

本国际公布:

- 包括国际检索报告(条约第 21 条(3))。

一种双纸卷打印装置，其包括一用来安装如下部件和纸卷(6)的安装架(13)，该安装架(13)上通过纸卷支撑轴(14)安装第一纸卷(61)和第二纸卷(62)，该第一纸卷(61)和第二纸卷(62)的纸带通过走纸通道被选择性送入打印部件(01)，该第一纸卷(61)和第二纸卷(62)分别通过独立的第一走纸通道(02)和第二走纸通道(03)选择性地送入打印部件(01)，该第一走纸通道(02)和第二走纸通道(03)互相叠置，该第一走纸通道(02)和该第二走纸通道(03)的通道末端形成交叉端，纸卷的纸带头经过该交叉端进入打印部件(01)。该装置通道完全开放，便于维护，纸卷更换操作空间需求较小，有利于设备的小型化。

一种双纸卷打印装置

本申请要求于 2014 年 08 月 04 日提交中国专利局、申请号为 201410380586.9、发明名称为“一种双纸卷打印装置”的中国专利申请的优先权，其全部内容通过引用结合在本申请中。

5 技术领域

本发明涉及一种打印装置，尤其涉及自助设备中实现两种格式纸卷自由切换的双纸卷打印装置。

背景技术

10 在轨道交通、金融银行、造纸、印刷、医疗卫生、电力、超市、彩票、餐饮、POS 终端等行业，需要为用户提供纸质交易凭证等，这些纸质交易凭证需要即时打印相关交易信息，因此目前为了提供连续的凭证打印，一般提供一卷纸进行打印、印刷或裁切，而且该纸卷可以按需更换。

为了使打印装置延长可持续打印的时间、使纸卷的更换不那么频繁，
15 目前一种方案是通过增大纸卷的直径提升纸带的量，以延长可持续打印的时间，另一种方案就是增加纸卷个数，对于该种增加纸卷个数的方案，固然可以增加打印设备的打印时间，但会使设备较为复杂，在纸卷切换上具有一定的技术难度，容易导致卡纸的频繁出现，如何设计一种在尽可能少
20 占用设备空间、可以减少卡纸、即使卡纸也便于清理维护的打印设备是业界技术人员一直在寻求解决的技术问题。

发明内容

本发明为了解决上述现有打印装置的不足，提供一种开放式的、且纸卷更换需要较小操作空间的双纸卷打印装置。

25 这种双纸卷打印装置，其包括一用来安装如下部件和纸卷的安装架，该安装架上通过纸卷支撑轴安装第一纸卷和第二纸卷，该第一纸卷和第二纸卷的纸带通过走纸通道被选择性送入打印部件，其中，该第一纸卷和第二纸卷分别通过独立的第一走纸通道和第二走纸选择性地送入打印部件，该第一走纸通道和第二走纸通道互相叠置，该第一走纸通道和该第二走纸

通道的通道末端形成交叉端，纸卷的纸带头经过该交叉端进入打印部件。

优选的，所述第一走纸通道和该第二走纸通道的通道末端形成的交叉端至打印部件之间设有一个公共走纸通道。

进一步的，所述公共走纸通道中设有检测纸带的传感器。

5 优选的，所述第一走纸通道和该第二走纸通道通过第一走纸通道顶部组件、中间组件和第二走纸通道下部组件构成，其中该中间组件具有两个分别于第一走纸通道和第二走纸通道相邻的第一通道面和第二通道面，该第一通道面与第一走纸通道顶部组件形成第一走纸通道，该第二通道面与第二走纸通道下部组件形成第二走纸通道。

10 优选的，所述第一走纸通道顶部组件与中间组件形成枢转连接，该中间组件又与第二走纸通道下部组件形成枢转连接。

优选的，所述打印部件的出纸通道外侧设有将打印完的纸带切断的切纸组件。

15 进一步的，所述打印部件的切纸组件外侧还设有将纸片送出的送纸通道，该送纸通道枢通过一个转轴接于安装架上，以实现与切纸组件的选择性分离。

优选的，所述第一纸卷和第二纸卷分别由一固定在安装架上的纸卷支撑轴支撑，该纸卷支撑轴的一端形成自由端，并由一活动挡门选择性锁扣，该活动挡门通过一个挡门转轴枢接在该安装架上。

20 进一步的，所述活动挡门与安装架之间设有拉簧，该拉簧的两端分别与该活动挡门与安装架固定。

进一步的，所述纸卷支撑轴的自由端具有一个限位槽，所述活动挡门对应该限位槽设有锁扣板，该锁扣板具有自动复位功能。

本发明与现有技术相比具有如下有益效果：

25 1、本技术方案通过将两个纸卷的走纸通道设计为相互独立的，组成两个独立走纸通道的通道组件互相叠置并依次枢接连接，相互之间形成开放的通道设计，有利于对通道内卡纸的清除维护操作；

2、纸卷的安装设计成侧面更换，纸卷支撑轴的一端设计成自由端，从而使得更换纸卷可以从侧面进行，尽可能地减小了设备的维护操作空间，并由一活动挡门选择性锁扣该自由端，即保证了设备的安全运行，又节约了设备的空间占用。

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附图说明

为了更清楚地说明本发明实施例或现有技术中的技术方案，下面将对实施例或现有技术描述中所需要使用的附图作简单地介绍，显而易见地，下面描述中的附图仅仅是本发明的一些实施例，对于本领域普通技术人员来讲，在不付出创造性劳动的前提下，还可以根据这些附图获得其他的附图。

- 图 1 是本发明所提供的一种双纸卷打印装置的示意图；
- 图 2 是图 1 所示双纸卷打印装置中第一走纸通道打开示意图；
- 图 3 是图 1 所示双纸卷打印装置中第二走纸通道打开示意图；
- 15 图 4 是图 1 所示双纸卷打印装置中第一、二走纸通道打开示意图；
- 图 5 是图 1 所示双纸卷打印装置中送纸通道打开示意图；
- 图 6 是图 1 所示双纸卷打印装置中纸卷安装机构的示意图；
- 图 7 是图 6 所示纸卷安装机构的 J-J 向剖视局部示意图；
- 图 8 是图 6 所示纸卷安装机构的零部件爆炸示意图；
- 20 图 9 是图 6 所示纸卷安装机构更换纸卷的过程第一状态示意图；
- 图 10 是图 6 纸卷安装机构更换纸卷的过程第二状态示意图；
- 图 11 是图 6 纸卷安装机构更换纸卷的过程第三状态示意图；
- 图 12 是图 6 所示纸卷安装机构中锁扣板对纸卷支撑轴的锁扣过程第一状态示意图；
- 25 图 13 是图 6 所示纸卷安装机构中锁扣板对纸卷支撑轴的锁扣过程第二状态示意图；
- 图 14 是图 6 所示纸卷安装机构中锁扣板对纸卷支撑轴的锁扣过程第三状态示意图。

具体实施方式

为进一步阐述本发明所提供的双纸卷打印装置，以下结合本发明的优选实施例的图示做进一步的详细介绍。

参阅图 1 和图 6 所示，该双纸卷打印装置，包括一用来安装如下部件
5 和纸卷 6 的安装架 13，该安装架 13 上通过纸卷支撑轴 14 安装第一纸卷 61 和第二纸卷 62，该第一纸卷 61 和第二纸卷 62 的纸带通过走纸通道被选择性送入打印部件 01，其中，该第一纸卷 61 和第二纸卷 62 分别通过独立的第一走纸通道 02 和第二走纸通道 03 选择性地送入打印部件 01，
10 该第一走纸通道 02 和第二走纸通道 03 互相叠置，该第一走纸通道 02 和该第二走纸通道 03 的通道末端形成交叉端，纸卷的纸带头经过该交叉端进入打印部件 01。为了实现第一走纸通道 02 和第二走纸通道 03 与打印部件 01 中纸带通道顺畅对接，所述第一走纸通道 02 和该第二走纸通道 03 的通道末端形成的交叉端至打印部件 01 之间设有一个公共走纸通道 04。另外为了侦测和判断上述走纸通道内是否有纸带经过及判断纸带的类型，
15 在所述第一走纸通道 02、第二走纸通道 03 以及公共走纸通道 04 中分别设有检测纸带的传感器，以便判断和控制第一纸卷 61 或第二纸卷 62 的走纸选择、走纸长度等控制，对于传感器的使用过程，属于本领域的公知常识，本申请不再赘述。

参阅图 1 至图 5 所示，所述第一走纸通道 02 和该第二走纸通道 03
20 通过第一走纸通道顶部组件 021、中间组件 022 和第二走纸通道下部组件 031 构成，其中该中间组件 031 具有两个分别于第一走纸通道 02 和第二走纸通道 03 相邻的第一通道面 0221 和第二通道面 0222，该第一通道面 0221 与第一走纸通道顶部组件 021 形成第一走纸通道 02，该第二通道面 0222 与第二走纸通道下部组件 031 形成第二走纸通道 03。所述第一走纸
25 通道顶部组件 021 与中间组件 022 通过转轴形成枢转连接，该中间组件 022 又与第二走纸通道下部组件 031 通过转轴形成枢转连接，从而实现了第一走纸通道 02 和第二走纸通道 03 的开放式设计，以便于对走纸通道内

故障的清除操作，如图 4 所示。另外为了将打印好的纸带进行分离，所述打印部件 01 的出纸通道外侧设有将打印完的纸带切断的切纸组件 05，用于将打印部件 01 打印好的纸带从纸卷上裁切下来，为了将裁切下来的纸片输送到设备外，所述打印部件 0 的切纸组件 05 外侧还设有将纸片送出的送纸通道 06，该送纸通道 06 枢转连接于安装架 13 上，以实现与切纸组件的选择性分离，如图 5 所示。

如图 6 所示，纸卷 6 通过一纸卷支撑轴 14 安装于安装架 13 上，该纸卷支撑轴 14 的一端形成自由端，并由一活动挡门 2 选择性锁扣，该活动挡门 2 通过一个挡门转轴 11 枢接在该安装架 13 上。

10 该活动挡门 2 为了对纸卷 6 的可靠阻挡，如图 7 所示，所述纸卷支撑轴 14 的自由端具有一个限位槽 141，所述活动挡门 2 对应该限位槽 141 设有锁扣板 21，该锁扣板 21 具有自动复位功能。为了使该锁扣板 21 可以自由插入该限位槽 141，所述该纸卷支撑轴 14 的自由端具有一个导向斜面 142，该导向斜面 142 将锁扣板 21 由该自由端部引导进入该限位槽 15 141 内。

如图 8 所示，为了保证锁扣板 21 选择性锁扣该纸卷支撑轴 14，即该锁扣板 21 在活动挡门 2 上具有滑动行程，所述锁扣板设有 4 个滑动柱 211，所述活动挡门 2 上设有与该滑动柱 211 对应的滑动槽 22，该锁扣板 21 在重力作用下自动复位。另外为了在进行纸卷 6 更换时，方便对锁扣板 21 的解锁操作，所述锁扣板 21 设有解锁操作柄 212。

20 为了使活动挡门 2 便于开启和锁闭，本发明所提供的双纸卷打印装置中，活动挡门 2 与安装架 13 之间设有拉簧 12，该拉簧 12 的两端分别与该活动挡门 2 与安装架 13 固定，而且当活动挡门 2 开启或锁闭时，该拉簧 12 的两个固定点与挡门转轴 11 不再同一直线上。

25 参阅图 8，为了保证纸卷 6 可以在纸卷支撑轴 14 上的自由滚动，所述纸卷支撑轴 14 滚动串套一纸卷轴芯 9，纸卷 6 活动串套在该纸卷轴芯 9 上，所述纸卷轴芯 9 与纸卷支撑轴 14 之间设有滚动件 8。该设计使得纸

卷 6 的卷心与纸卷轴心 9 是线接触,两者之间摩擦力小,便于打印时纸卷 6 的转动,纸卷轴心 9 与纸卷支撑轴 14 之间有 2 个摩擦力极小的滚动件 8。这样,此机构在拖动外径为 $\geq \phi 152.4\text{mm}(\phi 6")$ 的纸卷都毫无压力。

另外,本发明所提供的双纸卷打印装置,为了保证纸卷支撑轴 14 在
5 安装架 13 上的稳固固定,纸卷支撑轴 14 通过一固定板 15 辅助固定在安
装架 13 上,并通过螺栓 16 从纸卷支撑轴 14 的端头进行紧固。为了实现
对所有部件的紧固,如图 8 所示,需要若干紧固件 1、4、7、10 和 16。

下面通过图 9 至图 14 所示,进一步说明本发明的双纸卷打印装置更
换纸卷的过程:如图 9 所示,当纸卷 6 使用将尽时,需要进行更换操作,
10 此时,首先需要上抬锁扣板 21 的操作柄 212,使锁扣板 21 抬离纸卷支撑
轴 14 的限位槽 141,如图 12 所示,此时向外拉活动挡门 2 即可打开,活
动挡门 2 克服弹簧 12 的弹力绕挡门转轴 11 转动开启,当活动挡门 2 转动
使得拉簧 12 的两个固定点与挡门转轴 11 处于同一直线并超过此直线后,
活动挡门 2 在弹簧 12 的作用下保持开启状态,如图 10 所示,当然活动挡
15 门 2 的开启到位具有一限位机构。将整卷的纸卷装在纸卷轴芯 9 上后,进
行活动挡门 2 的关合过程,当活动挡门 2 上的锁扣板 21 抵靠纸卷支撑轴
14 的端头时,锁扣板 21 在纸卷支撑轴 14 端部的导向斜面 142 的引导下
向上抬起,如图 12 所示,活动挡门 2 继续关合,直到锁扣板 21 越过导向
斜面 142 的最高位,如图 13 所示,由于限位槽 141 两侧有高度差,即靠
20 导向斜面 142 的一侧低于另一侧,锁扣板 21 在自重及限位槽 141 侧壁
的作用下锁扣在纸卷支撑轴 14 的限位槽 141 内,如图 14 所示,至此整个纸
卷的更换过程完毕,此时的状态如图 11 所示,另外需要说明的是,对于
锁扣板 21 的自动复位本发明采用的锁扣板的自重作用力,当然还可以通
过弹簧或其他可以提供复位力的机构来实现锁扣板 21 的自动复位功能。

25 以上仅是本发明的优选实施方式,应当指出的是,上述优选实施方式
不应视为对本发明的限制,本发明的保护范围应当以权利要求所限定的范
围为准。对于本技术领域的普通技术人员来说,在不脱离本发明的精神和
范围内,还可以做出若干改进和润饰,这些改进和润饰也应视为本发明的

保护范围。

权 利 要 求

- 1、一种双纸卷打印装置，其包括一用来安装如下部件和纸卷的安装架，该安装架上通过纸卷支撑轴安装第一纸卷和第二纸卷，该第一纸卷和第二纸卷的纸带通过走纸通道被选择性送入打印部件，其特征在于，该第一纸卷和第二纸卷分别通过独立的第一走纸通道和第二走纸通道选择性地送入打印部件，该第一走纸通道和第二走纸通道互相叠置，该第一走纸通道和该第二走纸通道的通道末端形成交叉端，纸卷的纸带头经过该交叉端进入打印部件。
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- 2、如权利要求 1 所述双纸卷打印装置，其特征在于，所述第一走纸通道和该第二走纸通道的通道末端形成的交叉端至打印部件之间设有一个公共走纸通道。
- 10
- 3、如权利要求 2 所述双纸卷打印装置，其特征在于，所述公共走纸通道中设有检测纸带的传感器。
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- 4、如权利要求 1 所述双纸卷打印装置，其特征在于，所述第一走纸通道和该第二走纸通道通过第一走纸通道顶部组件、中间组件和第二走纸通道下部组件构成，其中该中间组件具有两个分别于第一走纸通道和第二走纸通道相邻的第一通道面和第二通道面，该第一通道面与第一走纸通道顶部组件形成第一走纸通道，该第二通道面与第二走纸通道下部组件形成第二走纸通道。
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- 5、如权利要求 4 所述双纸卷打印装置，其特征在于，所述第一走纸通道顶部组件与中间组件形成枢转连接，该中间组件又与第二走纸通道下部组件形成枢转连接。
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- 6、如权利要求 1 所述双纸卷打印装置，其特征在于，所述打印部件的出纸通道外侧设有将打印完的纸带切断的切纸组件。
- 7、如权利要求 6 所述双纸卷打印装置，其特征在于，所述打印部件的切纸组件外侧还设有将纸片送出的送纸通道，该送纸通道通过一个转轴枢接于安装架上，以实现与切纸组件的选择性分离。

8、如权利要求 1 所述双纸卷打印装置，其特征在于，所述第一纸卷和第二纸卷分别由一固定在安装架上的纸卷支撑轴支撑，该纸卷支撑轴的一端形成自由端，并由一活动挡门选择性锁扣，该活动挡门通过一个挡门转轴枢接在该安装架上。

5 9、如权利要求 8 所述的双纸卷打印装置，其特征在于，所述活动挡门与安装架之间设有拉簧，该拉簧的两端分别与该活动挡门与安装架固定。

10、如权利要求 8 所述的双纸卷打印装置，其特征在于，所述纸卷支撑轴的自由端具有一个限位槽，所述活动挡门对应该限位槽设有锁扣板，该锁扣板具有自动复位功能。

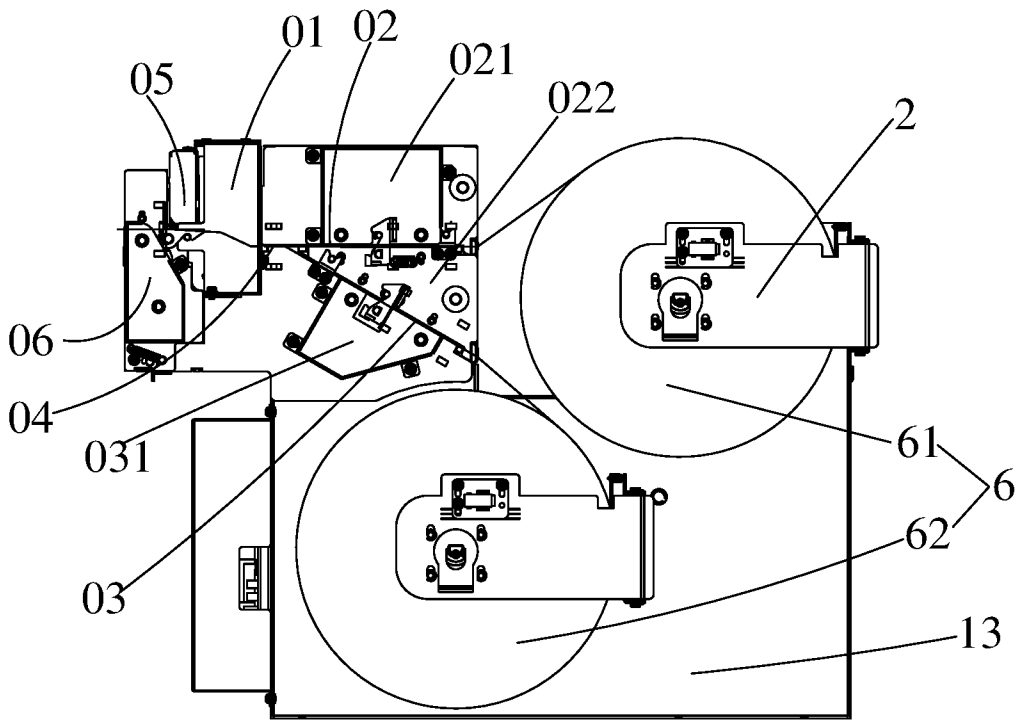


图 1

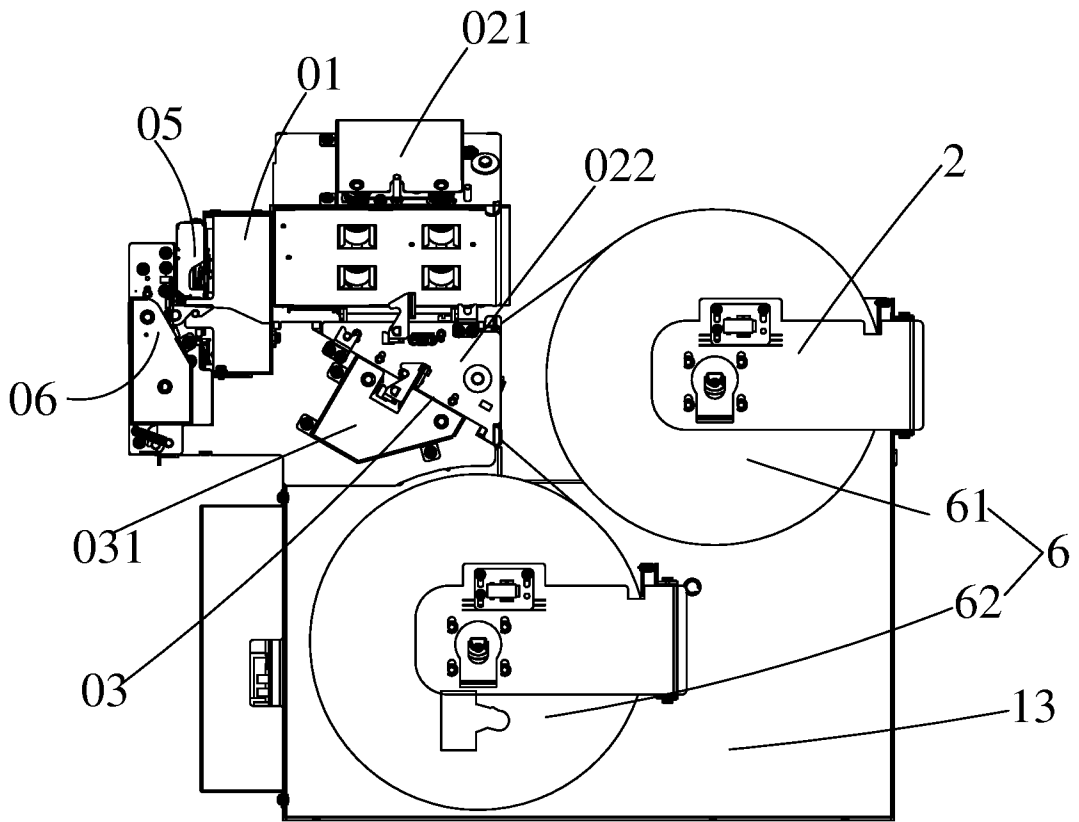


图 2

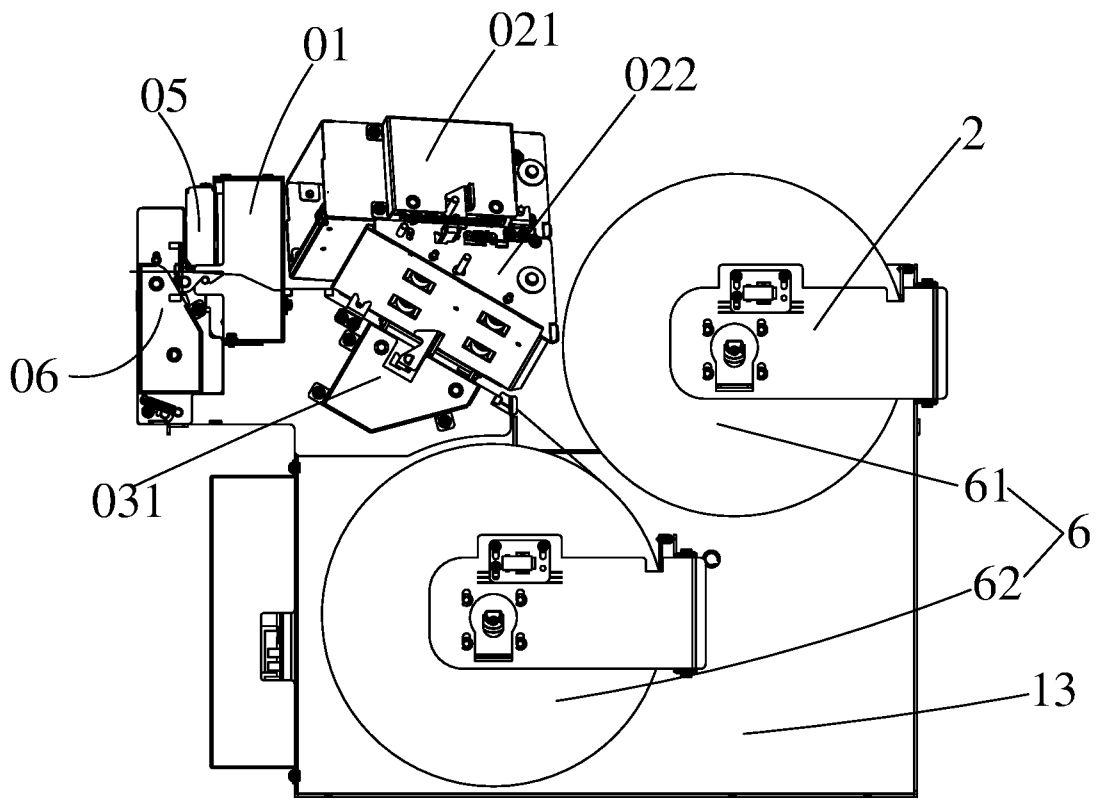


图 3

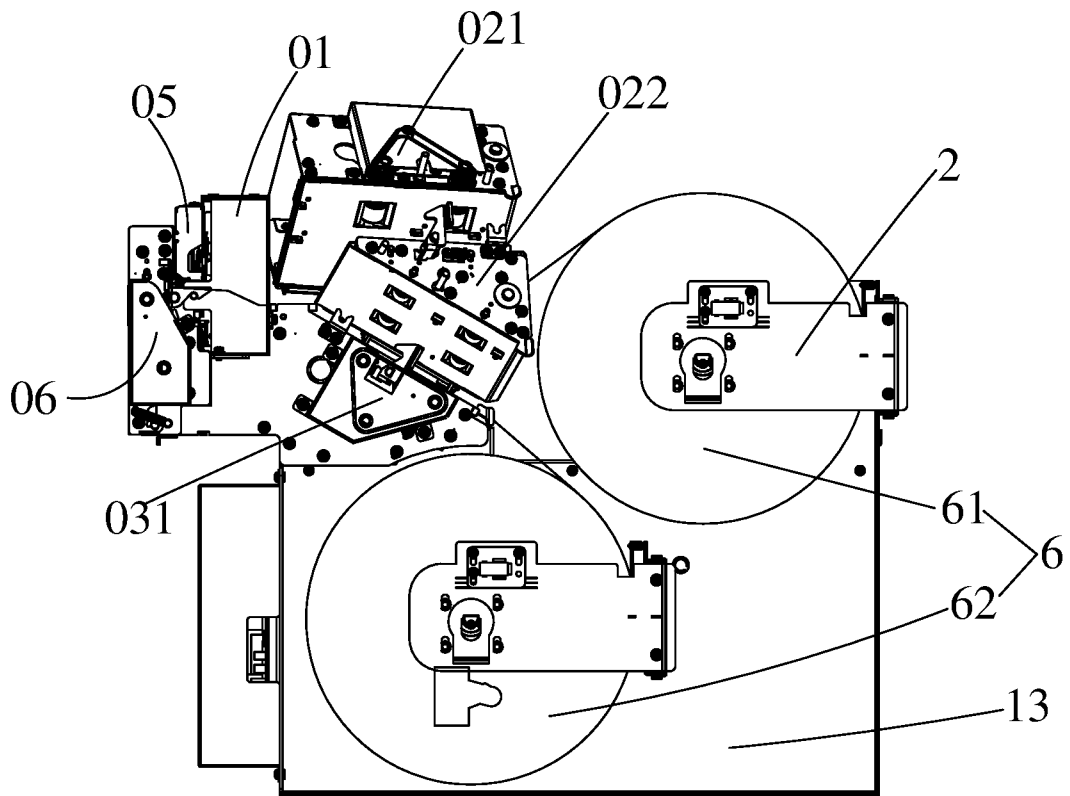


图 4

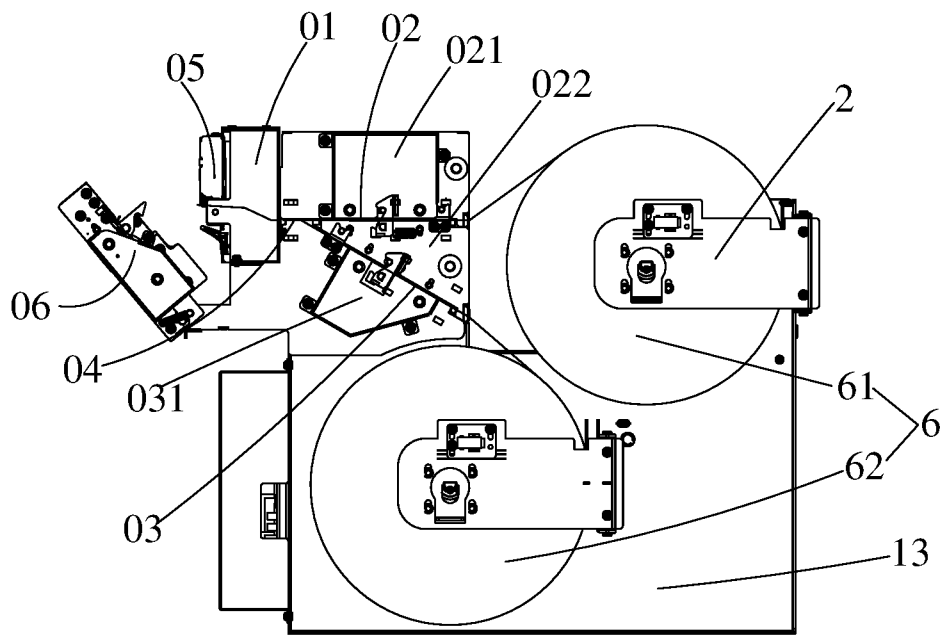


图 5

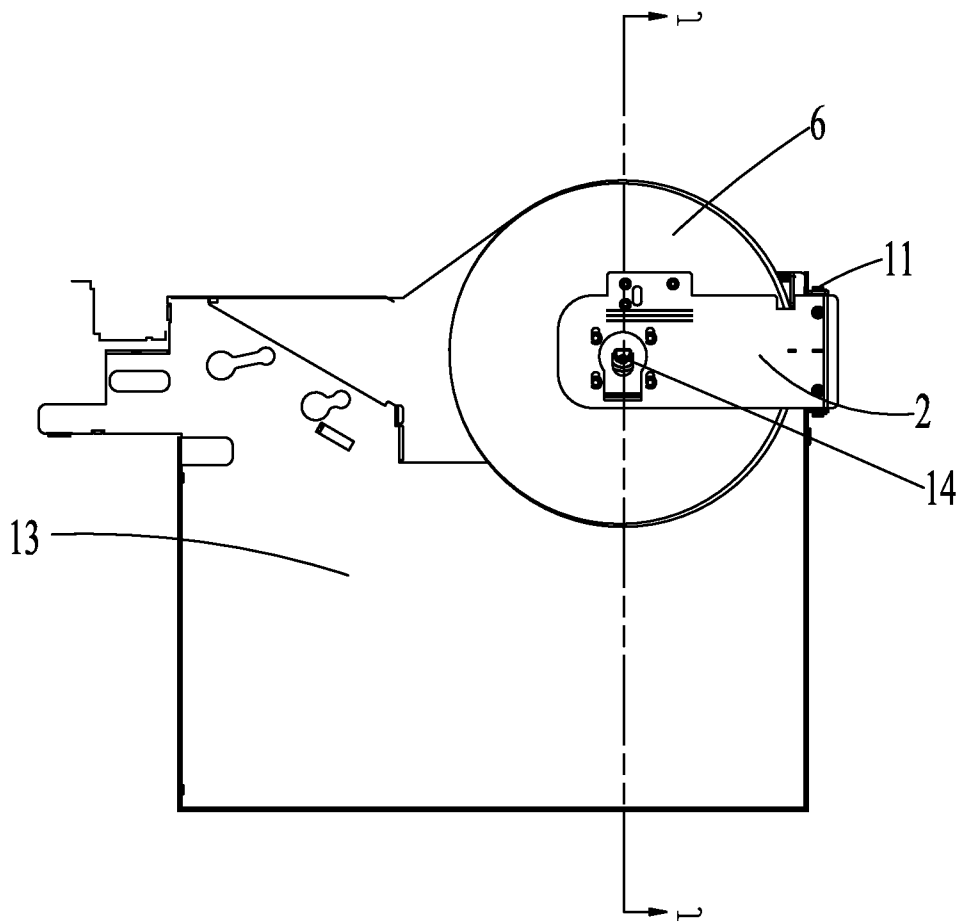


图 6

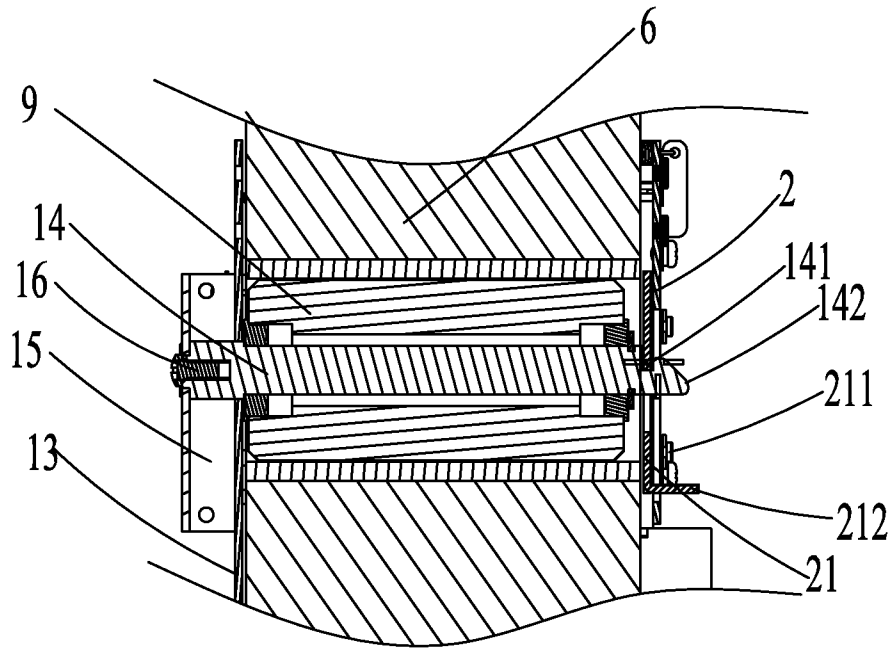


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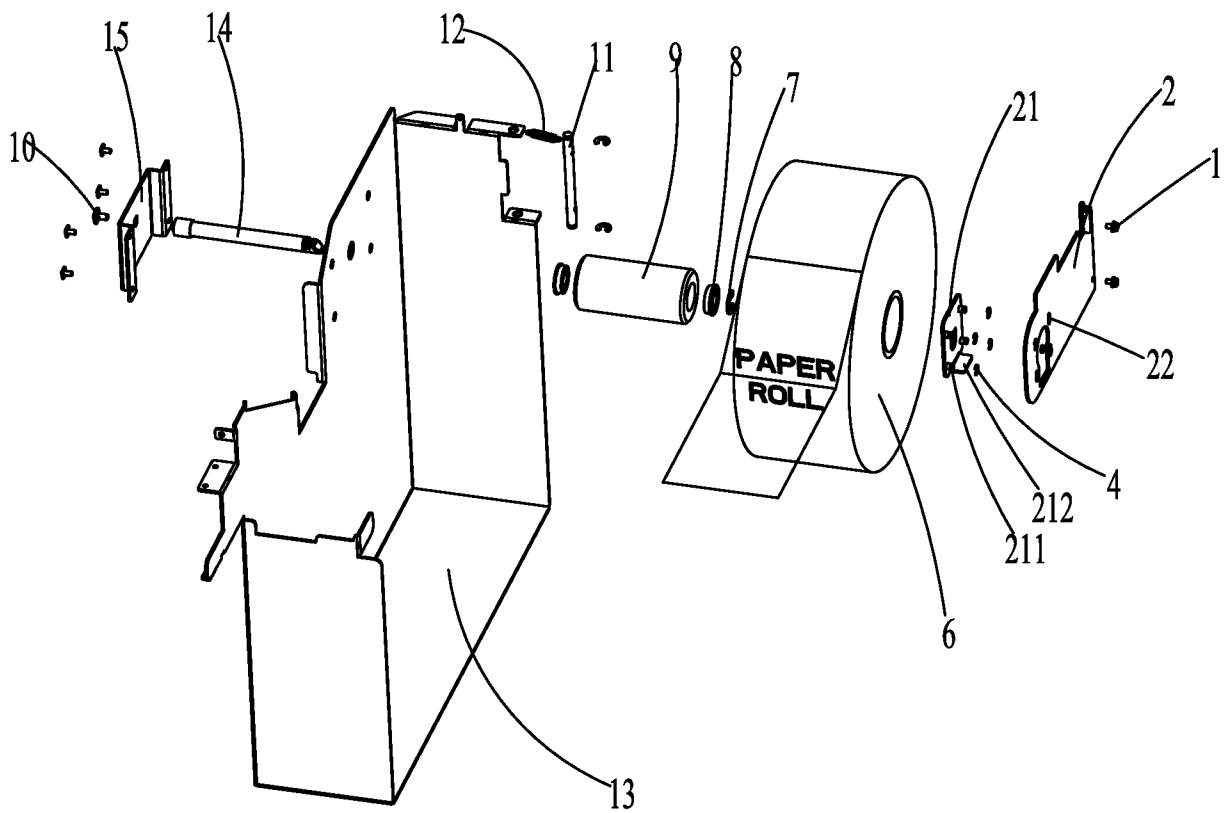


图 8

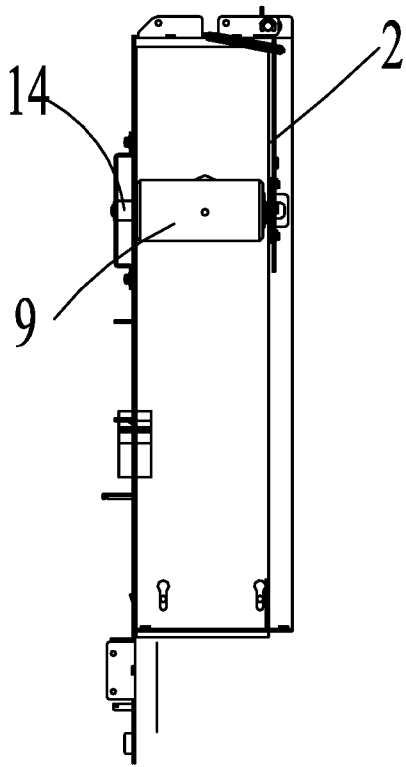


图 9

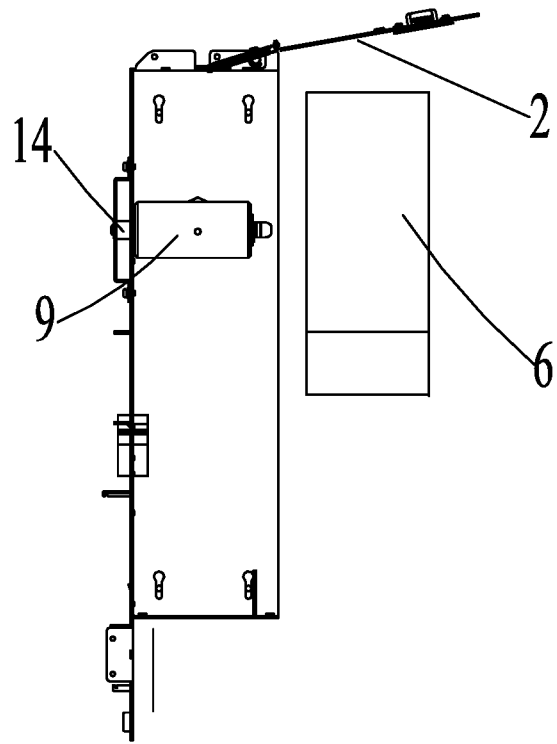


图 10

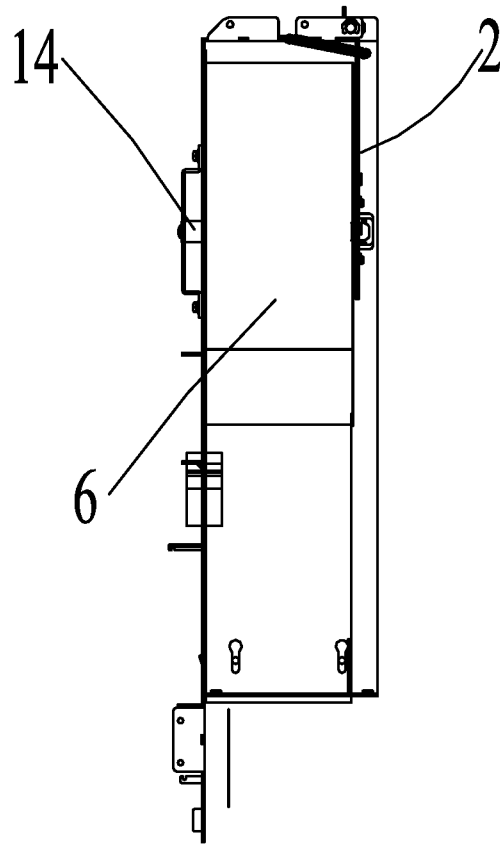


图 11

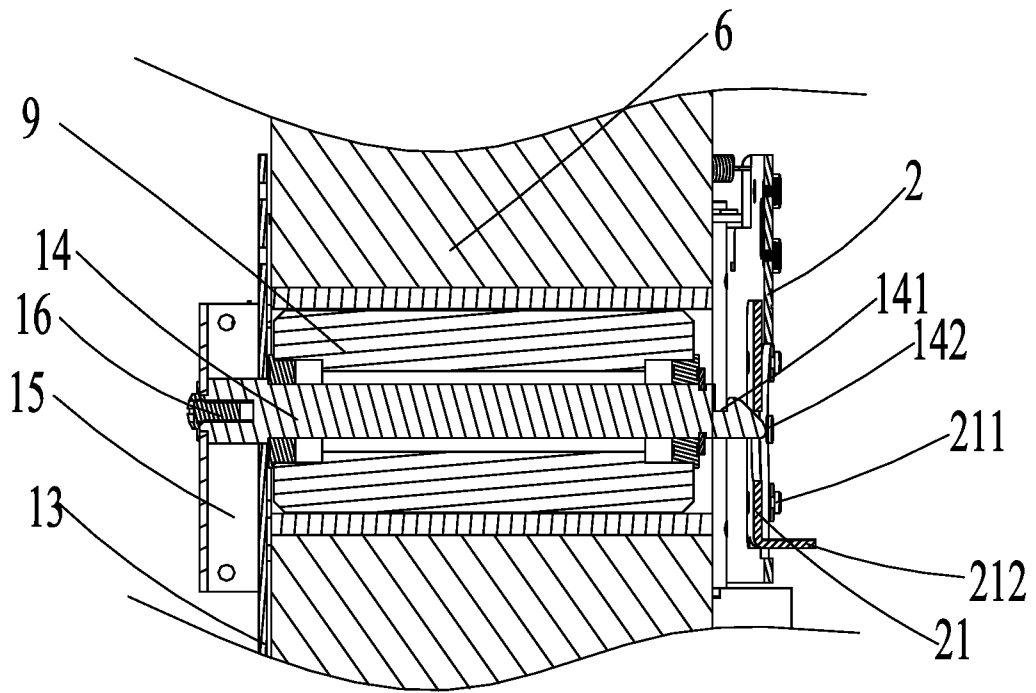


图 12

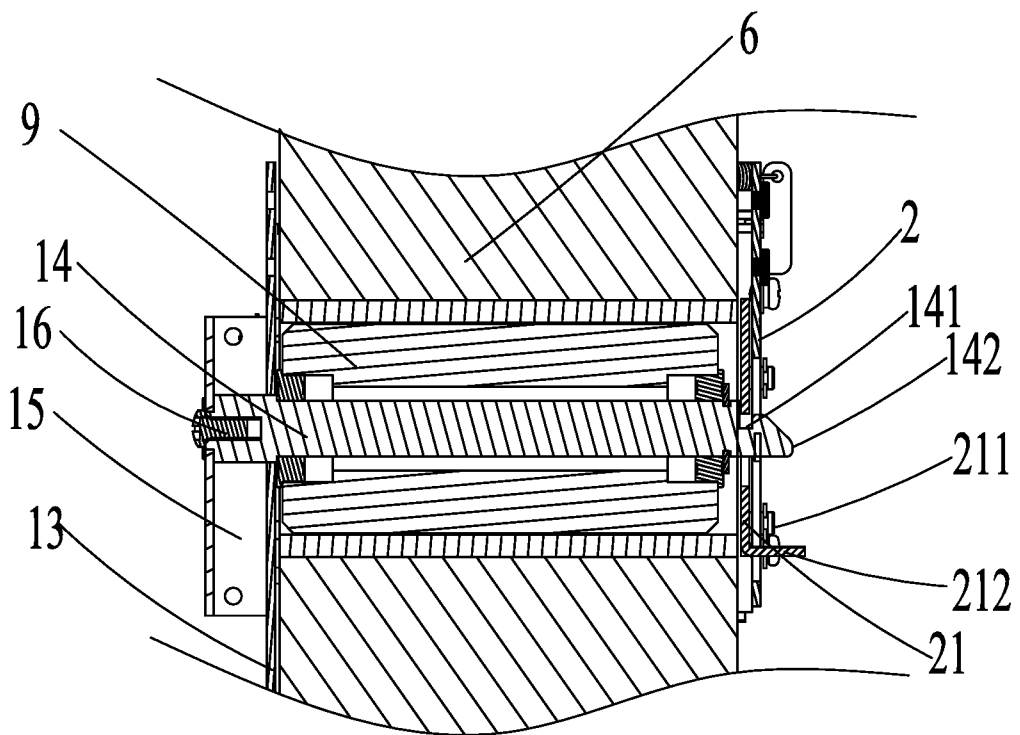


图 13

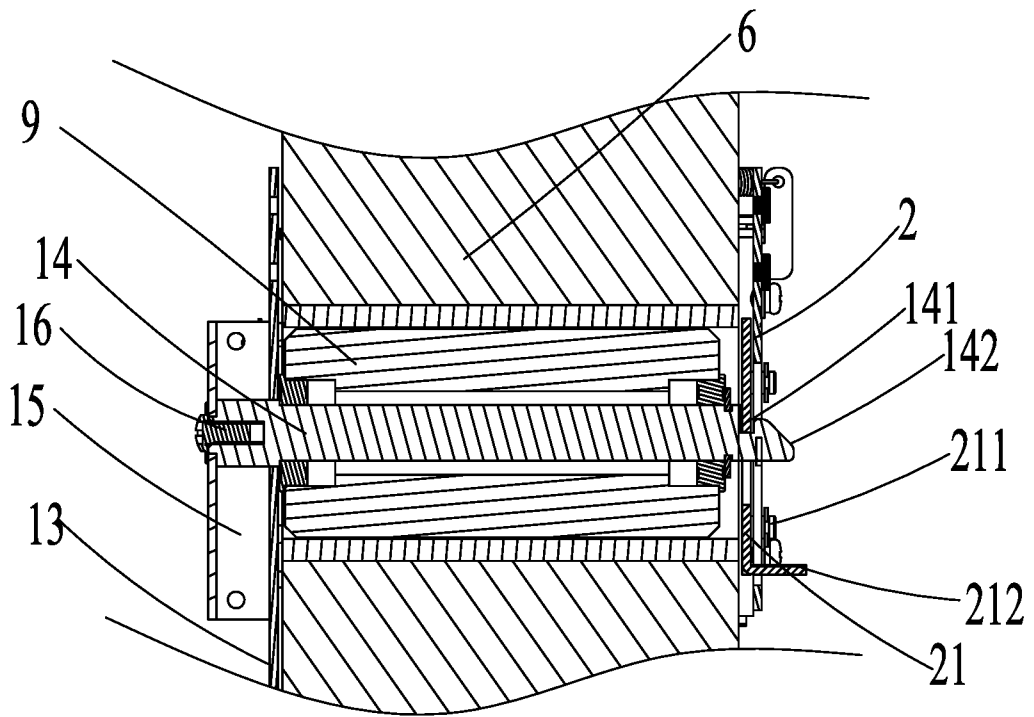


图 14

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2015/085187

A. CLASSIFICATION OF SUBJECT MATTER

B41J 15/04 (2006.01) i; B41J 15/18 (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)

B41J 15/-

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)

CNPAT, WPI, EPODOC, CNKI: paper roll, support shaft, web, roll, passage, path, channel, guide, support, shaft, double, two, lock, limit, pivot

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 104129177 A (GRG BANKING EQUIPMENT CO., LTD.), 05 November 2014 (05.11.2014), claims 1-10	1-10
Y	CN 101941335 A (SHANDONG NEW BEIYANG INFORMATION TECHNOLOGY CO., LTD.), 12 January 2011 (12.01.2011), description, paragraphs [0003] and [0004], and figure 1	1-3, 6-7
Y	CN 102873992 A (EASYWAY (SUZHOUZ) ELECTRONIC TECHNOLOGY CO., LTD.), 16 January 2013 (16.01.2013), figure 1	1-3, 6-7
A	JP S5739981 A (FUJI XEROX CO., LTD.), 05 March 1982 (05.03.1982), the whole document	1-10
A	US 6550908 B1 (LA POSTE), 22 April 2003 (22.04.2003), the whole document	1-10
A	CN 101391535 A (POSTEK ELECTRONICS CO., LTD.), 25 March 2009 (25.03.2009), the whole document	1-10

Further documents are listed in the continuation of Box C.

See patent family annex.

<p>* Special categories of cited documents:</p> <p>“A” document defining the general state of the art which is not considered to be of particular relevance</p> <p>“E” earlier application or patent but published on or after the international filing date</p> <p>“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)</p> <p>“O” document referring to an oral disclosure, use, exhibition or other means</p> <p>“P” document published prior to the international filing date but later than the priority date claimed</p>	<p>“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</p> <p>“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</p> <p>“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</p> <p>“&” document member of the same patent family</p>
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<p>Date of the actual completion of the international search</p> <p style="text-align: center;">28 September 2015 (28.09.2015)</p>	<p>Date of mailing of the international search report</p> <p style="text-align: center;">19 October 2015 (19.10.2015)</p>
<p>Name and mailing address of the ISA/CN:</p> <p>State Intellectual Property Office of the P. R. China No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088, China Facsimile No.: (86-10) 62019451</p>	<p>Authorized officer</p> <p style="text-align: center;">WANG, Rui</p> <p>Telephone No.: (86-10) 62413861</p>

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2015/085187

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2002130941 A1 (CANON K. K.), 19 September 2002 (19.09.2002), the whole document	1-10
A	CN 201841764 U (SHANDONG NEW BEIYANG INFORMATION TECHNOLOGY CO., LTD.), 25 May 2011 (25.05.2011), the whole document	1-10

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2015/085187

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
CN 104129177 A	05 November 2014	None	
CN 101941335 A	12 January 2011	CN 101941335 B	06 June 2012
CN 102873992 A	16 January 2013	None	
JP S5739981 A	05 March 1982	JP S6252711 B2	06 November 1987
US 6550908 B1	22 April 2003	FR 2800315 B1	04 January 2002
		EP 1224082 A1	24 July 2002
		DE 60003063 D1	03 July 2003
		ES 2200954 T3	16 March 2004
		EP 1224082 B1	28 May 2003
		AT 241475 T	15 June 2003
		DE 60003063 T2	29 April 2004
		FR 2800315 A1	04 May 2001
		WO 0130582 A1	03 May 2001
CN 101391535 A	25 March 2009	CN 100581833 C	20 January 2010
US 2002130941 A1	19 September 2002	US 6592217 B2	15 July 2003
		JP 2002348011 A	04 December 2002
CN 201841764 U	25 May 2011	None	

<p>A. 主题的分类</p> <p>B41J 15/04(2006.01)i; B41J 15/18(2006.01)i</p> <p>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</p>																							
<p>B. 检索领域</p> <p>检索的最低限度文献(标明分类系统和分类号)</p> <p>B41J15/-</p> <p>包含在检索领域中的除最低限度文献以外的检索文献</p> <p>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))</p> <p>CNPAT, WPI, EPODOC, CNKI: 纸卷, 通道, 支撑轴, 双, 两, 锁, 限位, 枢接, web, roll, passage, path, channel, guide, support, shaft, double, two, lock, limit, pivot</p>																							
<p>C. 相关文件</p> <table border="1"> <thead> <tr> <th>类型*</th> <th>引用文件, 必要时, 指明相关段落</th> <th>相关的权利要求</th> </tr> </thead> <tbody> <tr> <td>PX</td> <td>CN 104129177 A (广州广电运通金融电子股份有限公司) 2014年 11月 5日 (2014 - 11 - 05) 权利要求1-10</td> <td>1-10</td> </tr> <tr> <td>Y</td> <td>CN 101941335 A (山东新北洋信息技术股份有限公司) 2011年 1月 12日 (2011 - 01 - 12) 说明书第【0003】和【0004】段、附图1</td> <td>1-3, 6-7</td> </tr> <tr> <td>Y</td> <td>CN 102873992 A (易程苏州电子科技股份有限公司) 2013年 1月 16日 (2013 - 01 - 16) 附图1</td> <td>1-3, 6-7</td> </tr> <tr> <td>A</td> <td>JP S5739981 A (FUJI XEROX CO., LTD.) 1982年 3月 5日 (1982 - 03 - 05) 全文</td> <td>1-10</td> </tr> <tr> <td>A</td> <td>US 6550908 B1 (LA POSTE) 2003年 4月 22日 (2003 - 04 - 22) 全文</td> <td>1-10</td> </tr> <tr> <td>A</td> <td>CN 101391535 A (深圳市博思得通信发展有限公司) 2009年 3月 25日 (2009 - 03 - 25) 全文</td> <td>1-10</td> </tr> </tbody> </table>			类型*	引用文件, 必要时, 指明相关段落	相关的权利要求	PX	CN 104129177 A (广州广电运通金融电子股份有限公司) 2014年 11月 5日 (2014 - 11 - 05) 权利要求1-10	1-10	Y	CN 101941335 A (山东新北洋信息技术股份有限公司) 2011年 1月 12日 (2011 - 01 - 12) 说明书第【0003】和【0004】段、附图1	1-3, 6-7	Y	CN 102873992 A (易程苏州电子科技股份有限公司) 2013年 1月 16日 (2013 - 01 - 16) 附图1	1-3, 6-7	A	JP S5739981 A (FUJI XEROX CO., LTD.) 1982年 3月 5日 (1982 - 03 - 05) 全文	1-10	A	US 6550908 B1 (LA POSTE) 2003年 4月 22日 (2003 - 04 - 22) 全文	1-10	A	CN 101391535 A (深圳市博思得通信发展有限公司) 2009年 3月 25日 (2009 - 03 - 25) 全文	1-10
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<p>* 引用文件的具体类型:</p> <p>“A” 认为不特别相关的表示了现有技术一般状态的文件</p> <p>“E” 在国际申请日的当天或之后公布的在先申请或专利</p> <p>“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)</p> <p>“O” 涉及口头公开、使用、展览或其他方式公开的文件</p> <p>“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</p> <p>“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</p> <p>“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</p> <p>“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</p> <p>“&” 同族专利的文件</p>																							
<p>国际检索实际完成的日期</p> <p>2015年 9月 28日</p>		<p>国际检索报告邮寄日期</p> <p>2015年 10月 19日</p>																					
<p>ISA/CN的名称和邮寄地址</p> <p>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</p> <p>传真号 (86-10)62019451</p>		<p>受权官员</p> <p>王蕊</p> <p>电话号码 (86-10)62413861</p>																					

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 2002130941 A1 (CANON K.K.) 2002年 9月 19日 (2002 - 09 - 19) 全文	1-10
A	CN 201841764 U (山东新北洋信息技术股份有限公司) 2011年 5月 25日 (2011 - 05 - 25) 全文	1-10

国际检索报告
关于同族专利的信息

国际申请号

PCT/CN2015/085187

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	104129177	A	2014年 11月 5日	无			
CN	101941335	A	2011年 1月 12日	CN	101941335	B	2012年 6月 6日
CN	102873992	A	2013年 1月 16日	无			
JP	S5739981	A	1982年 3月 5日	JP	S6252711	B2	1987年 11月 6日
US	6550908	B1	2003年 4月 22日	FR	2800315	B1	2002年 1月 4日
				EP	1224082	A1	2002年 7月 24日
				DE	60003063	D1	2003年 7月 3日
				ES	2200954	T3	2004年 3月 16日
				EP	1224082	B1	2003年 5月 28日
				AT	241475	T	2003年 6月 15日
				DE	60003063	T2	2004年 4月 29日
				FR	2800315	A1	2001年 5月 4日
				WO	0130582	A1	2001年 5月 3日
CN	101391535	A	2009年 3月 25日	CN	100581833	C	2010年 1月 20日
US	2002130941	A1	2002年 9月 19日	US	6592217	B2	2003年 7月 15日
				JP	2002348011	A	2002年 12月 4日
CN	201841764	U	2011年 5月 25日	无			

表 PCT/ISA/210 (同族专利附件) (2009年7月)



(11) **EP 3 178 658 A1**

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(54) **DOUBLE-PAPER-ROLL PRINTING DEVICE**

(57) A double-paper-roll printing device, comprising an installation frame (13) for installing the following components and paper rolls (6). A first paper roll (61) and a second paper roll (62) are installed on the installation frame (13) through a paper roll supporting shaft (14). Paper tapes of the first paper roll (61) and the second paper roll (62) are selectively fed to a printing component (01) through paper passages. The first paper roll (61) and the second paper roll (62) are selectively fed to the printing component (01) through a first paper passage (02) and a second paper passage (03) that are mutually independent. The first paper passage (02) and the second paper passage (03) are mutually overlapped. The tail end of the first paper passage (02) and the tail end of the second paper passage (03) form an intersecting end, and paper tape heads of the paper rolls enter the printing component (01) through the intersecting end. The passages of the device are completely open and convenient to maintain, the requirement for the replacement operation space of the paper rolls is low, and miniaturization of the equipment is facilitated.

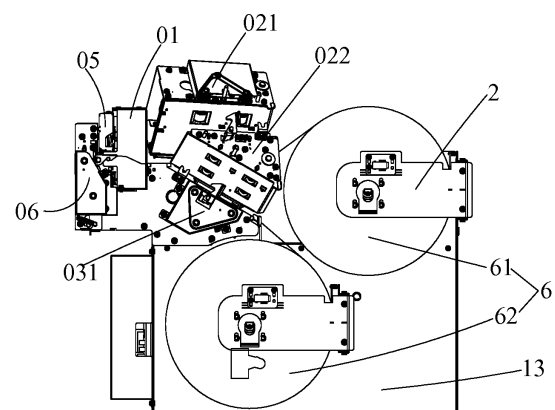


Figure 4

EP 3 178 658 A1

Description

[0001] This application claims the benefit of priority to Chinese patent application No. 201410380586.9, titled "DOUBLE-PAPER-ROLL PRINTING DEVICE", filed with the Chinese State Intellectual Property Office on August 4, 2014, the entire disclosure of which is incorporated herein by reference.

FIELD

[0002] This application relates to a printing device, and particularly to a double-paper-roll printing device of a self-service equipment, which achieves a free switch between two paper rolls with different types.

BACKGROUND

[0003] In the industries such as rail transportation, finance and banking, papermaking, printing, medical health, electrical power, supermarket, lottery, catering, POS terminal and the like, a paper transaction voucher is required to provide to users. Related transaction information is required to be printed on the paper transaction voucher instantly, therefore, currently, in order to achieve a continuous voucher printing, a roll of paper is generally provided for printing or cutting, and the paper roll may be replaced as desired.

[0004] For extending the continuous printing time of a printing device and thus avoiding frequent replacement of the paper roll, a conventional solution is to increase the amount of a paper tape by increasing a diameter of the paper roll, thus, the continuous printing time is extended. Another solution is to increase the number of paper rolls. Although the solution to increase the number of paper rolls may achieve the extension of printing time of printing equipment, the equipment would be more complicated. Further, it is difficult in a certain degree in technique to switch the paper rolls, thus paper is apt to be jammed frequently. Therefore, the technical issue sought to be addressed by those skilled in the art continually is to provide a printing equipment, which takes up space as less as possible, reduces the risk of paper jam and facilitates clearance and maintenance even in the case that paper jam occurs.

SUMMARY

[0005] To overcome the defects of the conventional printing device, the present application provides an open-type double-paper-roll printing device in which smaller operation space is needed to replace the paper roll.

[0006] The double-paper-roll printing device includes an installation frame for installing the following components and paper rolls. A first paper roll and a second paper roll are installed on the installation frame by a paper roll supporting shaft. Paper tapes of the first paper roll and the second paper roll are selectively fed to a printing

component through paper passages. The first paper roll and the second paper roll are selectively fed to the printing component respectively through a first paper passage and a second paper passage that are mutually independent. The first paper passage and the second paper passage are mutually superposed. A tail end of the first paper passage and a tail end of the second paper passage form an intersecting end, and paper tape heads of the paper rolls enter the printing component by the intersecting end.

[0007] Preferably, one common paper passage is provided between the printing component and the intersecting end formed by the tail end of the first paper passage and the tail end of the second paper passage.

[0008] Further, a sensor for detecting the paper tapes is provided in the common paper passage.

[0009] Preferably, the first paper passage and the second paper passage comprise a first paper passage top assembly, a middle assembly and a second paper passage lower assembly. The middle assembly includes two passage faces, i.e., a first passage face and a second passage face which are respectively adjacent to the first paper passage and the second paper passage. The first paper passage comprises the first passage face and the first paper passage top assembly, and the second paper passage comprises the second passage face and the second paper passage lower assembly.

[0010] Preferably, the first paper passage top assembly is pivotally connected to the middle assembly, and the middle assembly is further pivotally connected to the second paper passage lower assembly.

[0011] Preferably, a paper cutting assembly for cutting off the paper tape that has been printed is provided outside a paper-exit passage of the printing component.

[0012] Further, a paper delivering passage for delivering a paper sheet out is further provided outside the paper cutting assembly of the printing component. The paper delivering passage is pivotally connected to the installation frame by one rotation shaft, and a selective separation of the paper transportation passage from the paper cutting assembly is achieved.

[0013] Preferably, the first paper roll and the second paper roll each are supported by a paper roll supporting shaft fixed to the installation frame. One end of the paper roll supporting shaft is a free end and selectively locked by a movable baffle which is pivotally connected to the installation frame by a baffle rotation shaft.

[0014] Further, a tension spring is provided between the movable baffle and the installation frame, and the tension spring has two ends respectively fixed to the movable baffle and the installation frame.

[0015] Further, the free end of the paper roll supporting shaft is provided with a position-limiting slot, and the movable baffle is provided with a lock plate having an automatic reset function corresponding to the position-limiting slot.

[0016] When compared with the conventional technology, the present application has the following advantageous effects:

1. in the technical solution of the present application, the paper passages for two paper rolls are designed to be mutually independent and the passage assemblies that are formed by the two independent paper passages are mutually superposed and pivotally connected in turn and form open passages, which is beneficial to the clearance of the paper jam in the passages;

2. the installation of a paper roll is achieved by replacing from a side. One end of the paper roll supporting shaft is a free end, so that the paper roll may be replaced from the side. In this way, the maintenance operation space needed by the equipment is reduced as much as possible. Also, the free end is selectively locked by a movable baffle, which not only ensures a safe operation of the equipment but also saves the space taken up the equipment.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] For more clearly illustrating embodiments of the present application or the technical solutions in the conventional technology, drawings referred to describe the embodiments or the conventional technology will be briefly described hereinafter. Apparently, the drawings of the present application in the following description are only some examples of the present application, and for the person skilled in the art, other drawings may be obtained based on these drawings without any creative efforts.

Figure 1 is a schematic view of a double-paper-roll printing device according to the present application;

Figure 2 is a schematic view of a first paper passage of the double-paper-roll printing device shown in Figure 1 with the first paper passage opened;

Figure 3 is a schematic view of a second paper passage of the double-paper-roll printing device shown in Figure 1 with the second paper passage opened;

Figure 4 is a schematic view of the first and second paper passages of the double-paper-roll printing device shown in Figure 1 with the first and second paper passages opened;

Figure 5 is a schematic view of a paper feeding passage of the double-paper-roll printing device shown in Figure 1 with the paper feeding passage opened;

Figure 6 is a schematic view of a paper roll installation mechanism of the double-paper-roll printing device shown in Figure 1;

Figure 7 is a partial sectional schematic view of the paper roll installation mechanism shown in Figure 6

taken along J-J;

Figure 8 is an exploded schematic view of parts of the paper roll installation mechanism shown in Figure 6;

Figure 9 is a schematic view showing a first state of the paper roll installation mechanism shown in Figure 6 during the process of replacing a paper roll;

Figure 10 is a schematic view showing a second state of the paper roll installation mechanism shown in Figure 6 during the process of replacing a paper roll;

Figure 11 is a schematic view showing a third state of the paper roll installation mechanism shown in Figure 6 during the process of replacing a paper roll;

Figure 12 is a schematic view showing a first state of a lock plate of the paper roll installation mechanism shown in Figure 6 during the process of the lock plate locking a paper roll supporting shaft;

Figure 13 is a schematic view showing a second state of a lock plate of the paper roll installation mechanism shown in Figure 6 during the process of the lock plate locking a paper roll supporting shaft; and

Figure 14 is a schematic view showing a third state of a lock plate of the paper roll installation mechanism shown in Figure 6 during the process of the lock plate locking a paper roll supporting shaft.

35 DETAILED DESCRIPTION

[0018] To further illustrate the double-paper-roll printing device according to the present application, the preferred embodiments of the present application will be described further in detail hereinafter in conjunction with the drawings thereof.

[0019] Referring to Figures 1 and 6, the double-paper-roll printing device according to the present application includes an installation frame 13 for installing following components and paper rolls 6. A first paper roll 61 and a second paper roll 62 are installed on the installation frame 13 by a paper roll supporting shaft 14. Paper tapes of the first paper roll 61 and the second paper roll 62 are selectively fed to a printing component 01 through paper passages. Specifically, the first paper roll 61 and the second paper roll 62 are selectively fed to the printing component 01 respectively through a first paper passage 02 and a second paper passage 03 that are mutually independent. The first paper passage 02 and the second paper passage 03 are mutually superposed. A tail end of the first paper passage 02 and a tail end of the second paper passage 03 form an intersecting end, and paper tape heads of the paper rolls enter the printing component

01 by the intersecting end. In order to achieve a smooth abutment between the first paper passage 02, second paper passage 03 and a paper tape passage in the printing component 01, one common paper passage 04 is provided between the printing component 01 and the intersecting end formed by the tail end of the first paper passage 02 and the tail end of the second paper passage 03. Further, in order to detect and determine whether a paper tape is passing in the above paper passages and determine the type of the paper tape, the first paper passage 02, the second paper passage 03 and the common paper passage 04 are each provided with a sensor for detecting the paper tape so as to determine and control a paper selection of the first paper roll 61 and the second paper roll 62 and how long the paper passes, and the like. The working process of the sensor is the common knowledge in the art, which would not be described herein.

[0020] Referring to Figures 1 to 5, the first paper passage 02 and the second paper passage 03 comprise a first paper passage top assembly 021, a middle assembly 022 and a second paper passage lower assembly 031. The middle assembly 031 includes two passage faces, i.e., a first passage face 0221 and a second passage face 0222 which are respectively adjacent to the first paper passage 02 and the second paper passage 03. The first paper passage 02 comprises the first passage face 0221 and the first paper passage top assembly 021. The second paper passage 03 comprises the second passage face 0222 and the second paper passage lower assembly 031. The first paper passage top assembly 021 is pivotally connected to the middle assembly 022 by a rotation shaft. The middle assembly 022 is further pivotally connected to the second paper passage lower assembly 031 by another rotation shaft. Thus, the first paper passage 03 and the second paper passage 03 can be opened, which facilitates the clearance of faults occurred in the paper passages, as shown in Figure 4. Further, in order to separate the paper tape that has been printed, a paper cutting assembly 05 for cutting off the paper tape that has been printed is provided outside a paper-exit passage of the printing component 01, which is used for cutting the paper tape that has been printed by the printing component 01 from the paper roll. In order to deliver a paper sheet that has been cut off to the outside of the equipment, a paper delivering passage 06 for delivering the paper sheet out is further provided outside the paper cutting assembly 05 of the printing component 0. The paper transportation passage 06 is pivotally connected to the installation frame 13, and a selective separation of the paper transportation passage 06 from the paper cutting assembly is achieved, as shown in Figure 5.

[0021] As shown in Figure 6, the paper roll 6 is installed on the installation frame 13 by a paper roll supporting shaft 14. One end of the paper roll supporting shaft 14 is a free end and is selectively locked by a movable baffle 2, which is pivotally connected to the installation frame 13 by a baffle rotation shaft 11.

[0022] For allowing the movable baffle 2 to reliably block the paper roll 6, as shown in Figure 7, the free end of the paper roll supporting shaft 14 is provided with a position-limiting slot 141, and corresponding to the position-limiting slot 141, the movable baffle 2 is provided with a lock plate 21, and the lock plate 21 can return automatically. For allowing the lock plate 21 to be freely inserted into the position-limiting slot 141, the free end of the paper roll supporting shaft 14 includes an inclined guiding surface 142, which is used for guiding the lock plate 21 into the position-limiting slot 141 from the free end.

[0023] As shown in Figure 8, for allowing the lock plate 21 to selectively lock the paper roll supporting shaft 14, the lock plate 21 has a slide travel on the movable baffle 2, and the lock plate is provided with four sliding columns 211, and the movable baffle 2 is provided with sliding grooves 22 corresponding to the sliding columns 211. The lock plate 21 automatically returns under the action of gravity. Further, for facilitating unlocking the lock plate 21 when replacing the paper roll 6, the lock plate 21 is provided with a release-operation handle 212.

[0024] For facilitating the opening and closing of the movable baffle 2, a tension spring 12 is provided between the movable baffle 2 and the installation frame 13 in the double-paper-roll printing device according to the present application. Two ends of the tension spring 12 are respectively fixed to the movable baffle 2 and the installation frame 13. Also, when the movable baffle 2 is opened or closed, both of the two fixing points of the tension spring 12 are not in a line with the baffle rotation shaft 11.

[0025] Reference is made to Figure 8. For allowing the paper roll 6 to be freely rolled on the paper roll supporting shaft 14, the paper roll supporting shaft 14 is sleeved with a paper roll shaft core 9 in a rolling manner. The paper roll 6 is movably sleeved on the paper roll shaft core 9. A rolling element 8 is arranged between the paper roll shaft core 9 and the paper roll supporting shaft 14. Such design allows the roll core of the paper roll 6 to be in line contact with the paper roll shaft core 9, which makes the friction force between the roll core of the paper roll 6 and the paper roll shaft core 9 small and thus facilitates the paper roll 6 rotating in the printing. Two rolling elements 8, which generate small friction, are provided between the paper roll core 9 and the paper roll supporting shaft 14. In this way, it is easy for this mechanism to drag the paper roll having an outer diameter $\geq \Phi 152.4$ mm ($\Phi 6''$).

[0026] Further, for allowing the paper roll supporting shaft 14 to be stably fixed to the installation frame 13, in the double-paper-roll printing device according to the present application, the paper roll supporting shaft 14 is fixed to the installation frame 13 with the aid of a fixing plate 15 and then is fastened from one end of the paper roll supporting shaft 14 by a bolt 16. For achieving fixing of all the components, as shown in Figure 8, several fasteners 1, 4, 7, 10 and 16 are required.

[0027] A paper roll replacement process of the double-paper-roll printing device according to the present application will be further described hereinafter with reference to Figures 9 to 14. When the paper roll 6 runs out, as shown in Figure 9, a replacement operation is required. At this time, the operation handle 212 of the lock plate 21 is required to be lifted firstly for making the lock plate 21 away from the position-limiting slot 141 of the paper roll supporting shaft 14, as shown in Figure 12. At this time, the movable baffle 2 may be pulled outward and then opened. The movable baffle 2 is rotated around the baffle rotation shaft 11 against the elastic force of the spring 12 to be opened. When the movable baffle 2 is rotated to allow both of the two fixing points of the tension spring 12 to be in a line with the baffle rotation shaft 11 and then this line is passed over, the movable baffle 2 is allowed to stay open under the action of the spring 12, as shown in Figure 10. Certainly, a position-limiting mechanism is provided when the movable baffle 2 is opened in place. After an entire paper roll is installed on the paper roll shaft core 9, the movable baffle 2 is required to be closed. When the lock plate 21 of the movable baffle 2 abuts against an end head of the paper roll supporting shaft 14, the lock plate 21 is lifted under the guidance of the inclined guiding surface 142 of the end of the paper roll supporting shaft 14, as shown in Figure 12. The movable baffle 2 is closed continuously until the lock plate 21 is passed over a highest point of the inclined guiding surface 142, as shown in Figure 13. Since the two sides of the position-limiting slot 141 have a height difference, i.e., one side of the position-limiting slot 141 which is adjacent to the inclined guiding surface 142 is lower than the other side, the lock plate 21 is locked into the position-limiting slot 141 of the paper roll supporting shaft 14 under the action of self-gravity and a side wall of the position-limiting slot 141, as shown in Figure 14. In this way, the replacement process of the entire paper roll is completed. The state of the paper roll installation mechanism at this time is as shown in Figure 11. Further, it should be described that in the present application the automatic return of the lock plate 21 is achieved by self-gravity of the lock plate. Certainly, a spring or other mechanisms which may provide a return force may also be used for achieving the automatic return of the lock plate 21.

[0028] The above description is only preferred embodiments of the present application. It should be noted that the above preferred embodiments should not be construed as limiting to the present application. The protection scope of the present application should be defined by the scope defined by the claims. For the person skilled in the art, a few of modifications and improvements may be made to the present application without departing from the spirits and scope of the present application. These modifications and improvements also fall into the protection scope of the present application.

Claims

1. A double-paper-roll printing device, comprising:
 - an installation frame for installing following components and paper rolls,
 - wherein a first paper roll and a second paper roll are installed on the installation frame by a paper roll supporting shaft, and paper tapes of the first paper roll and the second paper roll are selectively fed to a printing component through paper passages, wherein the first paper roll and the second paper roll are selectively fed to the printing component respectively through a first paper passage and a second paper passage that are mutually independent, the first paper passage and the second paper passage are mutually superposed, and tail ends of the first paper passage and the second paper passage form an intersecting end, and paper tape heads of the paper rolls enter the printing component by the intersecting end.
2. The double-paper-roll printing device according to claim 1, wherein one common paper passage is provided between the printing component and the intersecting end formed by the tail ends of the first paper passage and the second paper passage.
3. The double-paper-roll printing device according to claim 2, wherein a sensor for detecting the paper tapes is provided in the common paper passage.
4. The double-paper-roll printing device according to claim 1, wherein the first paper passage and the second paper passage comprise a first paper passage top assembly, a middle assembly and a second paper passage lower assembly, and wherein the middle assembly comprises two passage faces, a first passage face and a second passage face, which are respectively adjacent to the first paper passage and the second paper passage, the first paper passage comprises the first passage face and the first paper passage top assembly, and the second paper passage comprises the second passage face and the second paper passage lower assembly.
5. The double-paper-roll printing device according to claim 4, wherein the first paper passage top assembly is pivotally connected to the middle assembly, and the middle assembly is further pivotally connected to the second paper passage lower assembly.
6. The double-paper-roll printing device according to claim 1, wherein a paper cutting assembly for cutting

off the paper tape that has been printed is provided outside a paper-exit passage of the printing component.

- 7. The double-paper-roll printing device according to claim 6, wherein a paper delivering passage for delivering a paper sheet out is further provided outside the paper cutting assembly of the printing component, and the paper delivering passage is pivotally connected to the installation frame by one rotation shaft, and a selective separation of the paper delivering passage from the paper cutting assembly is achieved. 5
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- 8. The double-paper-roll printing device according to claim 1, wherein the first paper roll and the second paper roll each are supported by the paper roll supporting shaft fixed to the installation frame, one end of the paper roll supporting shaft is a free end and selectively locked by a movable baffle which is pivotally connected to the installation frame by a baffle rotation shaft. 15
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- 9. The double-paper-roll printing device according to claim 8, wherein a tension spring is provided between the movable baffle and the installation frame, and the tension spring has two ends respectively fixed to the movable baffle and the installation frame. 25

- 10. The double-paper-roll printing device according to claim 8, wherein the free end of the paper roll supporting shaft is provided with a position-limiting slot, and the movable baffle is provided with a lock plate having an automatic reset function corresponding to the position-limiting slot. 30
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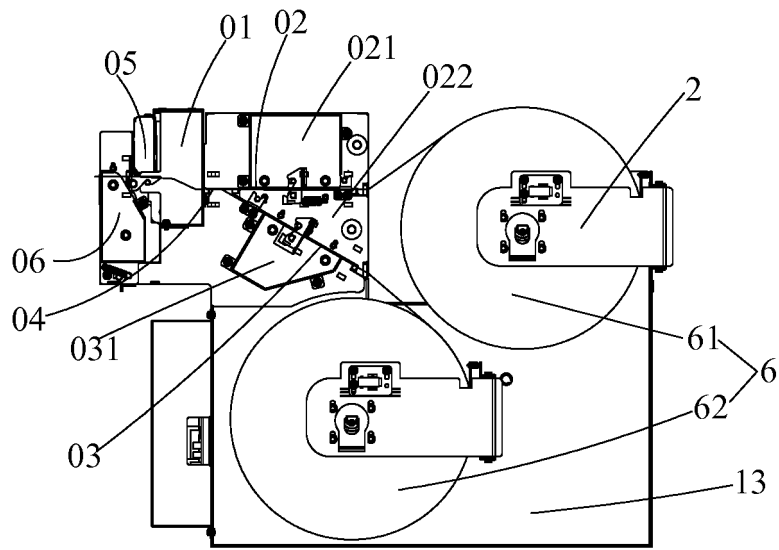


Figure 1

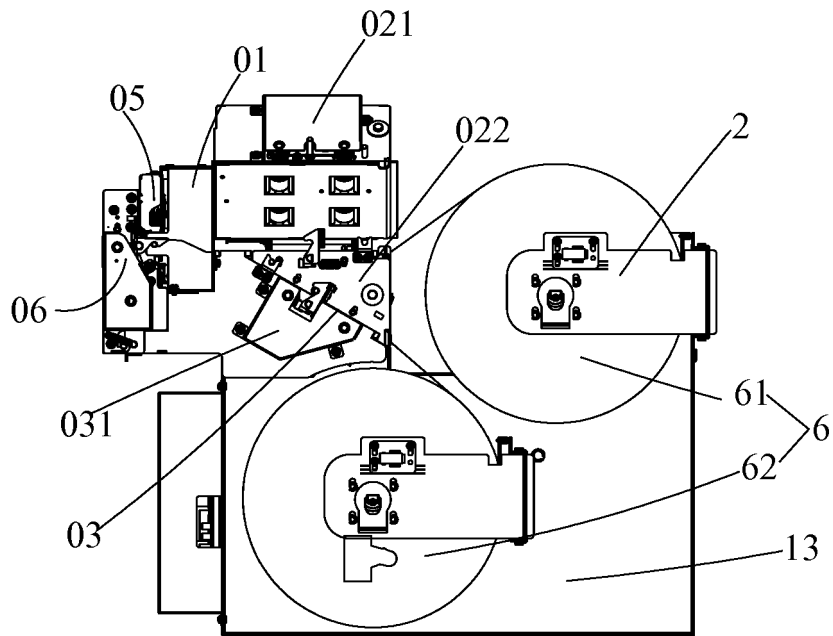


Figure 2

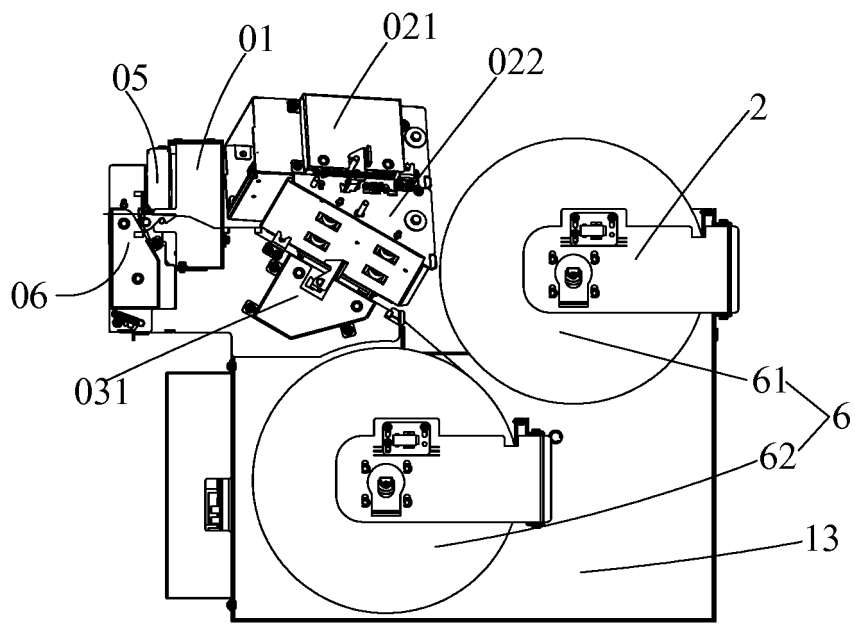


Figure 3

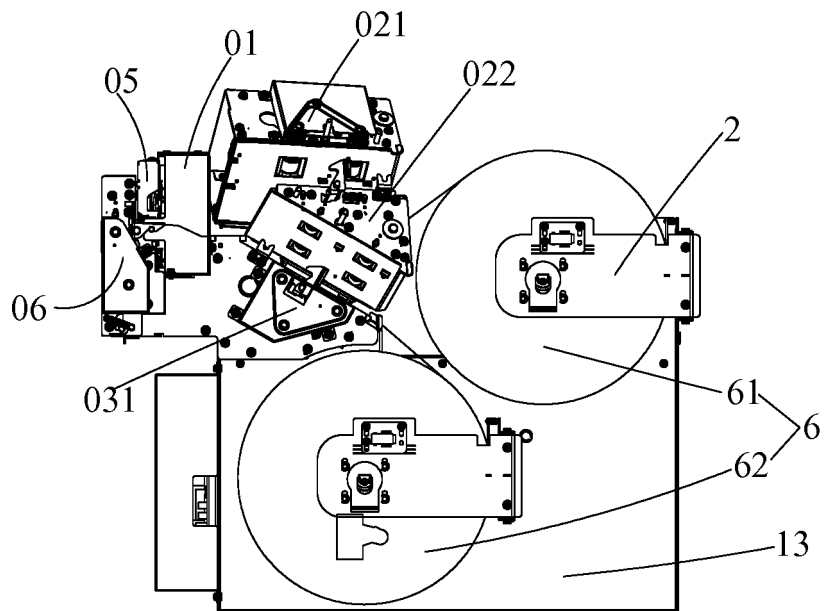


Figure 4

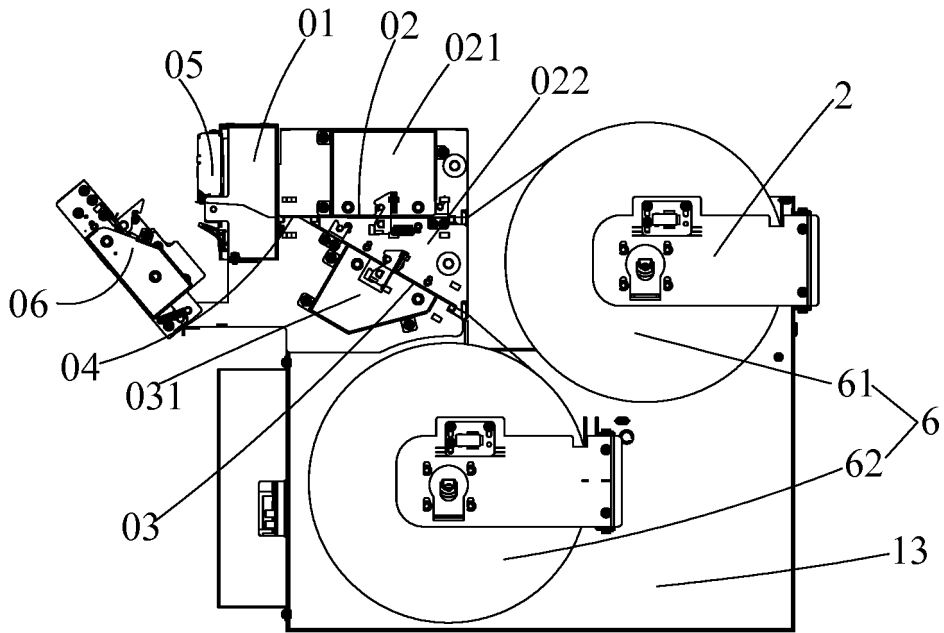


Figure 5

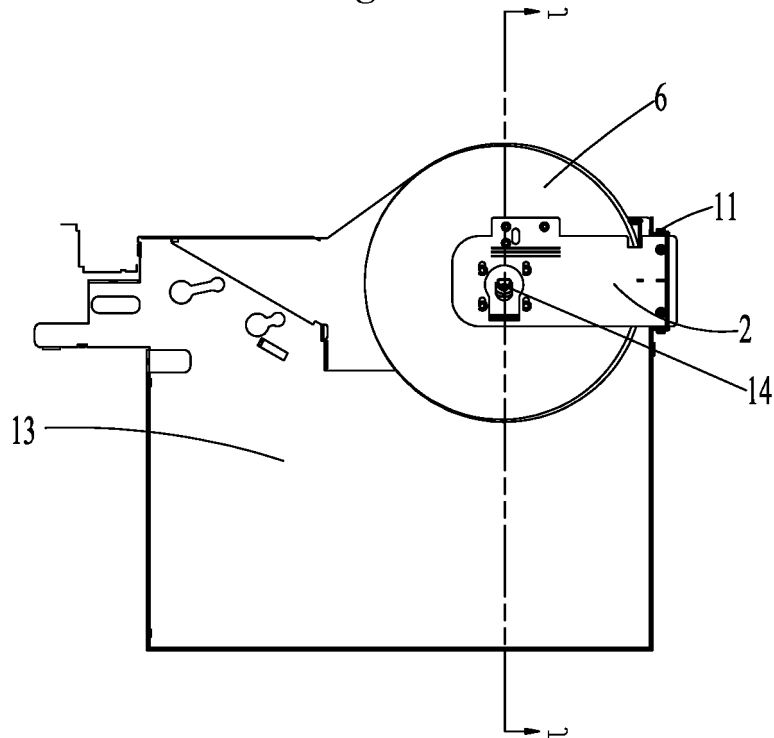


Figure 6

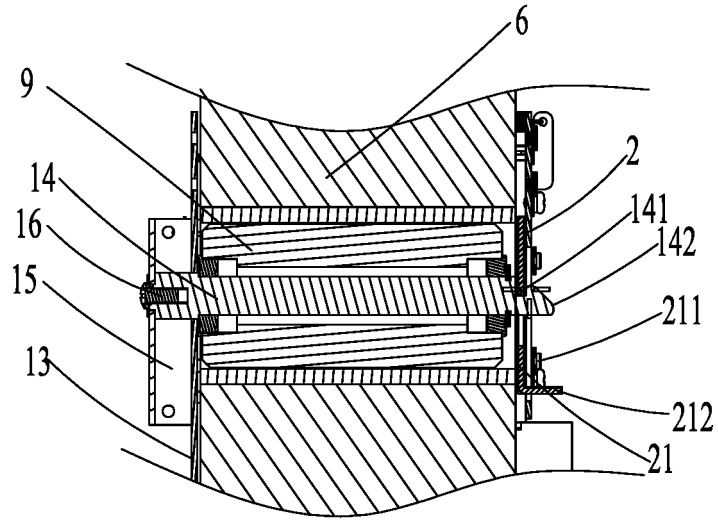


Figure 7

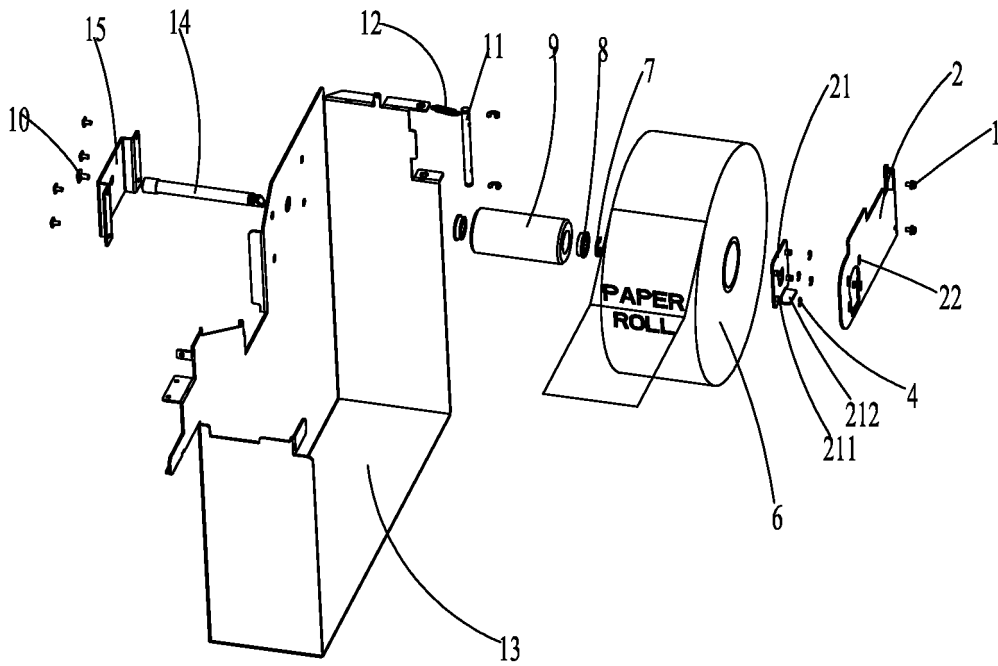


Figure 8

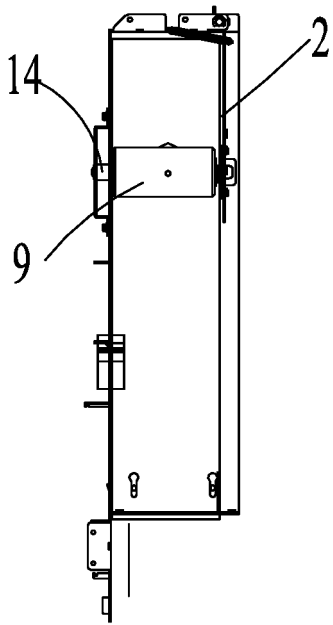


Figure 9

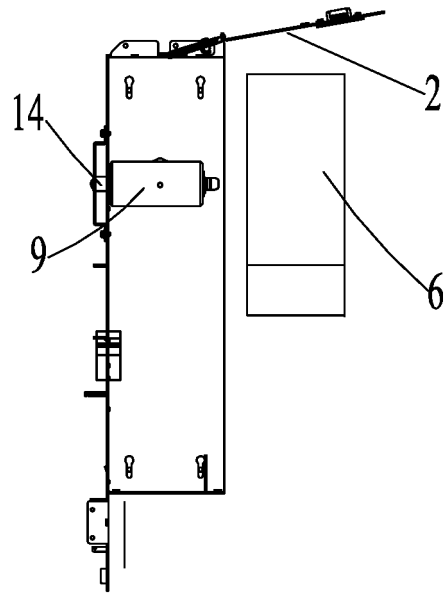


Figure 10

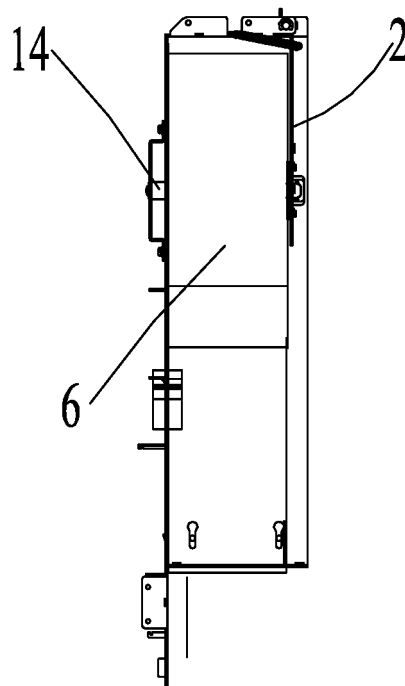


Figure 11

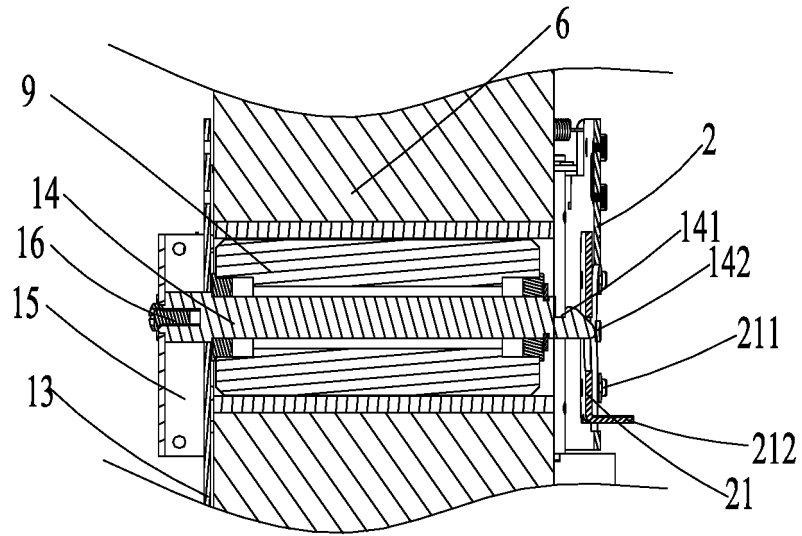


Figure 12

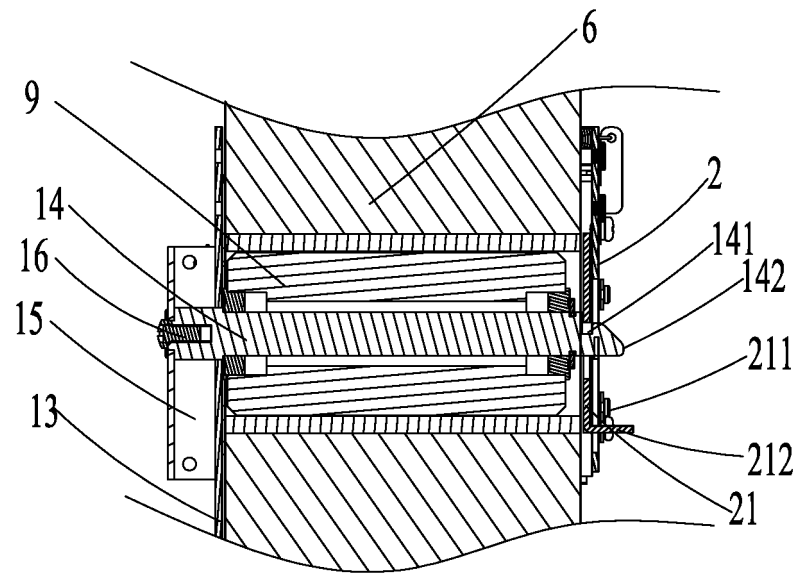


Figure 13

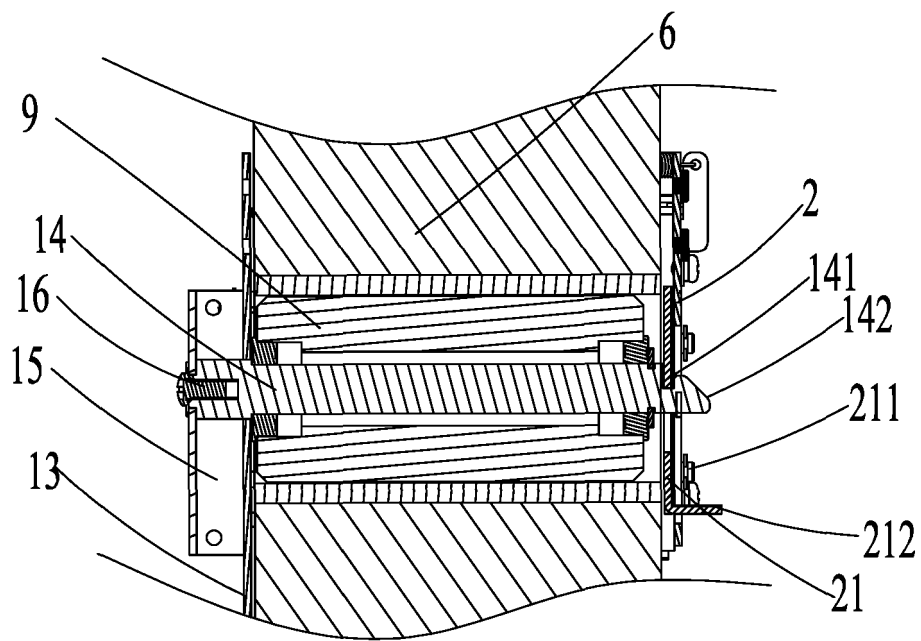


Figure 14

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2015/085187

A. CLASSIFICATION OF SUBJECT MATTER

B41J 15/04 (2006.01) i; B41J 15/18 (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)

B41J 15/-

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)
CNPAT, WPI, EPODOC, CNKI: paper roll, support shaft, web, roll, passage, path, channel, guide, support, shaft, double, two, lock, limit, pivot

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 104129177 A (GRG BANKING EQUIPMENT CO., LTD.), 05 November 2014 (05.11.2014), claims 1-10	1-10
Y	CN 101941335 A (SHANDONG NEW BEIYANG INFORMATION TECHNOLOGY CO., LTD.), 12 January 2011 (12.01.2011), description, paragraphs [0003] and [0004], and figure 1	1-3, 6-7
Y	CN 102873992 A (EASYWAY (SUZHOU) ELECTRONIC TECHNOLOGY CO., LTD.), 16 January 2013 (16.01.2013), figure 1	1-3, 6-7
A	JP S5739981 A (FUJI XEROX CO., LTD.), 05 March 1982 (05.03.1982), the whole document	1-10
A	US 6550908 B1 (LA POSTE), 22 April 2003 (22.04.2003), the whole document	1-10
A	CN 101391535 A (POSTEK ELECTRONICS CO., LTD.), 25 March 2009 (25.03.2009), the whole document	1-10

Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:	“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
“A” document defining the general state of the art which is not considered to be of particular relevance	“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
“E” earlier application or patent but published on or after the international filing date	“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
“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)	“&” document member of the same patent family
“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	

Date of the actual completion of the international search 28 September 2015 (28.09.2015)	Date of mailing of the international search report 19 October 2015 (19.10.2015)
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 WANG, Rui Telephone No.: (86-10) 62413861

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2015/085187

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2002130941 A1 (CANON K. K.), 19 September 2002 (19.09.2002), the whole document	1-10
A	CN 201841764 U (SHANDONG NEW BEIYANG INFORMATION TECHNOLOGY CO., LTD.), 25 May 2011 (25.05.2011), the whole document	1-10

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/CN2015/085187

5	Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
	CN 104129177 A	05 November 2014	None	
	CN 101941335 A	12 January 2011	CN 101941335 B	06 June 2012
10	CN 102873992 A	16 January 2013	None	
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	CN 201841764 U	25 May 2011	None	
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