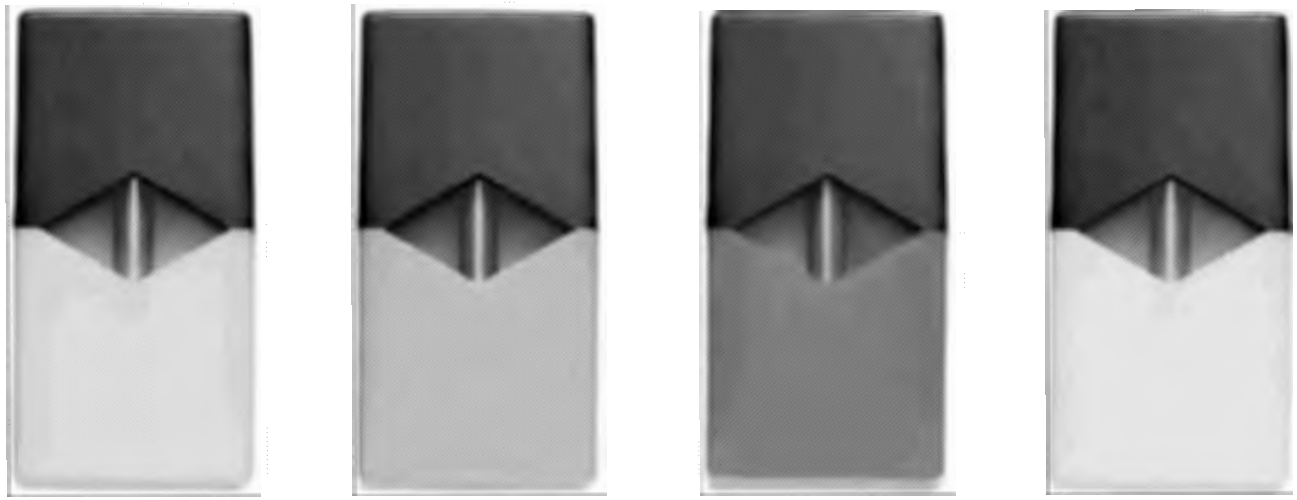
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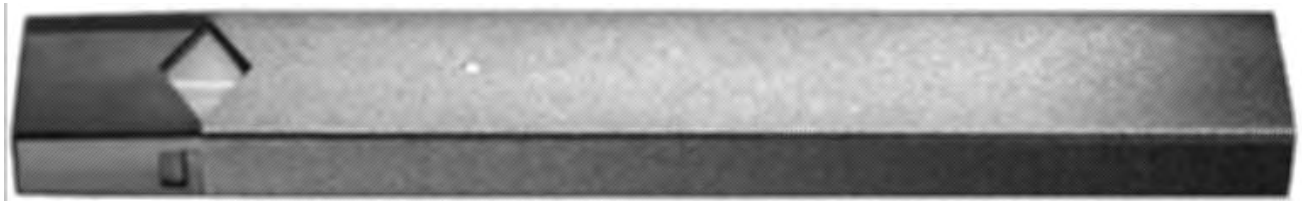
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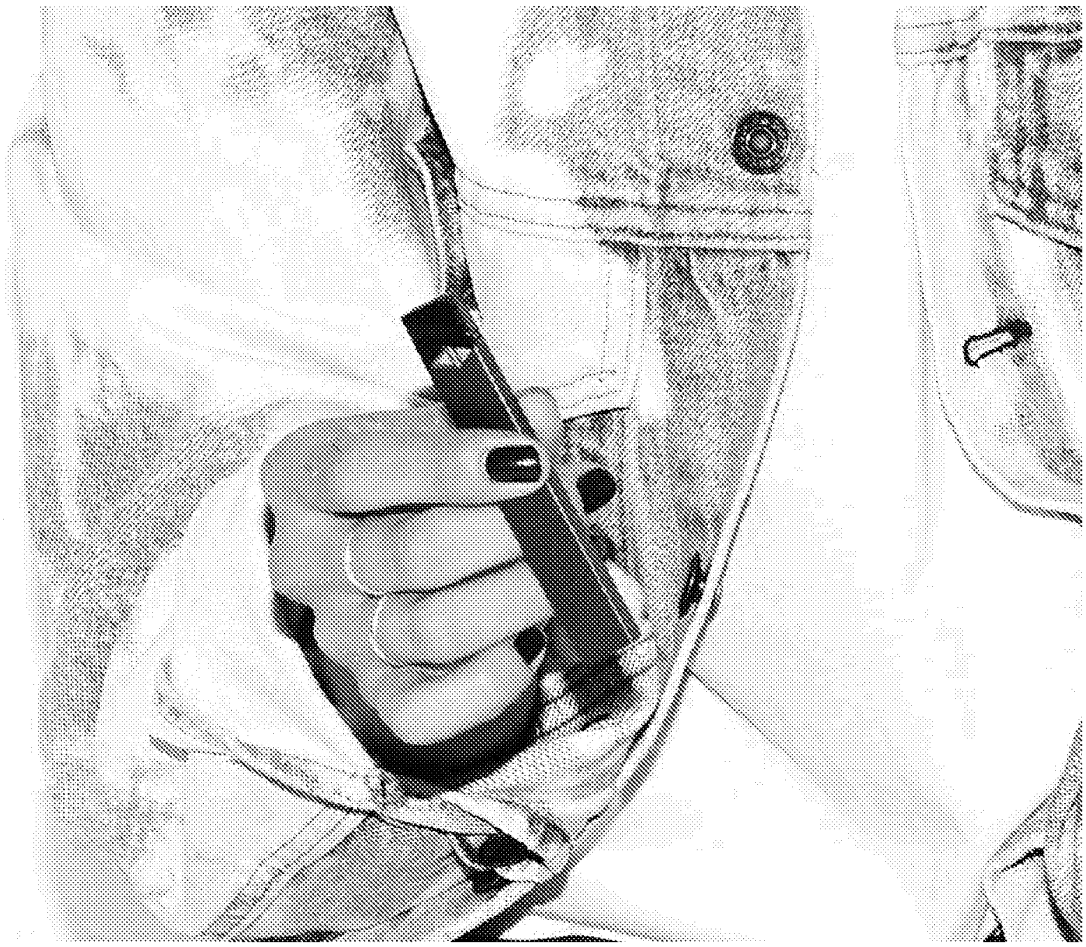
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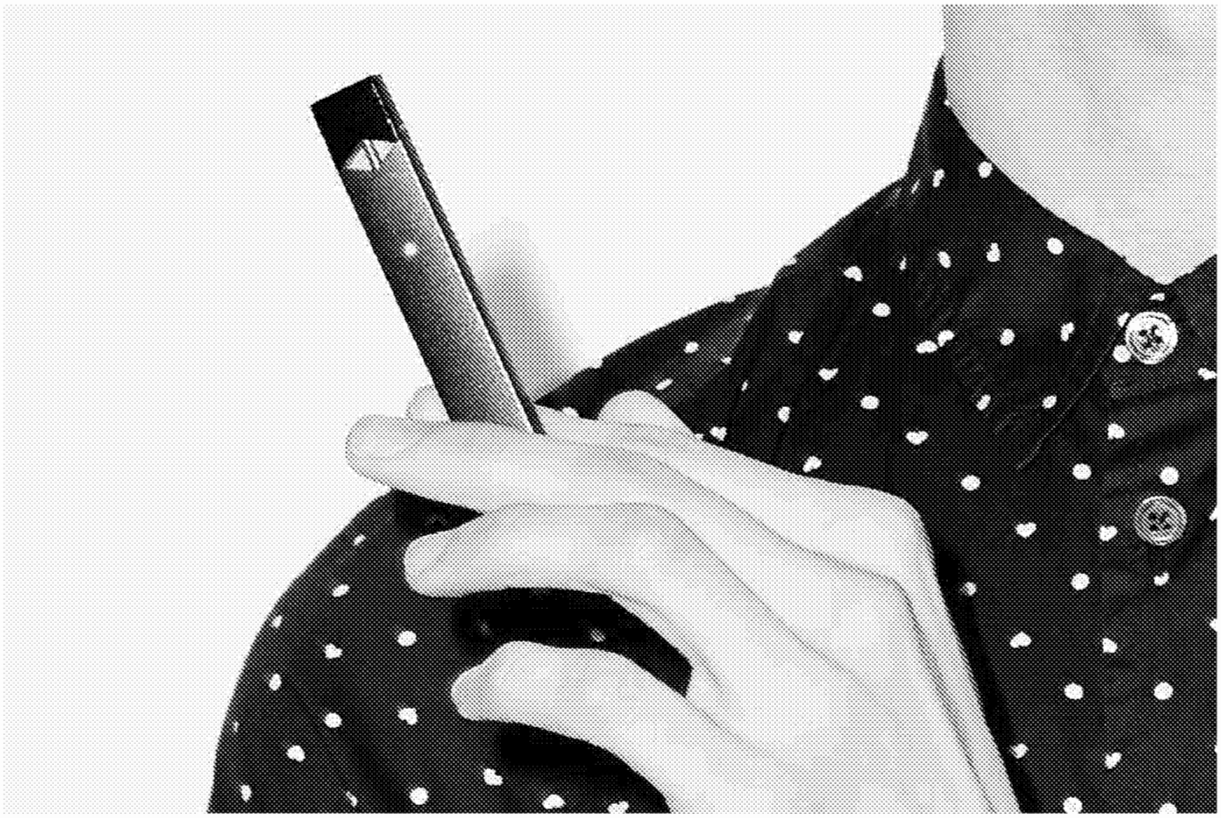
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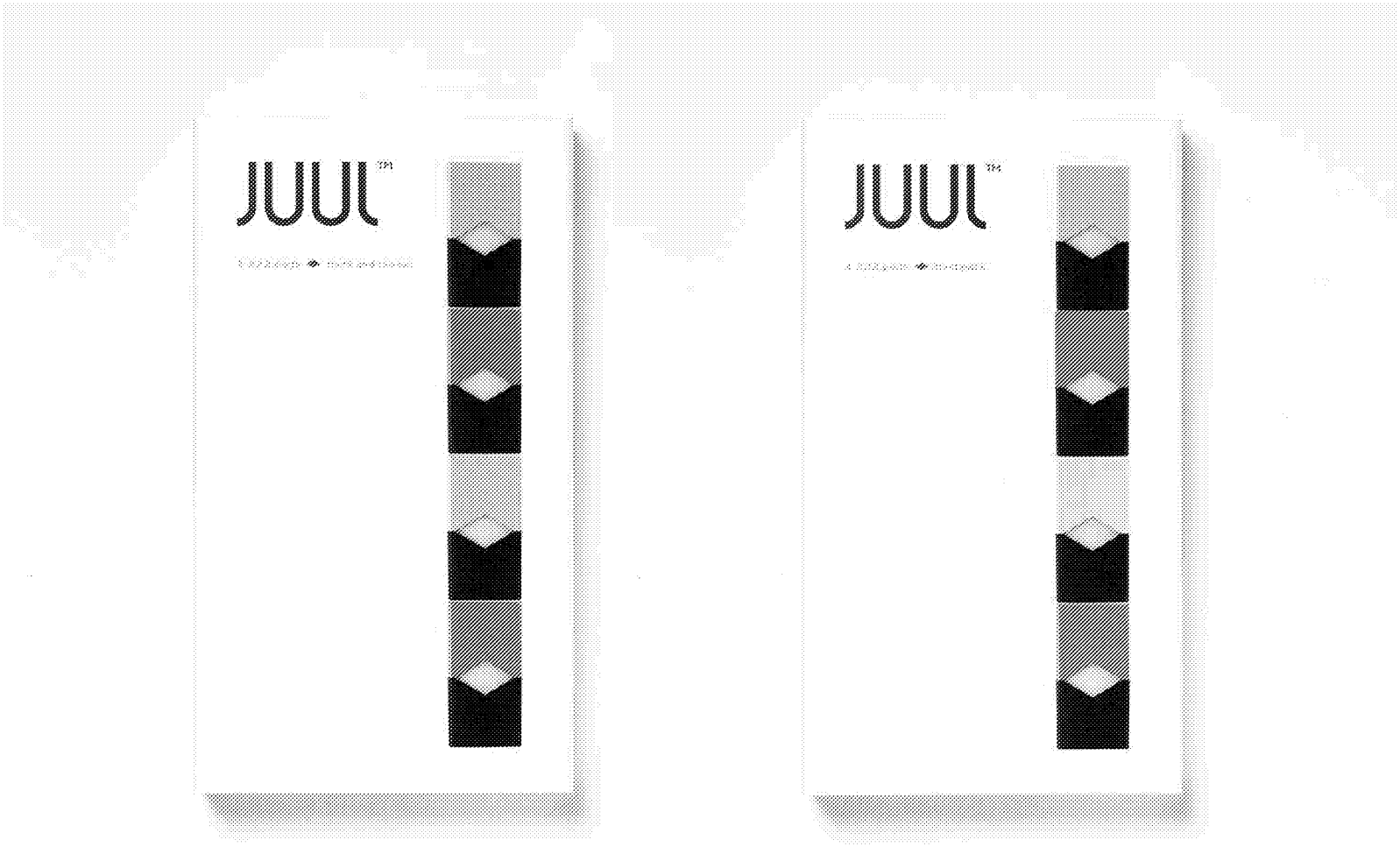
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The New York Times

Following the Vapor Trail

By Bee Shapiro

Dec. 18, 2013

At a recent party in Williamsburg, Brooklyn, as a joint was passed around casually, talk turned to the relative subtlety of vaporizers as a delivery mechanism for marijuana.

"I've heard they barely smell at all," said one of the hosts, 29, who works in digital marketing. One guest, a 38-year-old salesman in a button-down and Movember scruff, ran down the pluses and minuses of his newly acquired Pax vaporizer as if it were the latest smartphone release. "The best out there," he concluded. "Besides, it looks good."

The Pax ($249.99), housed in a lightweight opaque oval tube with a retractable click-out mouthpiece, may be subtle. But the company that makes it, Ploom, has been aggressive about promotion, marketing at events like the Sundance Film Festival and Aspen Food and Wine Classic, and it recently sponsored the after-party for the New York premiere of the film "Charlie Countryman."

Their new hit product (no pun intended) was conceived by two friends, Adam Bowen and James Monsees, who have master's degrees in product design from Stanford. They are hardly slacker stoners. Mr. Monsees said that while he's personally "very much in favor of what's happening on the legalization of marijuana front," the two came up with the idea when discussing tobacco smoking.

Mr. Bowen has designed products for Apple and Wal-Mart, and Mr. Monsees was a founding fellow at the Hasso Plattner Institute of Design at Stanford.

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The Firefly vaporizer, meant to be decorative as well as functional.
Tony Cenicola/The New York Times

They came up with the Pax after deciding that the market lacked sophistication, Mr. Monsees said: "It's an elegant high-end device. When people are given options and one is functional or one that is functional and is wonderful to use, then people might go in that direction."

"It has been worth the money," said a 32-year-old vice president of a media company in New York, who bought a Pax a couple weeks ago and said he liked that it had no visual associations with cheap pipes at the corner shop. "It's the iPhone of vaporizers: a beautiful covetable piece of technology."

And like the iPhone, it has not only Silicon Valley origins but competition, like the heavier Firefly, which has more of a retro 1950s aesthetic. Four years ago, when it was conceived, the options either looked "like science equipment or stoner paraphernalia," said Mark Williams, an Apple

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alumnus who developed the Firefly with Sasha Robinson, formerly of IBM. “Now there’s a lot more sophisticated people entering the market.”

Along with using convection technology, the Firefly ($269.95), which became available starting this month, is meant to be decorative. “You can put it on the table, and think that’s beautiful instead of something you want to hide,” said Mr. Williams. “For us, what we wanted really was taste. The taste of the device, sure, but also that it fits into the taste of your lifestyle.”

“We wanted to actually celebrate the experience,” Mr. Williams said, “whereas other brands are coming from a place of discretion as the primary attribute.”

Justin Miller, 30, a D.J. and antique and furniture restorer in Queens, is not quite ready to pay hundreds to celebrate the experience of inhaling dried herbs with a status vaporizer, though he said he would spend up to $120. “Vaporizers are getting more and more popular,” he said. “So, sure, I want a Pax, for all the reasons like design, but if they can knock the price point down.”

Mr. Miller has also been researching slimmer, less showy vaporizer pens. “They seem a little more clandestine,” he said.

A version of this article appears in print on Dec. 19, 2013, on Page E12 of the New York edition with the headline: Following The Vapor Trail

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IPHONE 5 HIGHLIGHTS APPLE'S FALL MOBILE LINEUP

Lightning: the iPhone's new connector

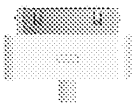
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(/author/Dan-Frakes/) By Dan Frakes (/author/Dan-Frakes/)
Macworld |
SEPTEMBER 13, 2012 10:15 AM PT



The iPhone 5 (http://www.macworld.com/article/1168510/apple_introduces_the_iphone_5.html) offers many improvements over its predecessor, including a larger screen, better performance , LTE, and an improved camera. But for those upgrading from an older iPhone, there's another change that might prove to be more significant, at least when it comes to compatibility: a new dock connector. Apple has done away with its proprietary—and nine-year-old—30-pin connector in favor of a new, smaller alternative. Why did Apple make the change? And what does it mean for you—and for your existing accessories? Here's a look at this new connector, dubbed Lightning.

30 pins, nine years

Apple's 30-pin dock-connector port has been a staple of iPods, iPhones, and iPads since the third-generation iPod (http://support.apple.com/kb/SP99) hit store shelves back in 2003. While most media players offered simple USB connectivity for data and charging, Apple's single port offered a slew of functionality: power, audio-out, playback control, and speedy data syncing were among the initial features.

[Further reading: The best high-res digital audio players] (https://www.techhive.com/article/3050398/home-audio/best-high-resolution-digital-audio-player-which-dap-reigns-supreme.html)

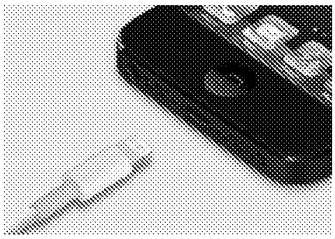
Over the years, the 30-pin port has gained some features (HD-video output, photo importing, and USB input, for example) while losing others (FireWire charging and data transfer), but it's served us—and Apple—well: Along with Apple's Universal dock-cradle design (http://support.apple.com/kb/HT1380), the 30-pin port ensured that if we bought an accessory with a dock connector—speakers, docks, car chargers and mounts, you name it—that product would work with any recent i-device.

But the 30-pin dock-connector port wasn't without flaws. For starters, it was somewhat fragile, making it prone to break either the accessory or, worse, your iPhone or iPod under stress. The connector's thin profile and only-fits-one-way design also made it more difficult to use than, say, a standard USB port: Depending on the device and the accessory, it could be a challenge to line up the connector and port (especially on the iPod touch and recent iPad models, thanks to their curved edges). Finally, the 30-pin connector took up a lot of space, both on the outside and the inside, and as Apple's phones, tablets, and media players are getting smaller and thinner, that real estate has become more and more precious.

First Thunderbolt, now Lightning

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(http://images.macworld.com/images/article/2012/09/lightningconnectorplug-294352.png)



The new Lightning connector (http://images.macworld.com/images/article/2012/09/lightningconnectorplug-294352.png)

All of which is to say that we shouldn't be surprised that Apple has, with the debut of the iPhone 5 and new iPods, slimmed down the dock-connector port. Specifically, the new models sport what Apple is calling the Lightning connector. (Yes, Apple now has Thunderbolt and Lightning connectors. Cue "Bohemian Rhapsody (http://en.wikipedia.org/wiki/Bohemian_rhapsody)" jokes.)

The new connector uses an 8-signal design that works in both orientations, so you never need to worry if you've inserted the plug wrong-way-up. Apple says that in addition to being easier to use, the Lightning connector is also more durable than its predecessor. The company also describes the new connector as all-digital and adaptive, with the latter meaning that it uses only the particular signals that each accessory requires.



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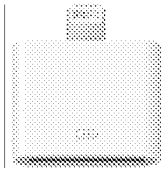
As with the 30-pin connector, the Lightning connector supports video output; Apple told *Macworld* that Lightning-to-HDMI and Lightning-to-VGA cables will be available "in the coming months."

Of course, the other big advantage of the Lightning connector is its size: It's 80 percent smaller than the 30-pin connector, which means the space required on your device to accomodate the new plug is smaller by at least the same amount—and that's not counting the reduction in the amount of interior circuitry required to support the connector's features. This new, smaller connector is part of the reason the new iPhone is 20 percent thinner than the iPhone 4S. (The other part is that the iPhone screen's touch sensors are now integrated into the display, so the display itself is thinner.)

Adapt or buy

Easier to use, sturdier, smaller—what's not to like? The downside of this change is that the new Lightning connector renders Apple's latest devices incompatible with the millions of 30-pin-connector accessories on the market and in people's homes. Apple includes with the new iPhones and iPods a USB-to-Lightning-connector cable, but no adapter to use the new devices with older accessories.

(http://images.macworld.com/images/article/2012/09/lightningto30pinadapter-294351.jpeg)



If you've got expensive older accessories that you don't feel like replacing, Apple offers the $29 Lightning to 30-pin Adapter (https://apple.sjv.io/c/321564/435031/7613?subid1=US-002-1168555-000-000000-web&u=https://www.apple.com/shop/us/product/MD823ZM/A/lightning-to-30-pin-adapter) and the $39 Lightning to 30-pin Adapter (0.2 m) (https://apple.sjv.io/c/321564/435031/7613?subid1=US-002-1168555-000-000000-web&u=https://www.apple.com/shop/us/product/MD824ZM/A/lightning-to-30-pin-adapter-02-m) (the latter a 20cm

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Apple's $29 adapter (http://images.macworld.com/images/article/2012/09/lightningto30pinadapter-294351.jpeg)

cable), each of which lets you connect older 30-pin-dock-connector accessories to the new iPhone and iPod models. (Extra Lightning to USB Cables (https://apple.sjv.io/c/321564/435031/7613?subid1=US-002-1168555-000-000000-web&u=https://www.apple.com/shop/us/product/MD818ZM/A/lightning-to-usb-cable) will run you $19 a piece.)

Apple has confirmed to *Macworld* that these adapters support analog and USB audio-out, as well as syncing and charging. However, the adapters don't support video-out or iPod mode, the latter a special mode that lets particular accessories, such as car stereos and some whole-home-audio systems, display your iPod's menus on the accessory's own screen. More cryptically, the online Apple Store's product pages note that "some 30-pin accessories are not supported."

Astute readers may have noticed that the Lightning connector does not support analog audio-out, but the 30-pin adapters do. That's because hidden away inside each 30-pin adapter is a digital-to-analog converter (DAC) that converts the Lightning connector's digital audio signal to an analog version. (The inclusion of a DAC explains at least part of the price of the adapters.)

There's also the concern, mentioned by a number of *Macworld* staffers around the office, that using an iPhone 5 with an older, 30-pin accessory risks putting a lot of pressure on both the phone's Lightning port and the accessory's dock connector thanks to the additional leverage added by the length of the adapter. We'll see how warranted this concern is once we start testing the new phone and the adapters.

Of course, if you're averse to adapters, or if you've been thinking about upgrading your older accessories anyway, Apple notes that companies are already working on Lightning-connector accessories—during Wednesday's event, Apple senior vice president Phil Schiller specifically mentioned Bose, JBL, Bowers & Wilkins, and Bang & Olufsen. (For the latest in new iOS accessories, follow our weekly roundups (http://www.macworld.com/search?query=week+in+ios+accessories).)

It's also worth noting that Apple has released a Lightning to Micro USB Adapter (https://apple.sjv.io/c/321564/435031/7613?subid1=US-002-1168555-000-000000-web&u=https://www.apple.com/shop/product/MD820ZM/A/lightning-to-micro-usb-adapter), presumably to comply with European Union requirements. This adapter supports only charging and syncing. (Thanks to Matthew Panzarino (https://twitter.com/panzer/) for spotting this.)

Read Macworld's hands-on with Apple's Lightning-to-30-pin adapters (http://www.macworld.com/article/2012137/hands-on-with-apples-lightning-to-30-pin-adapters.html)

More wireless, but still wired

What's perhaps most interesting about the change to the new Lightning connector is that it reflects changes in the ways we're using our iPhones and iPods. As Schiller noted during Wednesday's Apple event (http://www.macworld.com/article/1168476/live_blog_apples_iphone_event.html), "So much has changed and so many of the things they used to do over the wire can now be done wirelessly. Bluetooth for speakers, headphones; Wi-Fi for audio, syncing; and iCloud for downloading content wirelessly and backup." In other words, Apple doesn't think we *need* physical connections as much.

Still, physical connections remain necessary for charging, higher-speed syncing, and the best audio quality, to name a few uses. (Don't be fooled by "wireless" charging add-ons—there's still a cable or physical connection *somewhere*.) Until wireless charging like that found on the new Lumia 920 (http://www.techhive.com/article/2000433/nokia-lumia-920-brings-killer-camera-to-windows-phone-8.html) becomes widespread, and can be added without making the iPhone significantly thicker, we're stuck with cables. And as Schiller told All Things D's Ina Fried (http://allthingsd.com/20120912/interview-phil-schiller-on-why-the-iphone-5-has-a-new-connector-but-not-nfc-or-wireless-charging/), "This is the new connector for many years to come."

[*Dan Frakes is a senior editor for Macworld, specializing in iOS and iPod accessories.*]

Updated 11:15am to add note about analog audio-out and the Lightning connector, and to add a mention of the Lightning to Micro USB Adapter. 11:55am to add info about iPod-out mode. 2:50pm with additional information from Apple on video-out, analog audio-out, the 30-pin adapters' DACs, and the adaptive nature of the new connector.

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(/article/1168525/apple_

(/article/1168515/apple_**Apple announces major iTunes update (/article/1168515/apple_announces_major_itunes_update.html)**

On Wednesday, Apple announced a major update to its iTunes software, set to appear in October.

(/article/1168512/ios_6_**iOS 6 arrives on Sep. 19 (/article/1168512/ios_6_arrives_on_sep_19.html)**

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(http://ftijournal.com/article/governor-cuomos-plan-to-roll-out-recreational-marijuana?utm_source=Outbrain&utm_campaign=FTI_Journal&utm_content=Yahoo+Image+Search+Results+Test+CTR+Variation+-+Text+Only+-+Control+-+Desktop+-+Image+Search+Results&utm_term=1558&utm_medium=paid)

How To Turn Your Smartphone Into a Smart Glucose-Meter
Dario
(https://about.mydario.com/ryan/?tid=outbrain.HF-desk_ryan.$publisher_name$.$section_name$&utm_medium=cpc&utm_source=outbrain&utm_campaign=1558&utm_term=Yahoo+Image+Search+Results+Test+CTR+Variation+-+Text+Only+-+Control+-+Desktop+-+Image+Search+Results)

Hilarious Beach Photos They Wish Were Never Taken
Topix Passport
(http://topixpawsome.com/slideshow/19590?utm_source=outbrain&utm_campaign=1558&utm_ter

One Thing All Cheaters Have In Common, Brace Yourself
www.peoplewhiz.com
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[Photos] Funny Incidents Happened Just By Chance
Bob's Hideout
(http://www.bobshideout.com/view/hilarious-coincidences-bho_dorin_a_108490&obOrigUrl=true)

Storage Wars' Star Sells Unit With $7.5 Million
Money Pop
(http://www.moneypop.com/celebrity/the-million-dollar-treasure-that-the-cast-of-storage-wars-missed-out-on/?



Apple TV+ original shows, series, and movies: Jon Favreau's series...
Macworld
(https://www.macworld.com/article/3245534/list-of-apple-tv-plus-shows-and-series-news-actors-trailers-release-dates.html)



Amazon is selling the Fire 7 Kids Edition Kindle tablet for an all-time...
Macworld
(https://www.macworld.com/article/3395160/amazon-is-selling-the-fire-7-kids-edition-kindle-tablet-for-an-all-time-low-price-of-60.html)



12 little-known Apple Watch features you should start using
Macworld
(https://www.macworld.com/article/3396140/apple-watch-tips-and-tricks.html)

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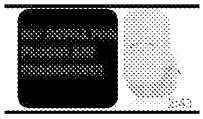
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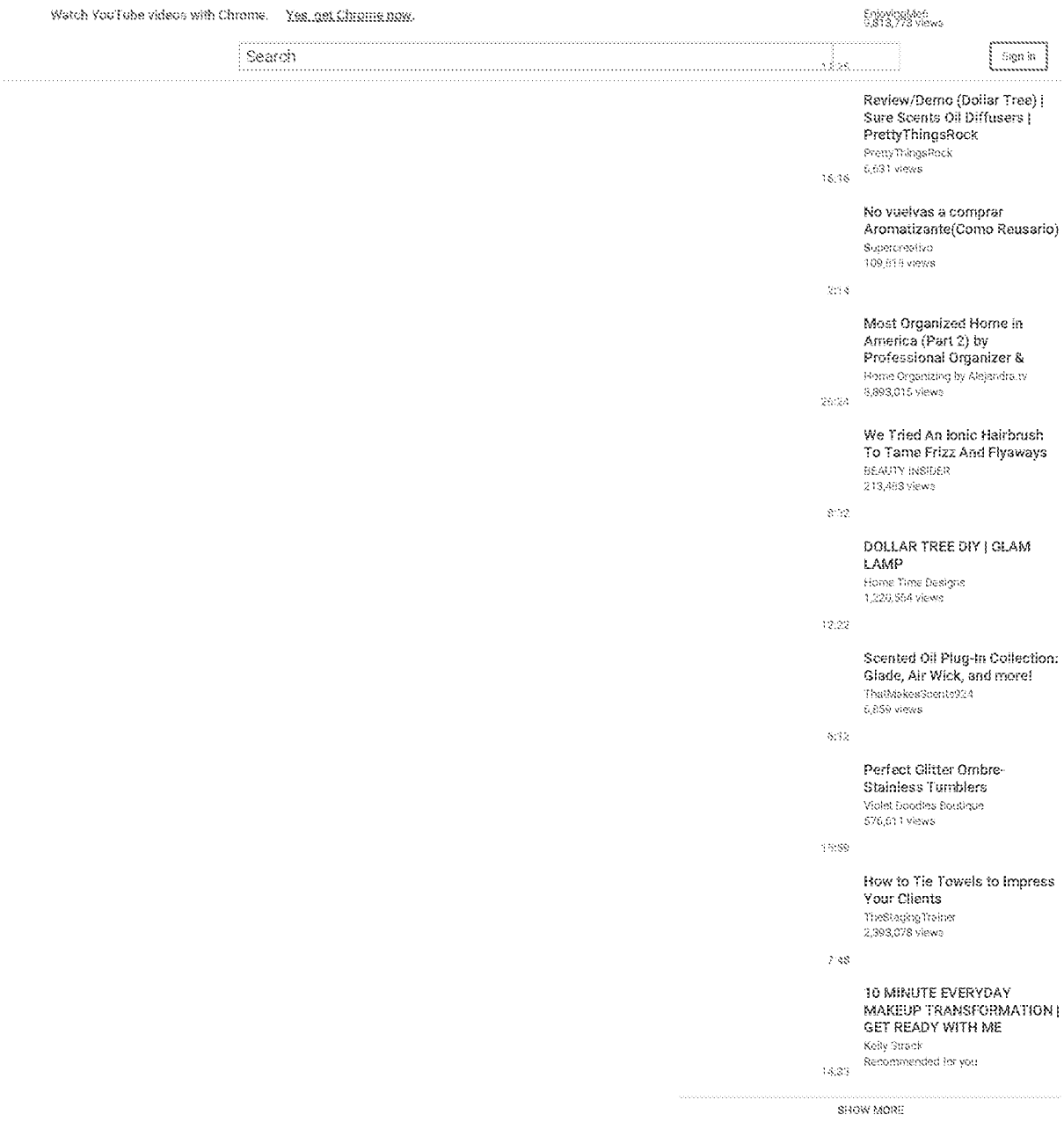
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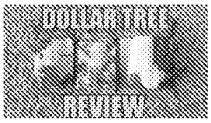
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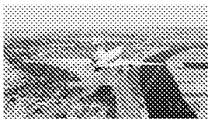


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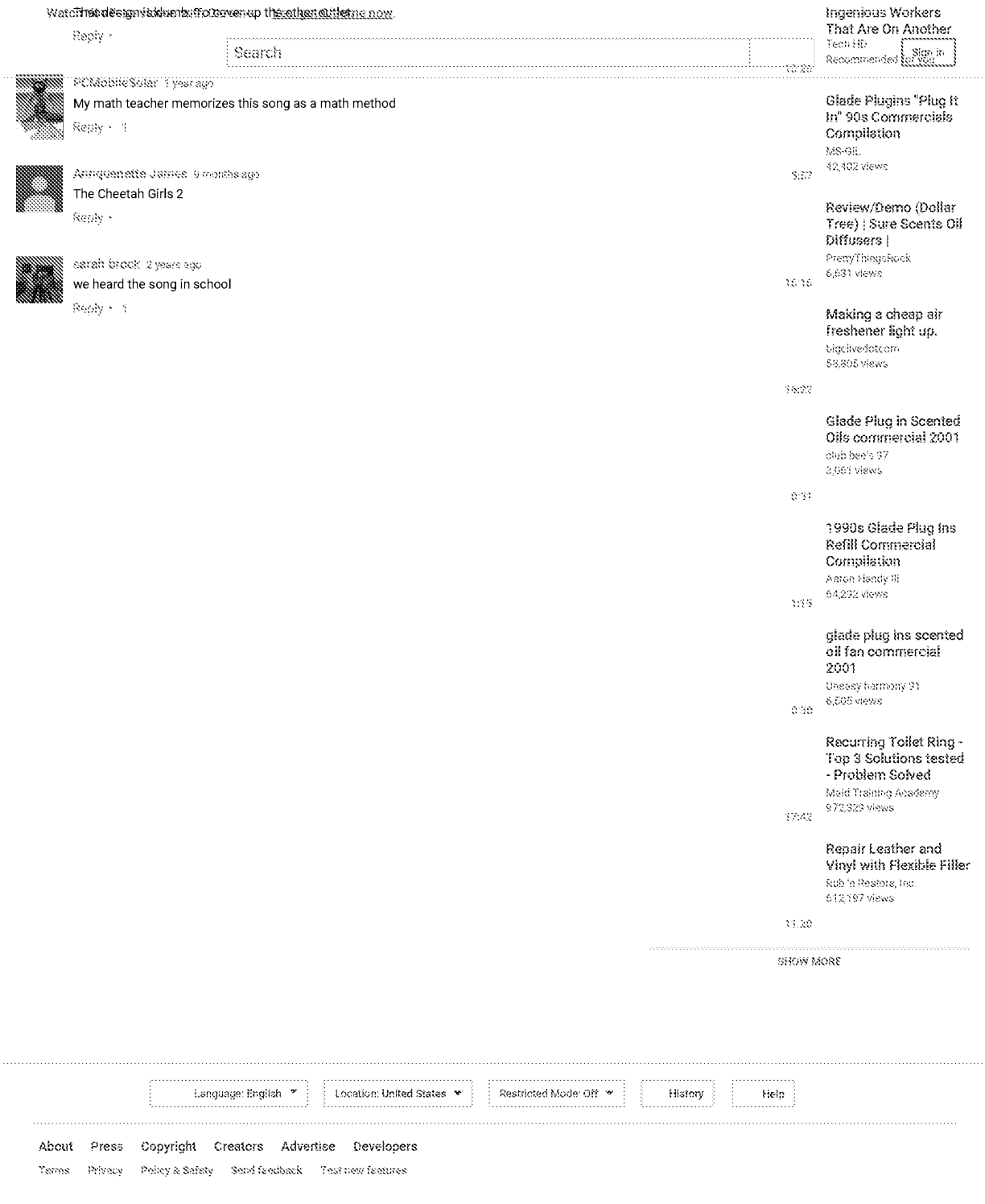

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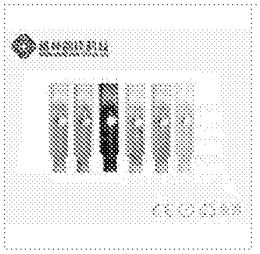


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Green Sound High-tech Co.,Ltd

Electronic Cigarette Refillable Cartridge GS-PUSH,Hold 1.5ml



See Larger Picture : Electronic Cigarette Refillable Cartridge GS-PUSH,Hold 1.5ml

Company Name	: Green Sound High-tech Co.,Ltd
Membership	: Free Member
Registration Date	: 2011-04-13
Country/Region	: China
City	: Guangdong
Contact	: Fenny Li
Related Keywords	: Refillable Cartridge, Electronic Cigarette, Cartridge, Refillable Cartridge GS-PUSH

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Price	US$ 0.2
Min Order Quantity	10pcs / 1
Supply Ability	10000pcs per day
Port	Shenzhen
Delivery Lead Time	2-5days

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Browse by Category

- All Products
- GS 2011 New Products
- GS-510 Series
- GS-901
- GS-Ego Series
- GS-Tank
- GS-Zerro
- GS-Green Tank
- GS-Legend
- GS E-liquid
- GS Atomizer

Product Details

Report Item

Quick Information

Brand Name: GS | Place of Origin: China | Model Number : PUSH

Color : Gray,blue,other | Packaging : 5pcs/box | Payment terms : T/T,Western Union,PayPal

Delivery time : 2-5days | OEM or ODM : Yes

Description

Electronic Cigarette Refillable Cartridge GS-PUSH,Hold 1.5ml

Feature:
1.PUSH cartridge can hold 1.5ml e-liquid(e-juice)
2.The button can control the e-liquid,keep smooth-smoking
3.The cartridge can match to any cig
4.No tar no oil flew out
5.CE,ROHS,CC,FDA certification

NJOY Exhibit 1002.1204

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Battery

GS 2012 New Products

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Contact us

Green Sound High-tech Co.,Ltd [China]

Address
C3-3 Xinxing Industry Park,Fuyong Town,Baoan District,Shenzhen Shenzhen Guangdong

Phone
86-0755-33194027

Contact name
Fenny Li

Four-step-smoke quitting:
Step 1: Use the cartridge with high e-liquid for 8 weeks by normal smoking habit.
Step 2: Use the cartridge with mediate e-liquid for 12 weeks by normal smoking habit.
Step 3: Use the cartridge with low e-liquid for 4 weeks by normal smoking habit.
Step 4: At last, Use the cartridge with zero e-liquid for 2 weeks and achieve smoke abatement.

After-sale service:
1: We will replace the broken parts with new parts in the next order
2: Track the order until you get the goods

Extra service:
1: MOQ50 sets: sample order is available
2: OEM 500 sets free customized package
3: 200 sets of according to customer's requirements, the printing of OEM/ODM designated LOGO

Others:
1: Payment: PayPal, Western Union, T/T
2: Delivery time: samples order within 2 days; bulk order within 2-5days
3: Shipment: DHL, EMS, Normal air freight as per customer's requirements

Certificates

CE : 2011NT0412154 FCC : 2011NT0412155 FDA : 2011NT0419181

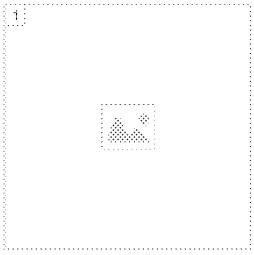
Price

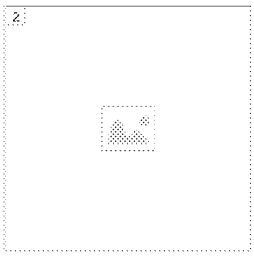
Price Condition : FOB Price : USD0.2 / 1 Delivery Port : Shenzhen

Packaging & Delivery

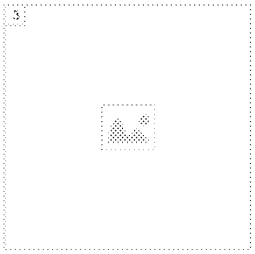
Packing : 5pcs/box Delivery Lead Time : 2-5days Minimum Order : 10pcs
Supply Ability : 10000pcs per day

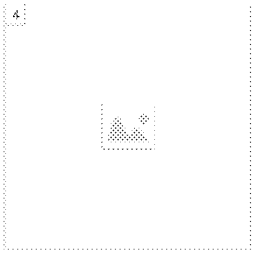
Product Image





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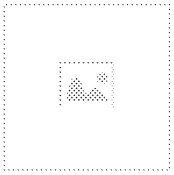
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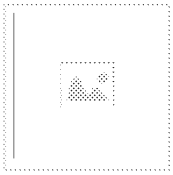
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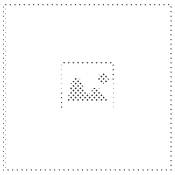
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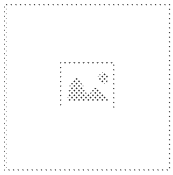
2011 New E-cigarette GS-Cato ...



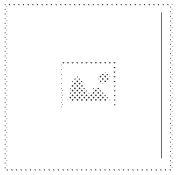
2011 New E-Cigarette GS-360 ...



Dual Coil Clearomizer GS-312 ...

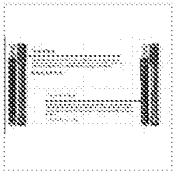


Larger Capacity Clearomizer ...

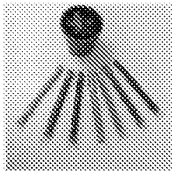


Patented Electronic Cigarette ...

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Electronic Cigarettes

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* From

To: Fenny Li
Green Sound High-tech Co.,Ltd

* Buying Product

Category : E-Cigarette

* Message

Use English only Max. 2000 characters. (Min. 20)

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GS-901
GS-Ego Series
GS-Tank
GS-Zero

Selling Leads
Sell Newest Clever Electronic...
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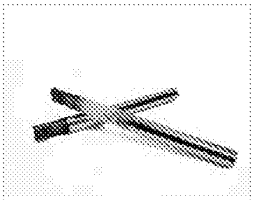
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Green Sound High-tech Co.,Ltd

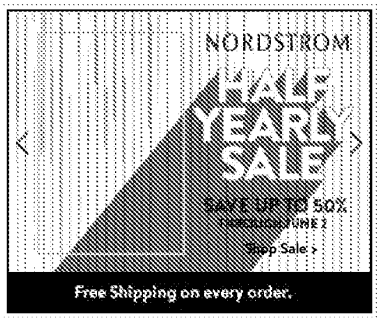
2011 New E-Cigarette GS-360,With 1.2ml Clearomizer





See Larger Picture : 2011 New E-Cigarette GS-360,With 1.2ml Clearomizer

Company Name	: Green Sound High-tech Co.,Ltd
Membership	: Free Member
Registration Date	: 2011. 04.13
Country/Region	: China
City	: Guangdong
Contact	: Fenny Li
Related Keywords	: E-Cigarette, New E-Cigarette, GS-360, Clearomizer



Free Shipping on every order.

Price	US$ 5
Min Order Quantity	2 sets / 15
Supply Ability	5000sets per day
Port	SHENZHEN
Delivery Lead Time	2-10days

Share to :

Contact Now or **Start Order**

* Send an Inquiry to this supplier * Name your price

Browse by Category

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- GS-510 Series
- GS-901
- GS-Ego Series
- GS-Tank
- GS-Zerro
- GS-Green Tank
- GS-Legend
- GS E-liquid
- GS Atomizer

Product Details

Report Item

Quick Information

Brand Name: GS	Place of Origin: China	Model Number : 360
Color : Silvery,black,stainless	Content of battery : 360mAh	Payment terms : T/T,Western Union,PayPal
Delivery time : 2-10days	OEM or ODM : Yes	

Description

E-Cigarette GS-360

GS-360		
Item	Electronic Cigarette	
Packaging	elegant gift box	

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Accessories
Battery
GS 2012 New Products

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Contact us

Green Sound High-tech Co.,Ltd [China]

Address
C3-3 Xinxing Industry Park,Fuyong Town,Baoan District,Shenzhen Shenzhen Guangdong

Phone
86-0755-33194027

Contact name
Fenny Li

Color	Silvery and other	
Certification	CE,ROHS,FCC,FDA	
Parameter	Size	11mm(D)*136mm(L)
	Each cartridge can supply	750 mouthfuls
	Content of battery	360mAh
	Normal working voltage	3.3V-4.2V
	Full battery can supply	400 mouthfuls
	Charge Time	2-3 hours
	Life of battery	300 times
Components	Clearomizer device	2 pc
	Battery	2 pc
	USB cordless	1 pc
	Filter	3pcs
	Manual	1 pc
Delivery Time	2-10days	
Warranty	12 months	
OEM or ODM	Yes	

-

Feature:
1. 360 is exclusive dealing of our factory
2. Transparent atomized cartridge,can hold 1.2 ml e-liquid(e-juice)
3. Not tin soldering but butt-joint
4. No tar no pollution
5. 2011 lastest product

Four-step-smoke quitting:
Step 1: Use the cartridge with high e-liquid for 8 weeks by normal smoking habit.
Step 2: Use the cartridge with mediate e-liquid for 12 weeks by normal smoking habit.
Step 3: Use the cartridge with low e-liquid for 4 weeks by normal smoking habit.
Step 4: At last, Use the cartridge with zero e-liquid for 2 weeks and achieve smoke abatement.

After-sale service:
1: One year warranty policy
2: We will replace the broken parts with new parts in the next order
3: Track the order until you get the goods

Extra service:
1: MOQ 2 sets; sample order is available
2: OEM 500 sets free customized package
3: 200 sets of according to customer's requirements, the printing of OEM/ODM designated LOGO

Others:
1: Payment: PayPal, Western Union, T/T
2: Delivery time: samples order within 2 days; bulk order within 2-10days
3: Shipment: DHL, EMS, TNT,UPS Normal air freight as per customer's requirements

Certificates

CE : 2011NT0412154 FCC : 2011NT0412155 FDA : 2011NT0419181

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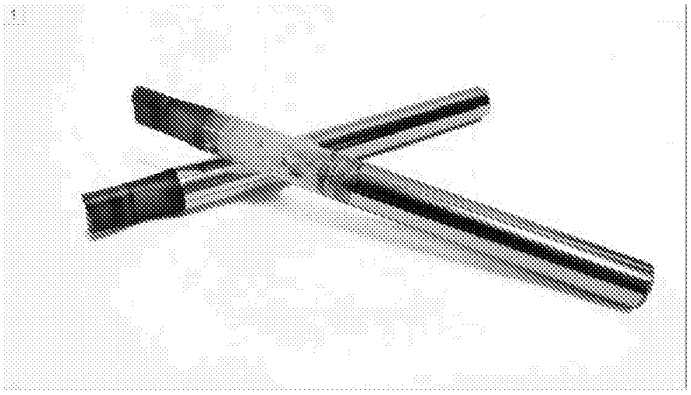
Price

Price Condition : FOB | Price : USD5 / 15 | Delivery Port : SHENZHEN

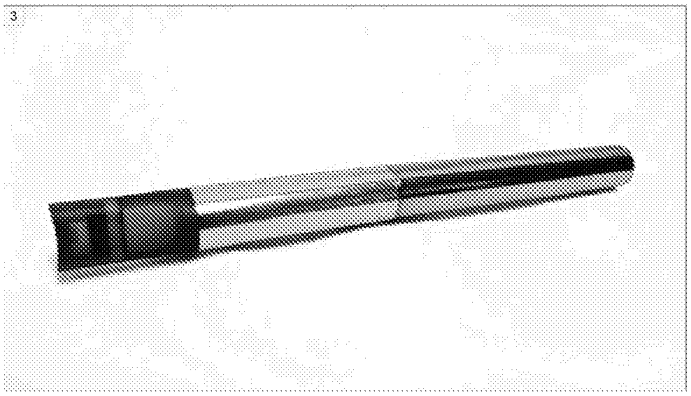
Packaging & Delivery

Packing : 50set/ctn | Delivery Lead Time : 2-10days | Minimum Order : 2 sets
Supply Ability : 5000sets per day

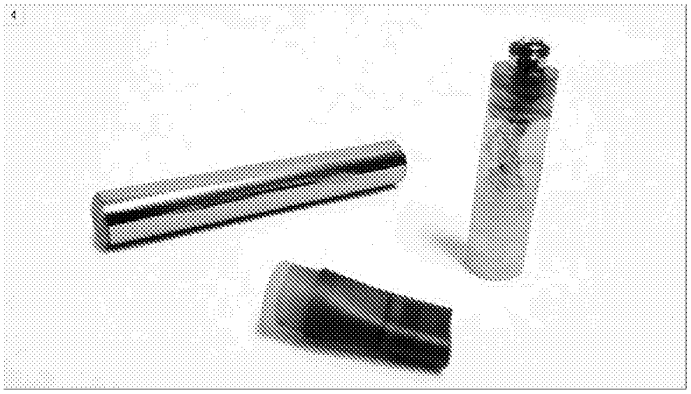
Product Image







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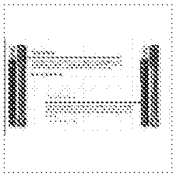
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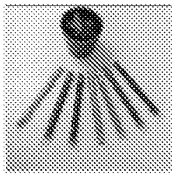
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NJOY Exhibit 1002.1212



The Crazy Rants of a Security Engineer

Friday, October 16, 2015

Hacking the Vuse E-Cig to Fully Use Cartridges and Allow Refills

If you've ever used a Vuse e-cigarette, you may have noticed that eventually the unit will say the cartridge is empty and no longer allow you to use it. Unfortunately, the cartridge isn't actually empty but the cartridge keeps track of how much it was used and has a cut off when it reaches a certain value. In this article I'm going to show you three ways to prevent the cartridge from reaching this cut off point. One method is very simple and can be implemented by anyone. The second is more convenient but does require a bit of work initially, and the third I haven't tested. First though, let me give some background on how the unit works. From their website,

> VUSE is the only Digital Vapor Cigarette designed with a SmartLight™ indicator to always keep consumers informed. The SmartLight Indicator informs on both the battery and Cartridge life. The SmartLight flashes white for two seconds when the Cartridge is getting low. When the SmartLight flashes white continuously, it is time to change the Cartridge.



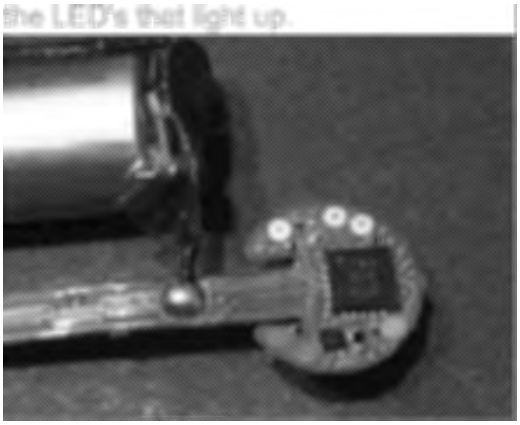
VUSE is an electronic cigarette designed with "Smart Technology," according to their website. The VUSE Digital Vapor Cigarette contains a VaporDelivery Processor that uses algorithms in the same way a computer does, therefore it is "digital." The VaporDelivery Processor in the PowerUnit, working with the SmartMemory™ microchip in the Cartridge, monitors and adjusts the power and heat delivered to the Cartridge up to 2,000 times a second, ensuring consistently satisfying puffs.

NJOY Exhibit 1002.1213



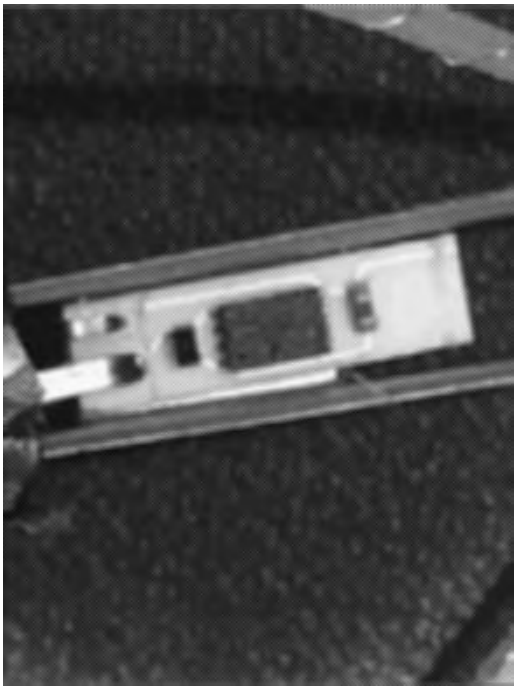
As you can see from the picture above, the main processor (Atmel ATtiny84A) is in the battery pack, but the cartridge also contains an 8 pin eeprom or microcontroller where, among other things, it keeps track of how much it was used. While I don't know for sure how it works since I don't know the technical specifications of the chip used, I do have a pretty good idea what it is doing.

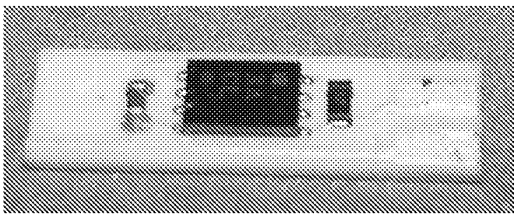
This is a picture of the main processor on the battery pack, this is located at the tip of the unit under the LED's that light up.



And this is the circuit board from the cartridge.

NJOY Exhibit 1002.1214





There are three main operations that happen when you take a puff.

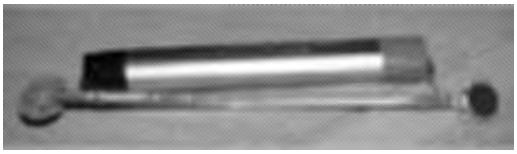
1. The Vuse battery will only work with Vuse cartridges, so the cartridge authenticates itself with the battery's processor and this communication (and possibly all communication between the processors) is encrypted. This makes it much harder to eavesdrop on this communication.
2. Power the heating element, as mentioned above, the battery's processor monitors and adjusts the power delivered to the cartridge using data it receives from the cartridge unit. I won't go too into how this works, but from the numerous patents (excerpts quoted at the end of this article,) of theirs that I've read, it likely monitors the airflow through the battery pack, and the resistance of a fusible link and the heating element located in the container. Keep in mind that the unit is calculating and adjusting the power up to 2,000 times a second.
3. Having calculated how long or intense the puff was, a value is incremented (or possibly decremented) in the cartridge's microcontroller's eeprom. Note that some people think this is a simple puff counter, but I think it is more advanced than that. If you don't know what an eeprom is, it is just memory that can be read and written like a hard drive. An eeprom doesn't need power to retain its contents, unlike other types of memory.

Step number 3 is the one that we care about. Because the puff value is written to the eeprom at the

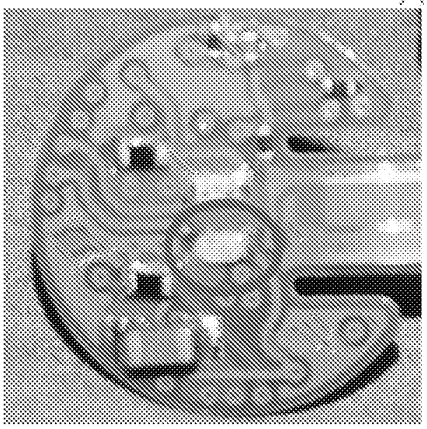
NJOY Exhibit 1002.1215

completion of a puff, the easiest way to keep a cartridge from expiring is to disconnect it quickly as you take your puff. Unfortunately the connector that connects the battery and the cartridge isn't very dependable and will probably end up breaking at some point. So another option is to carefully take the battery compartment apart and rig a tiny push button switch to the tip of the unit that disconnects the negative terminal of the battery. You can see this connection in the image below, the black wire is the negative terminal and it connects just below the LEDs and main processor.





One way for Vuse (R.J. Reynolds Vapor Company) to prevent this would be to increment the counter to the maximum value a puff can be before the puff starts and then once the puff is done, subtract a value if the puff didn't reach the maximum. Eeprom writes take a few processor cycles to initiate and around 5 to 10 milliseconds to complete. This along with the fact that eeproms can only be written to a limited number of time before they fail (usually 100,000+ but could be less on cheaper components,) is why you wouldn't want to constantly save the value during the puff.
There is a third method that others have reported that will allow you to reuse a cartridge and this method is easier than adding a switch and far more convenient than removing the cartridge every time. This is to sever the connection of the LED on the end of the battery pack. I believe it is this LED



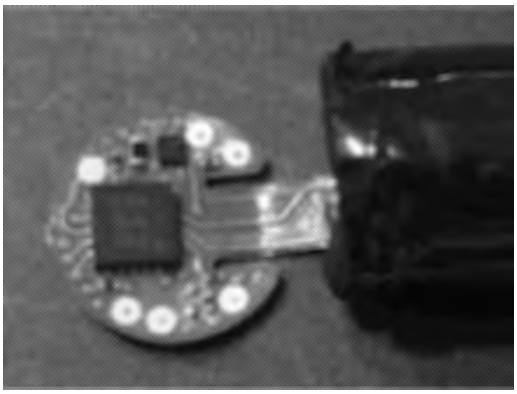
NJOY Exhibit 1002.1216

I haven't verified that this will work, and you need to be careful not to damage other components, especially since the main processor is on the other side. If it does work though, it is fairly simple and the only downside is that you no longer have the white LED to indicate that the device is in use.

Thanks for reading, if you like it please share. Leave a comment and let me know if this worked for you or if you have another idea. Before I end this with some more pictures (my own and some from anticommander) check out my YouTube videos. Follow me on Twitter, @gFogerlie, Google+ https://plus.google.com/+GarrettFogerlie and Facebook https://www.facebook.com/garrett.fogerlie and you can subscribe to me on Youtube if you want to keep up to date.

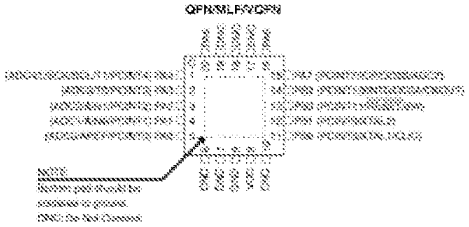
Here is a link to the photos I took during the teardown.





The big pads on the image above are likely ISP pinouts for programming the ATtiny microcontroller.

Here is the pinout of the main processor. Pin 14 connects to the white LED, and pin 15 to the red.



NJOY Exhibit 1002.1217

So here are some extra images. This is the inside of a cartridge.



This is the battery charging circuit located in the battery pack where the cartridge would connect.



Here are some excerpts from some of R.J. Reynolds Vapor Company's patents.

> The present disclosure relates to an aerosol delivery device including a variable output flow sensor. The variable output flow sensor particularly can be a flex/bend sensor wherein output from the sensor varies based upon changes in electrical current flow (e.g., resistance) along an extension of the sensor relative to flexing or bending of the extension resulting from airflow across the extension. The disclosure further provides methods for controlling operation of an aerosol delivery device through utilization of a variable output flow sensor. In particular, control of functional elements (e.g., a heating member, a fluid delivery member, and a sensory feedback member) can allow for real-time changes in the operation of the aerosol delivery device relative to airflow through the device.
> Read more: http://www.patentsencyclopedia.com/app/20150282527#ixzz3ojAfcn8F

> In various embodiments of the smoking article, the heating connection comprising a fusible

NJOY Exhibit 1002.1218

link and a heating element is in electrical connection with the power source and the control component when the control body and the cartridge body are engaged with one another. The control component can comprise a microcontroller. Furthermore, the control component can be configured to selectively actuate a first electrical current flow of a first set of conditions from the power source to the heating connection when the control body and the cartridge body are engaged, wherein the conditions of the first electrical current flow are insufficient to initiate heating by the heating element. The first set of conditions can comprise a voltage that is substantially the same as a voltage that defines a working voltage for the heating element and a current flow duration of about 45 milliseconds or less (e.g., about 5 milliseconds to about 25 milliseconds). The working voltage can be about 2 volts to about 6 volts.
Read more: http://www.faqs.org/patents/app/20140253144#ixzz3ojDJLor0

Various embodiments of the smoking article further comprise a current sense resistor, wherein the current sense resistor is adapted to establish an indication of the fusible link status. The control component can be further configured to initiate a command function based upon a cartridge status interpreted from the fusible link status indicated by the current sense resistor. Specifically, the current sense resistor can be adapted to sense a first resistance across the fusible link and a second resistance across the heating element. Sensing of the first resistance can be indicative of an unused cartridge. Sensing of the second resistance in the absence of the first resistance can be indicative of a used cartridge.
Read more: http://www.faqs.org/patents/app/20140253144#ixzz3ojDCT8pV

The control body 80 includes a control component 20, a flow sensor 30, and a battery 40. Although these components are illustrated in a specific alignment, it is understood that various alignments of the components are encompassed by the present disclosure. The control body 80 further includes a plurality of indicators 19 at a distal end 12 of the control body shell 81. Such indicators 19 can show the number of puffs taken or remaining from the smoking article can be indicative of an active or inactive status, can light up in response to a puff, or the like. The indicators can be provided in varying numbers and can take on different shapes and can even be simply an opening in the body (such as for release of sound when such indicators are present).
Read more: http://www.faqs.org/patents/app/20140253144#ixzz3ojE3wHNB

Generally, in use, when a consumer draws on the mouthend 11 of the cartridge, the flow sensor 30 detects the change in flow and activates the control component 20 to facilitate current flow through the resistive heating element 50. Thus, it is useful for air flow to travel through the control body 80 in a manner that flow sensor 30 detects air flow almost instantaneously.
Read more: http://www.faqs.org/patents/app/20140253144#ixzz3ojEccwtz

The control algorithm may call for power to the resistive heating element 50 to cycle and thus maintain a defined temperature. The control algorithm therefore can be programmed to automatically deactivate the smoking article 10 and discontinue power flow through the

NJOY Exhibit 1002.1219

smoking article after a defined time lapse without a puff by a consumer. Moreover, the smoking article can include a temperature sensor to provide feedback to the control component. Such sensor can be, for example, in direct contact with the resistive heating element 50. Alternative temperature sensing means likewise may be used, such as relying upon logic control components to evaluate resistance through the resistive heating element and correlate such resistance to the temperature of the element. In other embodiments, the flow sensor 30 may be replaced by appropriate components to provide alternative sensing means, such as capacitive sensing. Still further, one or more control buttons can be included to allow for manual actuation by a consumer to elicit a variety of functions, such as powering the article 10 on and off, turning on the heating element 50 to generate a vapor or aerosol for inhalation, or the like.
Read more: http://www.faqs.org/patents/app/20140253144#ixzz3ojETq400

In particular embodiments, the smoking article can include components that define an electrical circuit whereby a control component is configured to controllably deliver a low power pulse from the power source to the heating connection according to one or more defined algorithms. As a non-limiting example, the control algorithm can include pulse width modulation, which can be based on comparison of a battery voltage with a lookup table. As a further non-limiting example, the control algorithm can include a constant voltage feedback loop, such as through utilization of heater voltage measurements. Specifically, in various embodiments of the smoking article, appropriate wiring can be included such that a cartridge engaging a control body defines a closed electrical circuit through which the control component can controllably deliver a low power pulse (as well as a higher power pulse). The low power pulse can be defined as an electrical current that does not exceed the limits of a fusible link as described herein. By contrast, the higher power electrical current that defines a working status of the heating element (i.e., wherein the heating element heats to a temperature sufficient to vaporize the aerosol precursor material) can exceed the limits of the fusible link.
In some embodiments, a low power pulse can have a voltage, a current, or both that is substantially similar to the same property of the higher power pulse, and pulse power can be defined by current flow duration. In particular, time can be adjusted such that the average power delivered to the circuit is constrained appropriately. In certain embodiments, the fusible link can exhibit a resistance that is lower than the resistance of the heating element. In some embodiments, the fusible link and the heating element are provided in parallel, a majority of the current entering the closed circuit can preferentially flow through the fusible link. When the duration of the electrical current flow is sufficiently long, the lower resistance fusible link will fail and thus allow all of the delivered current to pass through the heating element. Depending upon the type of material from which the fusible link is formed, a sufficiently long current flow time can be about 50 milliseconds or greater or about 100 milliseconds or greater, particularly about 50 to about 500 milliseconds. In various embodiments, the heating element can require that the current be applied for a time of about 0.5 seconds or greater or about 1 second or greater, particularly about 1 second to about 4 seconds for sufficient heating to occur. Therefore, in some embodiments, conditions defining a low power pulse can comprise a voltage, a current, or both a voltage and a current that is substantially the same as the same corresponding voltage, current, or both that is utilized for normal functioning of the heating element, and can also comprise an active flow unit time of about 45 milliseconds or less or about 25 milliseconds or less, particularly about 5 milliseconds to about 25 milliseconds.

NJOY Exhibit 1002.1220

In other embodiments, the low power pulse can be defined by a current and/or voltage that can be less than the current and/or voltage that define the working status of the heating element. For example, the electrical current that defines a working status of the heating element can exceed the current delivered by the low power pulse by a factor of 2 or more, 5 or more, or 10 or more. A voltage that defines a working voltage for the heating element can be about 2 volts to about 6 volts, about 2.5 volts to about 5.5 volts, or about 3 volts to about 5 volts. The working voltage is the voltage at which the heating element sufficiently heats to form the desired amount of aerosol during a current flow time as described above.
Read more: http://www.faqs.org/patents/app/20140253144#ixzz3ojFr59Bv

Unknown at 5:19 AM

Share

58 comments:

Cjastic Vibe 11/06/2015 12:23 AM

Like what you are doing here! any luck finding a solution please keep us updated. I am definately interested and I have some good Soldering knowledge so if I can contribute let me know.

Reply

Replies

Unknown 10/06/2016 12:21 AM

im replying to this comment because its at the top of the list. HERE IS THE EASIEST WAY TO RESET THE CARTRIDGE COUNT I JUST TESTED THIS AND IT WORKS. https://www.youtube.com/channel/UCNt4hMwyzexEHWHKOkpb0Q

webmarketingtoday 5/06/2017 9:18 AM

I have found an extremely easy way to by-pass this and take no technical knowledge, all you need to do is when you have a bad cartridge take it off. Get a new cartridge and take a puff and then quickly, and I mean QUICKLY put on the bad cartridge. If you do this extremely fast the bad cartridge will be reset and the unit will light solid white and the cartridge will reset itself. This works but you have to be fast!

nanajanab 7/31/2017 7:09 PM

Good to know bc I keep wasting money on bad cartridges!!

Moriah Mount 5/15/2018 10:12 AM

NJOY Exhibit 1002.1221



So will you be able to start that cartridge completely over again, like as if it's a new one?



Moriah Mount 5/15/2018 10:14 AM

So would this method reset the bad cartridge and let you use it all over again, like as if it was new?

Reply



Garrett Fogerlie 11/06/2015 2:30 AM

Thanks, I'll let you know if I find anything else.

Reply



Unknown 11/07/2015 10:56 AM

Hi Garrett, thanks for posting this!

Could you please clarify what you mean by rig a tiny push button? I'm not sure what to do.

Also have you tested that third method?

Reply

Replies



Garrett Fogerlie 11/07/2015 8:12 PM

The push button idea is a bit tough to accomplish but the idea is to basically have a button that will disconnect power to the main processor. There is a black wire that is ground for the unit, and it connects towards the tip of the battery pack. If you place a button that is momentarily open, meaning power will flow through it unless the button is pressed, then while you are inhaling, just before you finish, you press the button so that the processor never updates the cartridge. Frankly just disconnecting the cartridge works fine for me so I haven't tried the other methods (there is another one I didn't post but it is to ground out the outermost two pins on the cartridge, it shouldn't work in theory because the cartridge couldn't be authenticated, but I'm told it does.) I don't see why the third method would work, after I posted this I mapped out most of the pins on the main processor and if I recall, it doesn't look like severing that connection will break any other part of the circuit. My guess is that you just won't see a light to tell you when it isn't working. It is an easy method to test and I may do so in an upcoming youtube video.



Unknown 11/08/2015 11:47 PM

Thanks for the clarification Garret. Seems like the push button thing would be tough to put together. I've been disconnecting the cartridge before each puff is over and it was working fine. Until it stopped recognizing the cartridge was even there (red and white blinking) but it did extend the life while it worked.

NJOY Exhibit 1002.1222



Garrett Fogerlie 11/10/2015 2:12 AM

Perhaps one of the pins on the cartridge got bent and isn't making contact, you could try to gently bend them with tweezers or something and connect it a few times to see what happens. The other thing that can happen is the heater element gets burnt out and then the cartridge will no longer work either.

Reply



adam 12/18/2015 12:26 AM

I have a battery pack that for an unknown reason has quit lighting while when inhaling. It does not blink while when cartridge is low. It kept working so I kept using it. It wasn't until I started getting a bad taste and barely and smoke that I realized it will continue to allow hits on the cartridge indefinitely. I have no idea how this happened but I am not complaining. I had a box full of "spent" cartridges and I have now been going through them some times getting 30 or better puffs from them. I'm really curios to find out how this happened and if it can be reproduced

Reply

Replies



Garrett Fogerlie 12/18/2015 2:11 AM

Thanks for the info. Since I wrote this post, I had drawn up a schematic to see if the LED's were also on the communication lines but I thought I ruled this out enough to not need to test the hypothesis. Now I'll have to follow up and test this in a video. If this works, and it's looking like it may, it would work by preventing the unit to communicate with the cartridge.

Manny 3/09/2016 1:54 PM

I had this happen a while back and I believe it was due to dropping it all the time. I used it till the battery wouldn't charge anymore. I got about 9 months of recharging it and probably double the amount of juice out of each cartridge as usual. I'd pay $20 for another battery like the one I accidentally made. Hell, I bet I saved 5 times that amount just to squeeze every ounce of vape juice out. Hint, hint LOL

Reply



Unknown 12/20/2015 6:11 PM

totally works! just bust the led inside the battery. Thanks a ton for the info.

Reply

Replies

NJOY Exhibit 1002.1223



Garrett Fogerlie 12/20/2015 9:24 PM

Can you confirm if it is only the white LED or Red or both? Thanks!

Unknown 12/29/2015 11:00 AM

I read here "https://hackaday.io/project/2943-vuse-e-cig-modification" that someone busted the white LED to get it the work. The Red LED caused the Vuse to stop working.

Giovani Villarreal 12/29/2015 11:02 AM

Hey I'm interested as well. I read from this website, https://hackaday.io/project/2943-vuse-e-cig-modification, that cutting the White LED is the way to go. It doesn't really explain why it works, but it did say cutting the red light will cause the device to stop functioning.

Reply

Unknown 12/28/2015 7:22 PM

So bust the led and you are good? And any good tutorial on how to go about refilling cartridges?

Reply

Replies

Itsjustme 1/30/2016 3:31 PM

I can't seem to get the LED trick to work, but as far as refilling goes it's fairly simple.

Just cut a small ring of the label off near the "mouthpiece" to get a better view of it, and cut or pry the plastic piece out. I don't think you can pop it out without breaking it off permanently, but it's fairly easy. After it's off, just run some juice onto the cotton and you're good.

Reply

Itsjustme 1/30/2016 3:25 PM

I busted the white LED with a pair of tweezers on three different batteries throughout this year, yet all still refuse to use "empty" cartridges, and the damn things still run out.

Not sure why it seems to work for everyone else and not me, are there any specific details I'm missing here?

Reply

Unknown 2/08/2016 2:50 PM

NJOY Exhibit 1002.1224

Breaking off the white led does the trick for me. I used small scissors and flick it up and away from red one.

Reply

Anonymous 2/11/2016 10:53 PM

Hey i decided to mod my vuse with some spare parts i had from a few vape pens i had laying around what i did was cut the part that attaches to the cartridge off and soldiered it to the thing in a vape pen charger that didnt work the one you screw a vape pen in to that way my vape pen battery can still let me know when the battery needs to be charged and i can take bigger hits cause the button triggers the cartomiser instead of it doin it from you taking a hit plus dont have to worry about the chip anymore all i gotta do is plug the cartridges in the same way as the vuse e cig and its good to go until its trully out.. if u got any questions hit me up at someoner2004@gmail.com

Reply

david dalleinne 2/26/2016 11:20 PM

i assume that....you must cut the white light led, before using the cartridges ..cause after you use it and hit the max..the counter in the cartridge is maxed and no matter what mod u did to the battery its too late....so the people who said it didnt work...prob didnt try it after with a new cartridge..the old used ones cant be reset.

Reply

Replies

UnscrupulousAgitator 3/18/2016 9:26 PM

They can be reset, easily, see below

Reply

Unknown 3/11/2016 5:17 AM

I found that taking a drag off a new cartridge and quickly swapping it with an old one(before the white light shuts off) will reset the puff counter on the old cartridge. It's simple to do you just have to be fast. I discovered this while quickly swapping cartridges to see which ones were still good. I used this trick to reset all of my old cartridges. Cheers!

Reply

Replies

UnscrupulousAgitator 3/16/2016 10:23 PM

WOW!!!! Unknowns post of 3/11/16 works!!!!
Thank you so much!!!!
To add: I also have removed the top of the cartridges, and use the rubber part of a an eye

NJOY Exhibit 1002.1225

dropper to take its place. Cutting a small hole to breath through. This makes refilling with a better liquid easier.
Had to laugh, as always "Try the simple way first"

UnscrupulousAgitator 3/16/2016 10:25 PM

Unknown 3/11/16 works. Thank you
Also, try removing the upper cap and replacing it with the rubber part of an eye dropper, with small hole cut on top. This allows for quicker, easier refills of your own liquid

Anonymous 3/19/2016 3:25 PM

Just tried the take a pull and quickly replace the carto mentioned above by anonymous, 30 minutes later I have 30ish "new" cartos! Word to the wise though the cotton and wires are going to get real nasty after a few refills. I just use one of my really fine point droppers off one of my 30ml bottles and drip very, very slowly down the hole in the top. Cheers!

Unknown 3/23/2016 11:45 AM

EUREKA!!! It works great. If your having issues with swapping carts do as I did and file down the tabs at the base of the connection point of your battery. there are 3, I filed off 2 and the third halfway. It still holds snug but theirs no aggressive snap or click required to remove. I use a needle nose dropper for refilling as this requires no work to refill.

Thank you all for the help and input. I have a bottle of E-juice that will save me hundreds with the methods learned here.

-Hundo Helix

JJ 9/18/2016 11:32 AM

Yesssss! thank you so much!! Luckily I save all my old cartridges!! I knew there was a way around the puff counter!!

Specialeffecks 9/25/2016 11:54 AM

Hi Unknown, this works like a charm! Thanks! Just pull off a "new" cartridge with your teeth so you can very quickly replace it with a "spent" cartridge. It "resets" the old cartridge to get many more puffs.

Anonymous 1/15/2017 8:57 AM

This definitely works. You gotta be quick though. Cheers

NJOY Exhibit 1002.1226



David Rockwell 2/27/2017 7:57 PM

I put the wrong end in my mouth and blow when switching. Makes it much easier.

Reply

Unknown 3/11/2016 5:17 AM

I found that taking a drag off a new cartridge and quickly swapping it with an old one(before the white light shuts off) will reset the puff counter on the old cartridge. It's simple to do you just have to be fast. I discovered this while quickly swapping cartridgee to see which ones were still good. I used this trick to reset all of my old cartridges. Cheers!

Reply

Unknown 3/25/2016 10:09 AM

I found a way to get unlimited puffs off your vuse. All you have to do is look at the circuit board where the white and red LEDs are. On the top of the board look at the opposite end with out the cable. You will see five very small holes right on the edge of the board. Use very small sharpe cutting tool to cutt the middle hole making sure to not cutt any of the other ones. Doing this will allow you to have unlimited puffs and be able to refill your carts with vape juice. Will be be able to also charge your battery with no problems but the red light won't show its charging. Email me at Ericmonroe23@gmail.com for pics . I've done this to about 4 vuse batteries and they work flawless.

Reply



eric monroe 3/25/2016 10:10 AM

I found a way to get unlimited puffs off your vuse. All you have to do is look at the circuit board where the white and red LEDs are. On the top of the board look at the opposite end with out the cable. You will see five very small holes right on the edge of the board. Use very small sharpe cutting tool to cutt the middle hole making sure to not cutt any of the other ones. Doing this will allow you to have unlimited puffs and be able to refill your carts with vape juice. Will be be able to also charge your battery with no problems but the red light won't show its charging. Email me at Ericmonroe23@gmail.com for pics . I've done this to about 4 vuse batteries and they work flawless.

Reply

Dylan Stewart 4/26/2016 12:18 AM

Apparently you can reset the puff counter this way:

-Insert a fresh cartridge
-Take a puff
-Before the light goes out, quickly snap in any old cartridge you want to use

Reply

NJOY Exhibit 1002.1227

Replies

shaky jane 5/15/2016 1:08 PM

I have familiar tremor (my hand shakes like crazy) and was not able to be quick enough to make the switch. Blowing into the cartridge worked beautifully, giving me the time to make the switch. Thank you so much!

Specialeffecks 9/25/2016 11:59 AM

Just use your teeth to pull the new cartridge off...then you have both hands free to quickly put on the 'old' cartridge...

Reply

Dan 5/10/2016 3:24 PM

I have experimented with blowing through the ecig before dragging on it. I find that the white led stays lit longer, and the quality of the drag seems better. Any clues why blowing would affect the ecig? Or how so?

Also, I've had one unit trigger 'on' and stay 'on' from being near my cell phone...

BTW, I hit two VUSE in parallel - and it is good.

Reply

Stephen Smith 7/02/2016 1:25 AM

I thought it was bulishit but blowing then switching worke. Thanks a bunch!

Reply

Unknown 7/03/2016 5:38 AM

The third method works I basicaly removed the white led and my cartridge that was "empty" according to the vuse e cig is now vaping after i removed the white led.

Reply

Joseph Cruz 7/03/2016 5:40 AM

The third method ive confirmed works I removed the white led and after that a cartridge that was once "empty" is now vaping after the removal of the white led

Reply

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Chuck Miller 7/28/2016 12:14 PM

This is a bit off topic, but my battery won't charge. Flashed red a few times when plugged in (red and white before completely died). I've only had it a couple weeks. Initially, I had to turn it 1/4 turn, try again; and keep going until I found a "sweet spot". Now nothing.

Also, how do I access the circuit board in the cartridge?

Reply

Anonymous 8/23/2016 2:33 PM

Clone New Cartridge onto old.
1. Install new cartridge.
2. Hold battery in left hand, cartridge pointed away from you.
3. With right hand, hold depleted cartridge parallel and against the new cartridge. Depleted cartridge must be oriented the same direction as new cartridge.
4. Grip both cartridges firmly with right hand.
5. Take a deep breath.
6. Insert light end of battery in mouth and blow firmly and steadily.
Continue blowing. Do not stop.
7. After one second you will see vapor coming from the new cartridge.
8. Keep blowing.
9. Now remove the new cartridge and install the depleted cartridge in one smooth motion. CONTINUE BLOWING.
10. While blowing, remove the battery from your mouth and you should see the white light go off. That is the instant when the count from the new cartridge is cloned onto the depleted cartridge.

Once You have the hang of it, you can do it while walking, riding a bike, or in total darkness.
Just remember, Start with NEW and switch to DEPLETED. In all it takes three seconds, one to start, the second to unplug the new, and the third to plug in the clone.
TIP 1
Don't continue using a depleted cartridge after it starts flashing white. If you do six or seven times, the battery will zap the cartridge and you will start getting red flashes. That indicates that the cartridge coil is burned out, is useless and can not be cloned onto again.
TIP 2
You can re-clone a cartridge once or twice before it runs dry. Once it dries out the battery will zap the coil, causing it to flash red and rendering it useless and un-clonable. Always add a few drops of liquid and the cartridges will last for 10 or 15 times.

Happy cloning.

Reply

Anonymous 9/28/2016 4:50 PM

I was trying to get access to the circuit board to break the white LED. I thought maybe I could pull the board out a little bit. I gripped the board between a screwdriver and my thumb and pulled a little bit. The board ripped completely out. I first thought "dang it, there goes 10 bucks"... But I put a spent cartridge on

NJOY Exhibit 1002.1229

it, and it worked, so if you're clumsy like me or can't figure out what LED to break, just tear the whole thing out and it's good.

I have about 10 cartridges that I pulled out of my trash. They all work now! (I just cleaned out my car and tossed about 30 of them... go figure.)

Now I need get some liquid to keep these things going indefinitely. Got any suggestions on the best flavors?

Reply

Specialeffecks 9/29/2016 2:03 PM

You do not have to open the battery unit, or the cartridge on a Vuse to "reset" the cartridge for reuse (everything remains working - charging light, etc). Just hold a "spent" Vuse cartridge in your hand (ready to quickly install it on the Vuse battery) take a hit off a Vuse (with a NEW Vuse cartridge attached), quickly pull the new cartridge off with your teeth and swap it with the spent Vuse. If you do this swap process as quickly as possible (not that hard) it resets the old cartridge "counter" to zero. You can use the old cartridge as is for quite a while, and/or REFILL the old vuse cartridges with the vape juice of your choice - very easily. Refill: by using one of the clear rubbery caps that fit over a disposable e-cig: fill the cap 2/3 full, place the 'connector' end of the spent Vuse cartridge just inside the top of the cap, flip the now connected cap and cartridge over, and gently push the cap down until all the juice flows into the Vuse cartridge. Clean the connector end of the Vuse cartridge well before re-connecting it to your Vuse battery. The only thing I cannot fix (currently) is when the spent Vuse cartridge makes the Vuse battery light flash red and white...any ideas on this?

Reply

Specialeffecks 9/29/2016 2:18 PM

I believe the Vuse fluid has a high nicotine count, along with unique a processor routine that ensures a great hit from such a small device. As far as flavors for refilling Vuse cartridges, use part "Tobacco" in the highest nicotine count available (I believe 24), mixed with another high nicotine count e-liquid of your choice (2/3 tobacco e-liquid to 1/3 other flavor). "Tobacco" flavored e-liquid is the most "neutral" flavor I have found. Then "reset" and "refill" the Vuse cartridges per the instructions posted.

Reply

Unknown 10/23/2016 1:14 AM

What about the pin 14 on the main processor. Cut the pin and no white light? I would like to do with out the light... also who needs a whitelight if your cartridge does not count your puffs and you don't need to be alerted about it dying? That was my first thought seeing the main processors pin 14 goes to white light. And if you bust white light do you have to reset cartridges or they just don't stop until the juice is gone right? I have not disassembled one yet and I will to just play around with it myself.

Plus I would like to be able to be more discreet with it at times so I am all for eliminating the white light.

NJOY Exhibit 1002.1230

If you have any info on cutting the pin please email me ASAP because I feil I may be throwing away $ with some experiment. Lol
Diller.nicholas@gmail. Please just info and no bs.

And what about bigger hits? What about better air flow?

Reply



j ste 12/14/2016 10:35 AM

would anyone be willing to post a video on how to refill a vuse cartridge

Reply

Anonymous 3/02/2017 1:10 PM

Kill white LED and pin #14 worked for me on spent cartridge

Reply



Unknown 6/14/2017 1:50 PM

Thanks for the hacks the blowing swap out works great and using a needle dropper to refill was easier than cutting the plastic. I wish other pens with refillable carts had the buyer battery.

Reply

Anonymous 12/20/2017 2:22 AM

One of the most common myths surrounding e-cigarettes is that vaping e-cigs lead to smoking. However this is a misconception. vape pens

Reply

Anonymous 4/03/2018 12:12 PM

can you put e liquid at the place where the tip connects to the battery

Reply



Moriah Mount 5/15/2018 10:17 AM

Hi, I tend to get quite a few ecig cartridges that on the first use, or after a few puffs, starts flashing red and white, indicating an error (right?) And no matter what I do or if I change it onto a different unit, it will not work.. what do I do for that??

Reply

DUA 8/11/2018 5:07 AM

NJOY Exhibit 1002.1231

Nice post mate, keep up the great work, just shared this with my friendz Padron Cigars

Reply

RKelly 9/13/2018 10:24 AM

DAMN!!!! I have thrown away hundreds and hundreds of dollars! I was just able to puff and quickly replace. Luckily, I do have an entire bowl full of cartridges. THANKS A TON!!!!

Reply

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Comment as: shaer90@gma ▼

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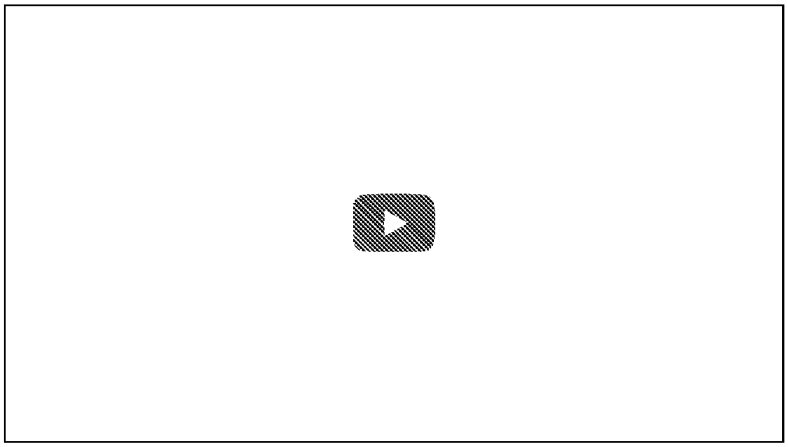
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http:// www.halocigs.com

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BLOWIN SMOKE 4 years ago
Do you still recommend the Triton? I'm considering getting one.
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Jacob Bonanno 5 years ago
if you want thick smoke, look up sub-ohm vaping on mechanical mods.. you blow clouds with that
Reply •

bakonfreak 5 years ago
Would 1.1% be fine in small quantities? Also, how do you do smoke rings (yeah, me be n00b, I turned 18 in April, whatever).
Reply •

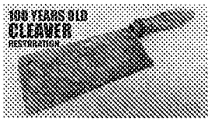
movikking 5 years ago
Been vaping for about a month now, cut my smoking in half, so far so good.
Reply •

Drew Breton 5 years ago

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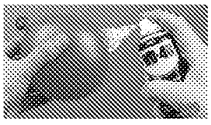
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uBeRix 5 years ago
the battery? no, got a eGo-T next to me, they are a lot shorter and does not have a "cone" on the top
Reply

SightTuber180 5 years ago
I vape almost every day I use the ego ce4 red easy way to refill really simple great little e cig if you need a new e cig give it a try
Reply

cladam81 5 years ago
i notice you quit 7 months ago when you posted this, seven months ago, just curios are you still off the smokes? ive just picked up my ecig today and this is the first time in years ive drank a few beers without a smoke
Reply

WanderingTangoStudios 5 years ago
yes and no it depends on your reasoning and if you get nicotine it can be addictive because nicotine is very addictive and there is a lot of speculations around if there harmful or not most people say no while others say yes my philosophy is that if you don't do it all the time you'll be fine
Reply

joel42097 5 years ago
Looks like an ego-t
Reply

Carlos Graves 5 years ago
I go between by Blu ecigs and my eGo Vision vapes
Reply

duby149 5 years ago
I always wanted to smoke but kinda for the wrong reason all my favorite characters in tv shows movies and so on smoke and I always thought it looked so cool but till this day i never smoked because its so bad for you but now there are making stuff like this and it makes me want to try them
Reply

Zack Ramsey 5 years ago
how did you get two different colors??
Reply

Anthony Tippy 5 years ago
check out vaporkings
Reply

mmandaSTS 5 years ago
yep... any! =)
Reply

Waffle Goblin 5 years ago
Ya most e juice should work in the cartos.
Reply

jakef805 5 years ago
try the midnight apple flavor. its definitely my favorite flavor.
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Riley Tebbetts 6 years ago

Is it pointless to use these even if you dont smoke? Is it addictive are there any negetive results of using it

Reply



Redaface 6 years ago

Ever tried hookah steam stones? It's the same thing as this, but with hookah.

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Halo Cigs: Triton Starter Kit Review

Darth Vapor Reviews

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Published on Aug 11, 2013

http://www.darthvaporreviews.com

The Triton Starter Kit by Halo Cigs is an excellent kit for transitioning from analog style batteries to bigger eGo style batteries. More info/Coupon on the Halo Cigs: Triton Dual Starter Kit:

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Top comments

po fritto 5 years ago

@Michelle L bot lol

Reply

Darth Vapor Reviews 5 years ago

Excellent! Glad you found a local vape shop that offers high end e-juice. Haven't had much luck myself yet. Lol! Yeah, hide the good stuff!

Reply

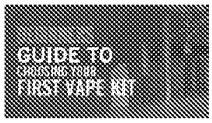
Darth Vapor Reviews 5 years ago

I haven't jumped into the world of dripping yet, although I want to try it. Especially for trying out new e-juices. Sounds like great advice! Give it a shot. Sorry, don't know best brands. If you figure out a great combo or if someone else has advice, please share it here for the rest of us.

Reply

Darth Vapor Reviews 5 years ago

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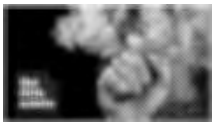
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12:35

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Cool! There are a few styles of 808d tanks, but none that I found under $7. There are

Reply

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Darth Vapor Reviews 5 years ago
Excellent! Cinnamon Rolls sounds really good. Yep. Halo does have excellent juices. I really enjoyed Belgian Cocoa. Nope. Haven't tried any AIV juices yet. Let me know what you think.
Reply

Darth Vapor Reviews 5 years ago
Thanks! I'm using the 400mah and it lasts me about a day of decent vaping. The 650mah should last closer to 2 days before needing to be charged. It also depends on how much you vape.
Reply

Alexx POWERS 5 years ago
Great Review! What is the difference in battery life between the two choices?
Reply

Darth Vapor Reviews 5 years ago
Congrats! No, I don't. Excellent suggestion! Something to work on.
Reply

Darth Vapor Reviews 5 years ago
I agree with Jerad. I started at 24 and immediately suffered from headaches and sore throat. Mainly because I vape so much more than I smoked. After a few months of stepping down, I eventually settled with 6. Happy Vaper now.
Reply

Jerad Benge 5 years ago
I would switch to a lower strength if your throat is getting sore, and remember to drink water when you vape. I usually vape 12mg (1.2) from standard tanks, and 6mg (.6) from my rebuildables. I generally add a little lemon, and/or lime to my water. Especially if I'm switching flavors. Hope that helps.
Reply

Darth Vapor Reviews 5 years ago
Thanks! Yep. A permanent coupon. Hope you enjoy the kit! :)
Reply

Donald Smith 5 years ago
I can only think i've done something wrong, all equip is halo. Maybe the 2.4 strength is throwing me. My throat seems sore. again thx
Reply

Darth Vapor Reviews 5 years ago
Hi and thanks! Vapor depends partly on the e-liquid and partly on the power of the device.I've noticed that some e-liquids need more power to crank out the vapor. Are you using Halo e-liquid? Some brands do have a nasty metallic taste, but Halo is pretty good from what I've tried.
Reply

Donald Smith 5 years ago
Thanks for your review. I'm very concerned about my recent purchase and this is my first refillable ecig. My concerns are that i'm not getting nearly the vapor as i've seen on videos and the 3 flavors I've tried all have a very distinct metallic taste. I bought the 2.4 and while they are a bit on the strong side, the metal taste is bothersome. Have I done something
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Darth Vapor Reviews 5 years ago
I think it will. You'll have options with attachments to keep it fun. I mostly enjoy using my Halo with refillable cartomizers. Good luck!!

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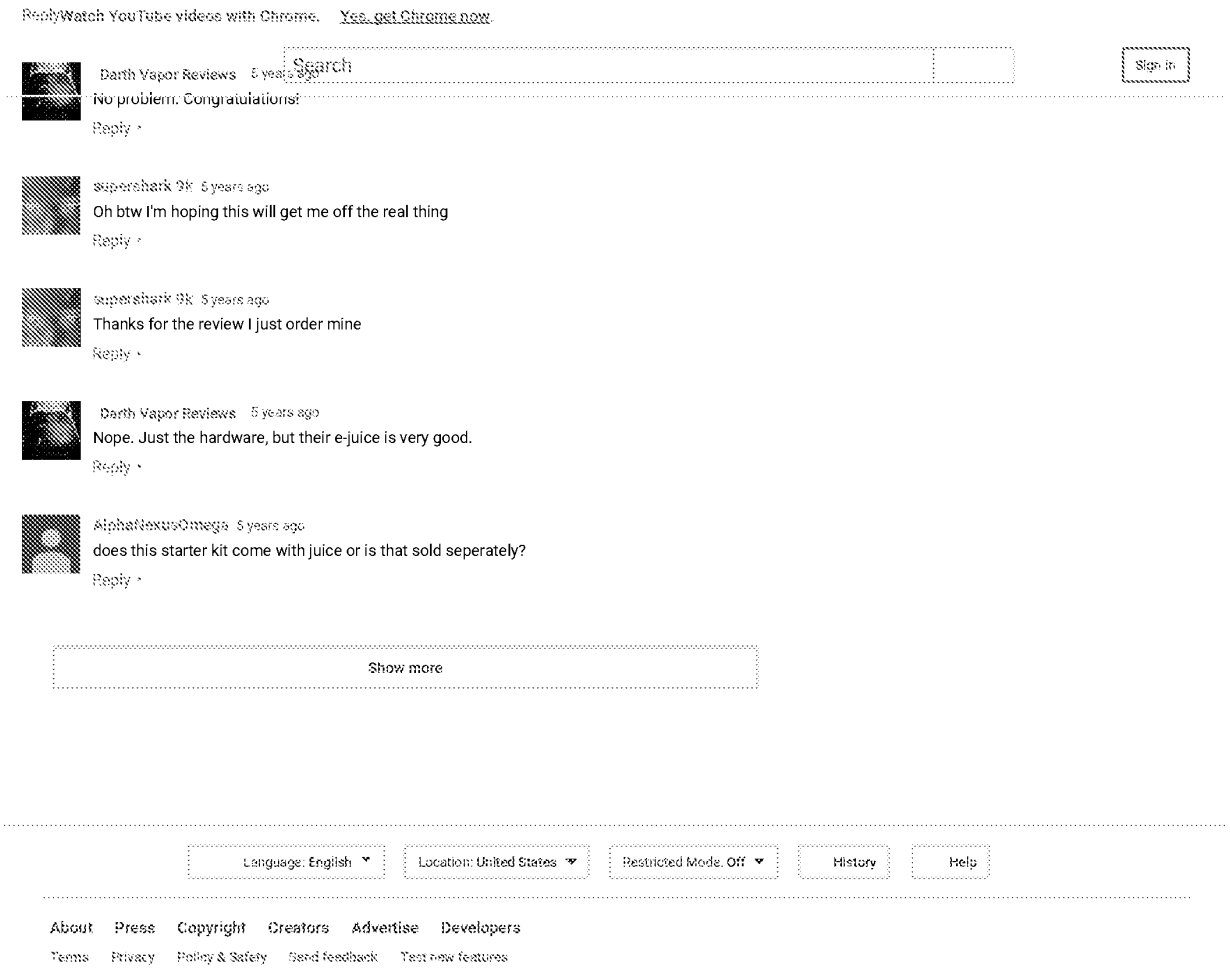
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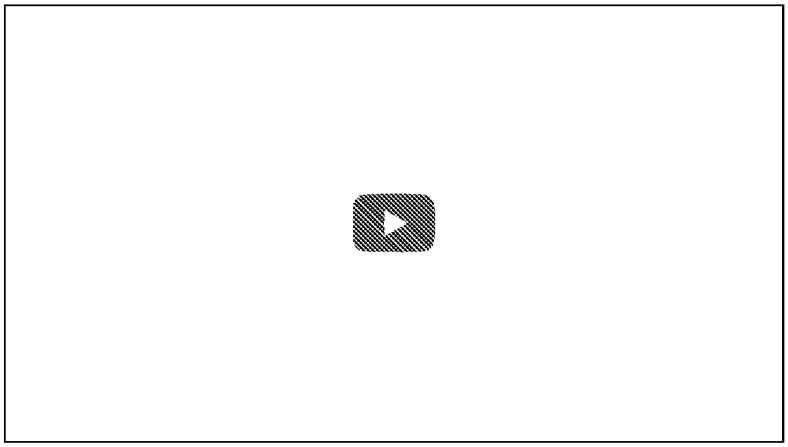


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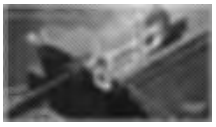
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