(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
28 August 2014 (28.08.2014)

WIPO | PCT

(10) International Publication Number
WO 2014/128542 A1

(51) International Patent Classification:
A47J 31/18 (2006.01) *A47J 31/44* (2006.01)

(21) International Application Number:
PCT/IB2014/000090

(22) International Filing Date:
31 January 2014 (31.01.2014)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2013900592 22 February 2013 (22.02.2013) AU
61/770,059 27 February 2013 (27.02.2013) US

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(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, 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.

(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, 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,

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(54) Title: COFFEE POD ADAPTER SYSTEM

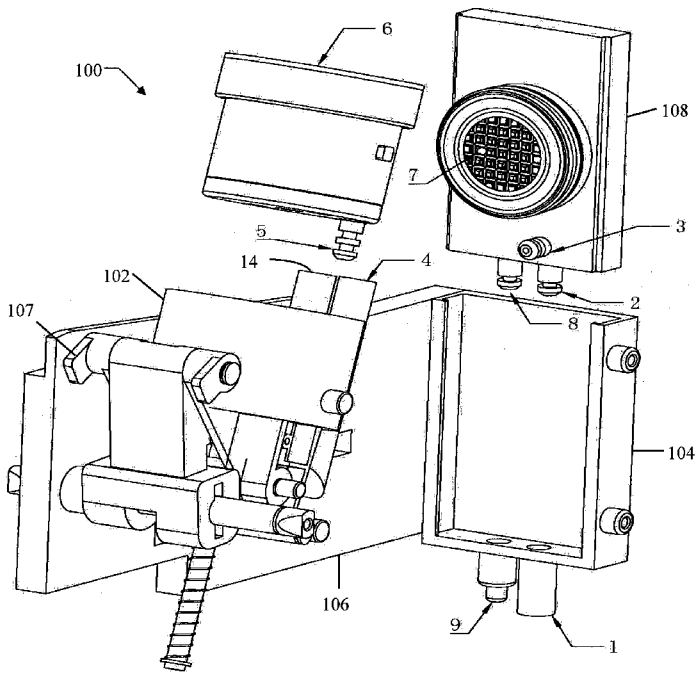

Figure 1

(57) Abstract: A system, including: a pod holder mount and a pressure plate mount reciprocally movable relative to one another; and a plurality of interchangeable pairs of pod holders and pressure plates respectively removable receivable in, and fluidly connectable to, the pod holder mount and the pressure plate mount to define an extraction chamber for individual coffee pods; wherein each of the pairs of pod holders and pressure plates are constructed and arranged to define fluid passages that selectively combine with fluid passages in the pod holder mount and the pressure plate mount to provide alternate fluid paths to inject water into, and extract coffee from, individual coffee pods in the extraction chamber in two opposite directions.

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TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

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))*

COFFEE POD ADAPTER SYSTEM

Field

[0001] The present invention relates to a coffee pod adapter system for coffee pod machines.

Background

[0002] Coffee pod machines that extract coffee from pre-packaged coffee pods (or capsules) are increasingly popular. Suppliers of coffee pod machines have developed their own proprietary types of coffee pods having specific shapes, sizes, piercing directions, and water injection and coffee extraction directions that match their particular machines. As a result, coffee pods from one supplier cannot be used in coffee pod machines of other suppliers.

[0003] A need therefore exists for a solution that addresses or alleviates at least some of the problems described above.

Summary

[0004] According to the present invention, there is provided a system, including:

a pod holder mount and a pressure plate mount, at least one of which is reciprocally movable relative to the other; and

a plurality of interchangeable pairs of pod holders and pressure plates respectively removable receivable in, and fluidly connectable to, the pod holder mount and the pressure plate mount to define an extraction chamber for individual coffee pods;

wherein each of the pairs of pod holders and pressure plates are constructed and arranged to define fluid passages that selectively combine with fluid passages in the pod holder mount and the pressure plate mount to provide alternate fluid paths to inject water into, and extract coffee from, individual coffee pods in the extraction chamber in two opposite directions.

[0005] The pressure plate mount may have a water inlet port and a coffee outlet port, and each pressure plate may have a water connector and a coffee connector that are respectively fluidly connectable to the water inlet port and the coffee outlet port of the pressure plate mount.

[0006] The pod holder mount may have two fluid passages, and each pressure plate may have an internal fluid passage and a fluid connector arranged to permit fluid flow through one of the fluid passages in the pod holder mount in one direction while blocking off the other fluid

passage in the pod holder mount to prevent fluid flow in the other direction, so as to provide alternate fluid paths in the two opposite directions between the water inlet port and the coffee outlet port of the pressure plate mount.

[0007] Each pod holder may have a fluid connector arranged to permit fluid flow through one of the fluid passages in the pod holder mount in one direction while blocking off the other fluid passage in the pod holder mount to prevent fluid flow in the other direction, so as to provide alternate fluid paths in the two opposite directions between the water inlet port and the coffee outlet port of the pressure plate mount.

[0008] One or both of each of the pairs of pod holders and pressure plates may be constructed and arranged to selectively pierce individual coffee pods in the extraction chamber in one of the two opposite directions.

[0009] Each of the pairs of pod holders and pressure plates may be colour coded to visually indicate compatibility both with one another and individual coffee pods.

[0010] The pod holder mount may be reciprocally movable relative to the pressure plate mount by a lever between an open position for loading and unloading individual coffee pods, and a closed position for extracting coffee from individual coffee pods.

[0011] The system may further include a pod pusher arranged to eject individual coffee pods from the extraction chamber when the system returns to the open position from the closed position.

[0012] Individual pod holders may have internal shapes that correspond to external shapes of individual coffee pods.

[0013] The pod holder mount and the pressure plate mount may be supported by a frame that is included in, or operatively connectable to, a coffee pod machine.

[0014] The water inlet port of the pressure plate mount may be fluidly connectable to a hot water circuit of the coffee pod machine, and the coffee outlet port is fluidly connectable to a coffee dispensing circuit of the coffee pod machine.

[0015] The present invention also provides a coffee pod machine including the above system.

Brief Description of Drawings

[0016] Embodiments of the invention will now be described by way of example only with reference to the accompanying drawing, in which:

Figure 1 is a perspective view of a coffee pod adapter system according to an embodiment of the invention in an open position and configured for water and coffee flow in a first direction;

Figure 2 is a bottom view of the system of Figure 1 in a closed position;

Figure 3 is a sectional view of the system along lines A-A of Figure 2;

Figure 4 is a sectional view of the system along lines B-B of Figure 2;

Figure 5 is a perspective view of the system in an open position and configured for water and coffee flow in a second direction opposite to that in Figure 1;

Figure 6 is a bottom view of the system of Figure 5 in a closed position;

Figure 7 is a sectional view of the system along lines C-C of Figure 5; and

Figure 8 is a sectional view of the system along lines D-D of Figure 5.

Detailed Description

[0017] Figures 1 and 5 illustrate a coffee pod adapter system 100 according to an embodiment of the invention in an open position. The system 100 generally includes a pod holder mount 102 and a pressure plate mount 104, at least one of which is reciprocally movable relative to the other. The pod holder mount 102 and the pressure plate mount 104 are supported by a frame (or support cradle) 106 that is included in, or operatively connectable to, a coffee pod machine (not shown). In the illustrated embodiment, the pod holder mount 102 is reciprocally movable (ie, movable forwards and backwards) relative to the pressure plate mount 104, for example by a lever mechanism 107, between the open position for loading and unloading individual coffee pods, and a closed position for extracting coffee from individual coffee pods. Referring to Figure 2, a pod pusher 109 is operatively connected to the lever mechanism 107 and arranged to eject individual coffee pods when the pod holder mount 102 is retracted to return the system 100 to an open position. Other equivalent arrangements for supporting and reciprocally moving at least one of the pod holder mount 102 and the pressure plate mount 104 relative to one another may also be used.

[0018] The system 100 further includes a plurality of interchangeable pairs of pod holders 6 and pressure plates 108 respectively removable receivable in, and fluidly connectable to, the pod holder mount 102 and the pressure plate mount 104 to define an extraction chamber for individual coffee pods. Each of the pairs of pod holders 6 and pressure plates 108 are constructed and arranged to define fluid passages that selectively combine with fluid passages

in the pod holder mount 102 and the pressure plate mount 104 to provide alternate fluid paths to inject water into, and extract coffee from, individual coffee pods in the extraction chamber in two opposite directions.

[0019] In addition, each of the pairs of pod holders 6 and pressure plates 108 are constructed and arranged when in the closed position to sealingly enclose individual coffee pods having different corresponding shapes, sizes, piercing directions, and fluid flow directions. The compatibility of each of the pairs of the pod holders 6 and pressure plates 108 to particular types of corresponding or complementary individual coffee pods is visually indicated, for example, by colour coding. Individual pod holders 6 have internal shapes that correspond to external shapes of individual coffee pods. For example, Figures 3 and 4 illustrate a pod holder 6 having an external cylindrical shape and an internal shape that corresponds to individual coffee pods 110 having a generally frustoconical external shape. Figures 7 and 8 illustrate a different pod holder 6 having an internal shape that corresponds to individual coffee pods 112 having a generally cylindrical external shape.

[0020] Furthermore, each of the pairs of pod holders 6 and pressure plates 108 are constructed and arranged to selectively pierce individual coffee pods in the extraction chamber in one of the two opposite directions. For example, piercing elements 114 are selectively provided in or on one or both of the pod holder 6 or the pressure plate 108 of each pair. Figures 3 and 4 illustrate piercing elements 114 provided on the pressure plate 108, whereas Figures 7 and 8 illustrate piercing elements 114 provided in the pod holder 6.

[0021] The alternate fluid paths of the system 100 described above are defined by fluid passages, fluid ports and fluid connectors provided in or on each of the components of the system 100. The pressure plate mount 104 has a water inlet port 1 and a coffee outlet port 9 that are respectively fluidly connectable to a hot water circuit and a coffee dispensing circuit of the coffee pod machine. The direction in which water is injected into, and coffee is extracted from, individual coffee pods is selectively determined by the arrangement of fluid passages and fluid connectors on individual pairs of pod holders 6 and pressure plates 108. For example, the pod holder mount 102 has two alternate fluid passages 4, 14, and each of the pairs of pod holders 6 and pressure plates 108 are constructed and arranged to selectively permit fluid flow through one of the fluid passages in the pod holder mount 102 in one direction while blocking off the other fluid passage in the pod holder mount 102 to prevent fluid flow in the other direction, so as to provide alternate fluid paths in opposite directions between the water inlet port 1 and the coffee outlet port 9 of the pressure plate mount 104.

[0022] For example, Figures 1 to 4 illustrate the system 100 configured to inject water into, and extract coffee from, frustoconically-shaped coffee pods 110 in the extraction chamber in a first direction through one of the alternate fluid passages 4 in the pod holder mount 102. In this configuration, the pressure plate 108 has an external water connector 2 and an external coffee connector 8 that are respectively fluidly connectable to the water inlet port 1 and the coffee outlet port 9 of the pressure plate mount 104. Referring to Figure 1, the pressure plate 108 has an external fluid connector 3 that is fluidly connectable to one of two fluid passages 4, 14 in the pod holder mount 102. For example Figure 3 illustrates that the external fluid connector 3 is fluidly connected to the fluid passage 4 in the pod holder mount 102. The other fluid passage 14 in the pod holder mount 102 is blanked or blocked off by the body of the pressure plate 108 as illustrated in Figure 4. The open fluid passage 4 of the pod holder mount 102 is fluidly connected to an external fluid connector 5 provided on the pod holder 6. In a closed position, the pod holder 6 is fluidly connected to an internal fluid passage 7 in the pressure plate mount 108. The fluid path for permitting fluid flow in the first direction is completed by an external fluid connector 8 provided on the pressure plate mount 108 that fluidly connects the internal fluid passage 7 to the coffee outlet port 9.

[0023] Figures 5 to 8 illustrate the system 100 configured to inject water into, and extract coffee from, cylindrically-shaped coffee pods 112 in the extraction chamber in a second direction opposite to the first direction through the other of the alternate fluid passages 4, 14 in the pod holder mount 102. In this configuration, the pressure plate 108 has an external water connector 100 that is fluidly connectable to the water inlet port 1 of the pressure plate mount 104. The pressure plate 108 has an external fluid connector 15 that is fluidly connectable to the fluid passage 14 in the pod holder mount 102, as illustrated in Figure 8. The other fluid passage 4 in the pod holder mount 102 is blanked or blocked off by the body of the pressure plate 108 as illustrated in Figure 7. The open fluid passage 14 of the pod holder mount 102 is fluidly connected to an external fluid connector 13 provided on the pod holder 6. In a closed position, the pod holder 6 is fluidly connected to an internal fluid passage 11 in the pressure plate mount 108. The fluid path for permitting fluid flow in the first direction is completed by an external fluid connector 16 provided on the pressure plate mount 108 that fluidly connects the internal fluid passage 11 to the coffee outlet port 9.

[0024] Embodiments of the present invention provide a coffee pod adapter system that enables different types of coffee pods to be used in a single coffee pod machine. This useful result is provided by three functional aspects. First, the pod holder is interchangeable with the main injection mechanism, this to fit the different shaped pods into the pod holder. Second, the forward pressure plate, into which the pod is pushed against for extraction of the coffee, is

interchangeable. Third, the direction of the water is determined by the channels in the pod holder and pressure plate (or wall), enabling the coffee pod adapter system to control the direction of the water forward or backward to thus give the ability of a two way water injection.

[0025] In certain embodiments, the pod holder 6 is a cylindrical-shaped part that fits into the pod holder mount (or injection cradle) 102 to carry the coffee pod 110 forward towards the pressure plate 108. It fits in to the pod holder mount 102 and twists locks into position. As it connects with the pod holder mount 102 cradle and locks, it is lined up with the water inlet path and allows water to pass through it into the pod 110 that it holds. The pod 110 is pieced when positioned into the pod holder 6 allowing the water to pass through, and the dispensing pod pusher 109 passes through it when retracted to eject the used pod 110. The pod holder 6 can be made in any and all shapes and sized and dimensioned to accommodate any type or brand of commercially available coffee pod 110. The interchangeable pressure plate 108 is inserted into the forward part of the coffee machine injection system 100 at the opposite end to the pod holder mount 102. The pressure plate 108 can be interchangeable into many different sizes to accommodate the matching pod holder 6 in size. The pressure plate 108 is inserted into position matching the pod holder 6 and the injection system 100 when in the injected closed position closes the pod holder and pressure plate together forming a sealed chamber for the pod 110, enabling it be injected with hot water for the formation of the coffee.

[0026] The two way water system 100 allows the water to selectively inject the pod 110 from the front or the rear. Coffee pods 110 are differently injected directionally. There are two water channels for forward flow and reverse flow in two opposite directions. For forward injection, the pod holder 6 forces the water though the forward water channel to the corresponding pressure plate 108. The water direction is permanently set in one direction through the corresponding water channel and is received through the pressure plate 108 in the same direction forward. The same in reverse, ie the water is forced through the rear channel for the reverse water flow direction to the corresponding pressure plate 108, changing the direction of the water flow enabling the water to inject from the rear.

[0027] Coffee pods 110 are injected from the front or from the rear; to inject them differently from their design water direction will cause the failure of injection. The ability to inject both ways ensures the multi pod design will inject the pods 110 correctly as they were designed. The pods 110 are pieced when inserted into the pod holders 6, each version has its own piercing paten which every pod 6 insert is built matching the piercing sequence. The pod holder 6 is inserted into the pod holder mount 102 and locked into position; this will then activate the water direction that is suitable for the pod 110 that is to be injected. The activating lever handle 107 when in

the closed position will slide the pod holder 6 forward to the pressure plate 108 and lock into position. When locked the pod 110 is ready to be injected with hot water. Water is then injected into the pod 110 which saturates the coffee and is forced under pressure through the pressure plate. The liquid coffee then proceeds to the coffee dispenser, which in turn dispenses it to the cup. Releasing the locked position with the handle 107 of the pod holder mount 102 will slide the pod holder 6 back into the start position; this will also eject the spent coffee pod 110 with a push rod 109 that passes through the centre of the pod holder 6 pushing the spent pod 110 out into the used pod basket ready for disposal.

[0027] When changing to a different brand/shape coffee pod 110, the correct matching pod holder 6 is selected together with the correct matching pressure plate 108, and both parts are inserted into the machine ready for the injecting of that particular pod 110. This will automatically select the correct water channel direction for injecting and the coffee machine is configured for correct injection of that selected pod 110. Water from the boiler is connected through tubes to the pod holder mount 102 and pod holder insert 6 where the two water channels connect to the forward insert or rear insert pod holders 6 for selecting the direction of the water flow which is essential for successful injection. The pressure plate 108 matches the pod holder 6; each pressure plate 108 at its peripheral sealing point has a gasket, which is different in size according to the pod circumference and piecing of the pod method. Each pressure plate 108 is colour coded (or visually indicated by numbers, letters, patterns or colours) to match each pod holder 6, so both are selected as a complementary pair that are matching, for example red pod holder 6 with red pressure plate 108. It is desirable that both correspond as they will have the matching water channels that allow the directional flow of the water. For example, a yellow corresponding pod holder 6 and pressure plate 108 will have their water channels matching for the reverse flow of the water direction.

[0028] The above embodiments have been described by way of example only and modifications are possible within the scope of the claims that follow.

Claims

1. A system, including:

a pod holder mount and a pressure plate mount, at least one of which is reciprocally movable relative to the other; and

a plurality of interchangeable pairs of pod holders and pressure plates respectively removable receivable in, and fluidly connectable to, the pod holder mount and the pressure plate mount to define an extraction chamber for individual coffee pods;

wherein each of the pairs of pod holders and pressure plates are constructed and arranged to define fluid passages that selectively combine with fluid passages in the pod holder mount and the pressure plate mount to provide alternate fluid paths to inject water into, and extract coffee from, individual coffee pods in the extraction chamber in two opposite directions.

2. A system according to claim 1, wherein the pressure plate mount has a water inlet port and a coffee outlet port, and each pressure plate has a water connector and a coffee connector that are respectively fluidly connectable to the water inlet port and the coffee outlet port of the pressure plate mount.

3. A system according to claim 2, wherein the pod holder mount has two fluid passages, and each pressure plate has an internal fluid passage and a fluid connector arranged to permit fluid flow through one of the fluid passages in the pod holder mount in one direction while blocking off the other fluid passage in the pod holder mount to prevent fluid flow in the other direction, so as to provide alternate fluid paths in the two opposite directions between the water inlet port and the coffee outlet port of the pressure plate mount.

4. A system according to claim 3, wherein each pod holder has a fluid connector arranged to permit fluid flow through one of the fluid passages in the pod holder mount in one direction while blocking off the other fluid passage in the pod holder mount to prevent fluid flow in the other direction, so as to provide alternate fluid paths in the two opposite directions between the water inlet port and the coffee outlet port of the pressure plate mount.

5. A system according to any preceding claim, wherein one or both of each of the pairs of pod holders and pressure plates are constructed and arranged to selectively pierce individual coffee pods in the extraction chamber in one of the two opposite directions.

6. A system according to any preceding claim, wherein each of the pairs of pod holders and pressure plates are colour coded to visually indicate compatibility both with one another and individual coffee pods.

7. A system according to any preceding claim, wherein the pod holder mount is reciprocally movable relative to the pressure plate mount by a lever between an open position for loading and unloading individual coffee pods, and a closed position for extracting coffee from individual coffee pods.

8. A system according to any preceding claim, further including a pod pusher arranged to eject individual coffee pods from the extraction chamber when the system returns to the open position from the closed position to the open position.

9. A system according to any preceding claim, wherein individual pod holders have internal shapes that correspond to external shapes of individual coffee pods.

10. A system according to any preceding claim, wherein the pod holder mount and the pressure plate mount are supported by a frame that is included in, or operatively connectable to, a coffee pod machine.

11. A system according to any one of claims 2 to 10, wherein the water inlet port of the pressure plate mount is fluidly connectable to a hot water circuit of the coffee pod machine, and the coffee outlet port is fluidly connectable to a coffee dispensing circuit of the coffee pod machine.

12. A coffee pod machine including a system according to any preceding claim

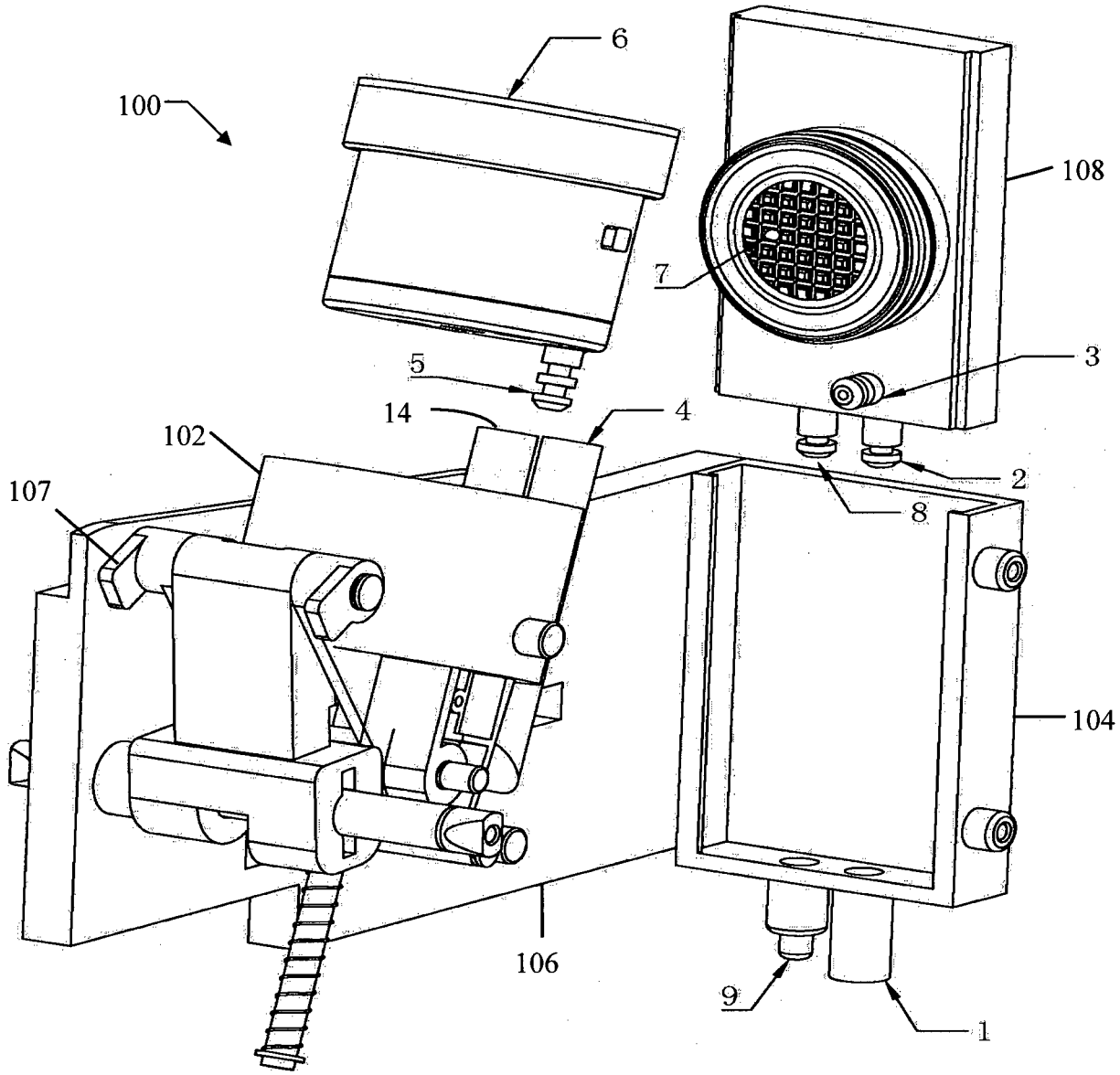

Figure 1

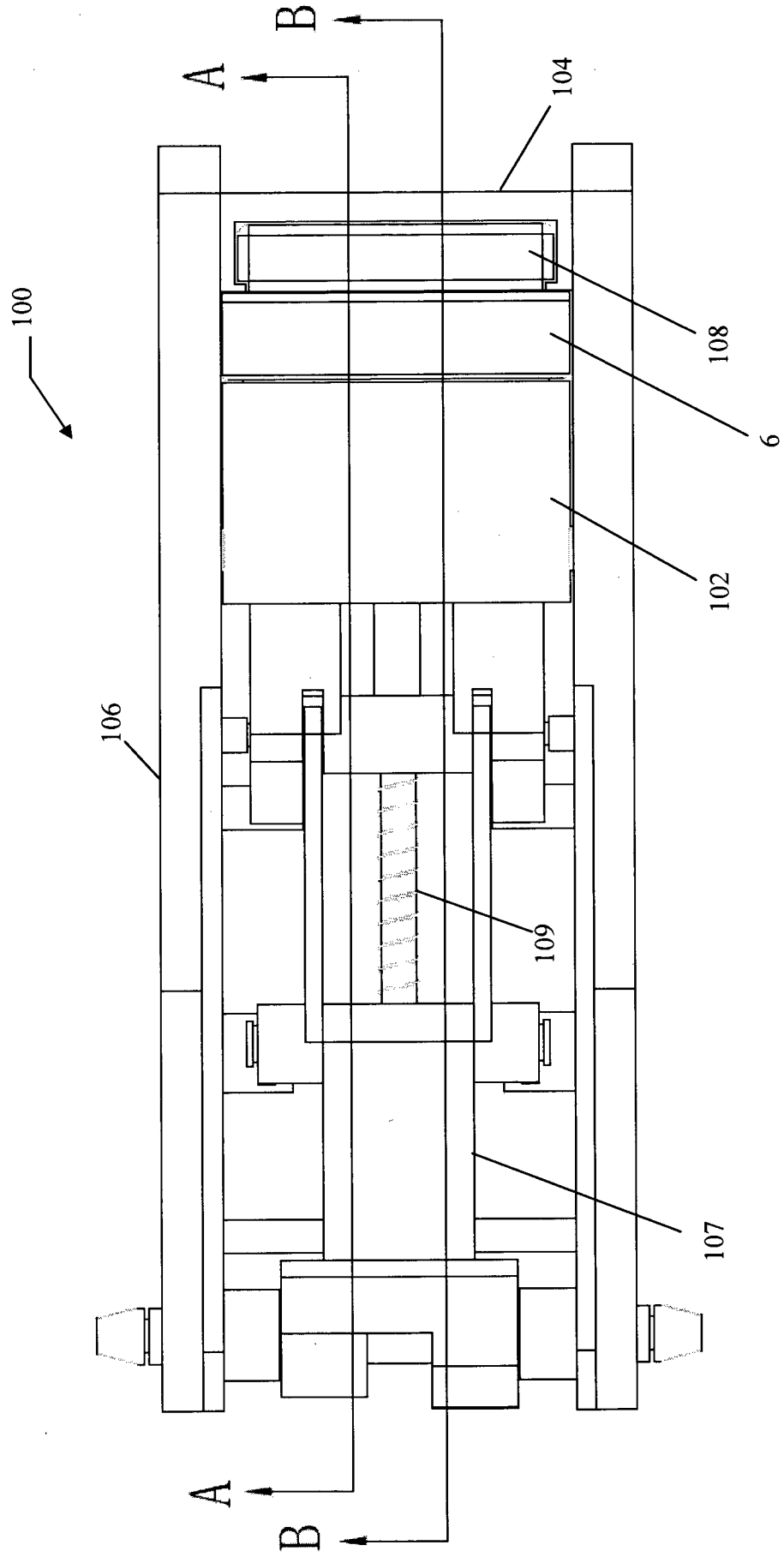

Figure 2

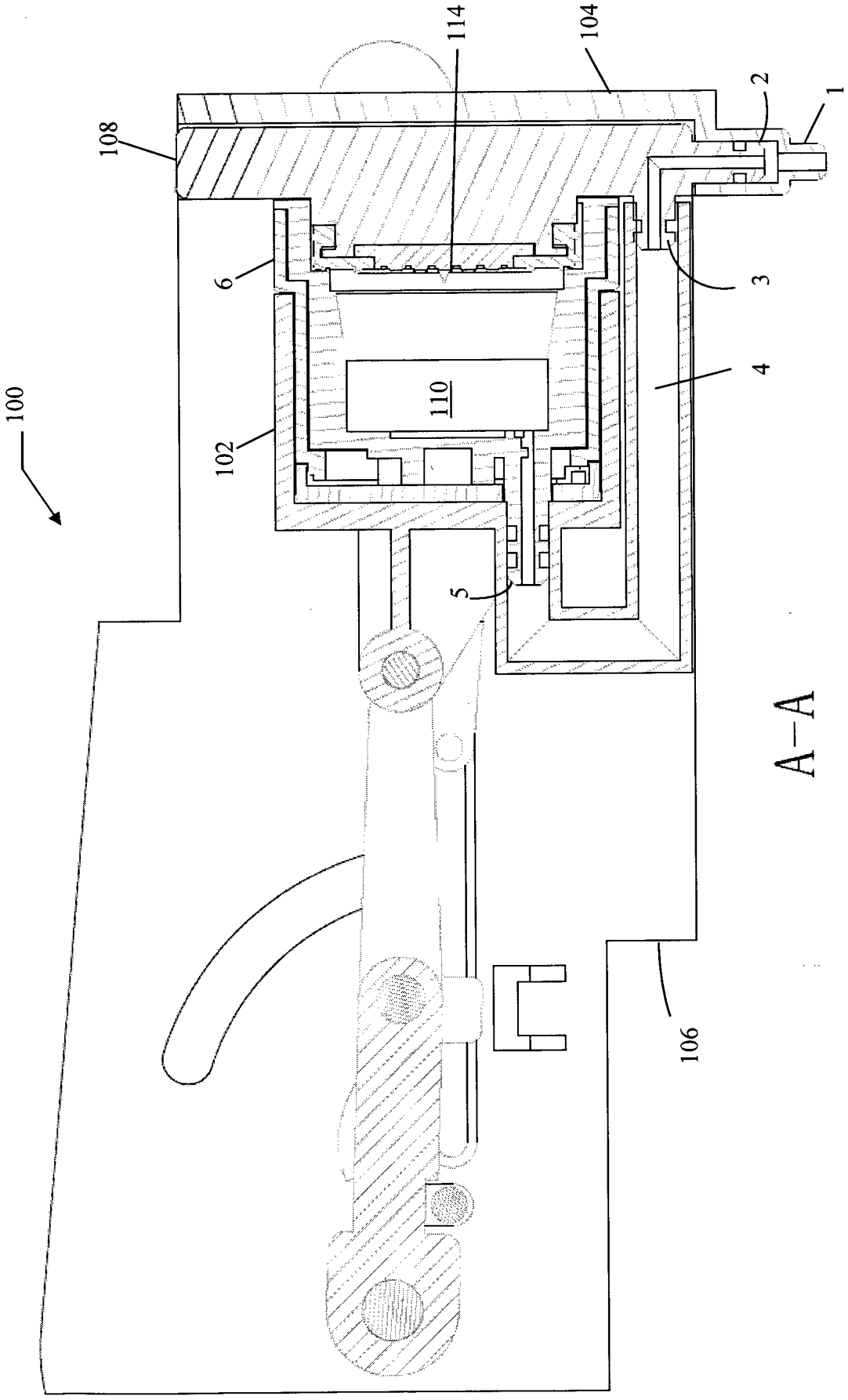

Figure 3

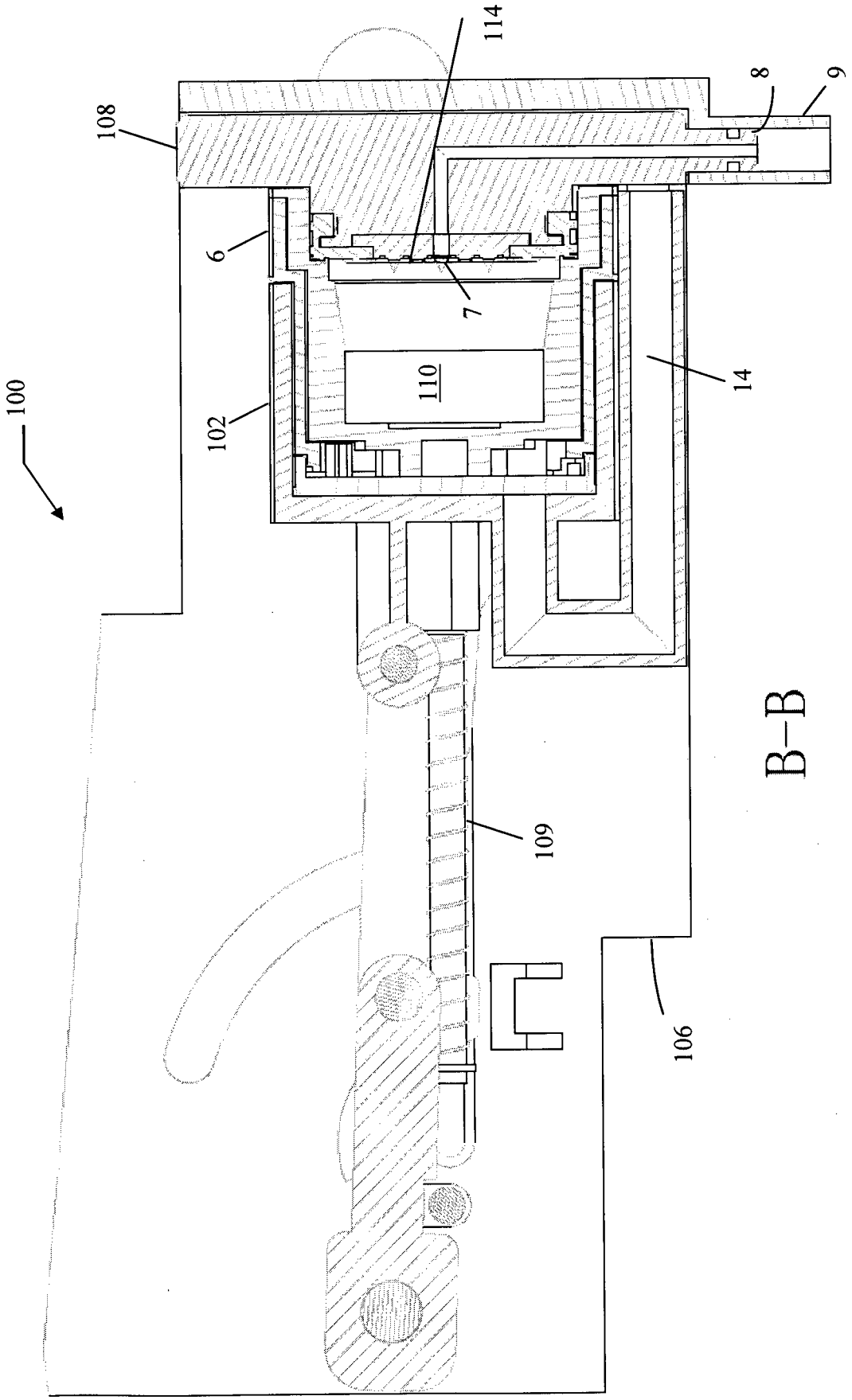

Figure 4

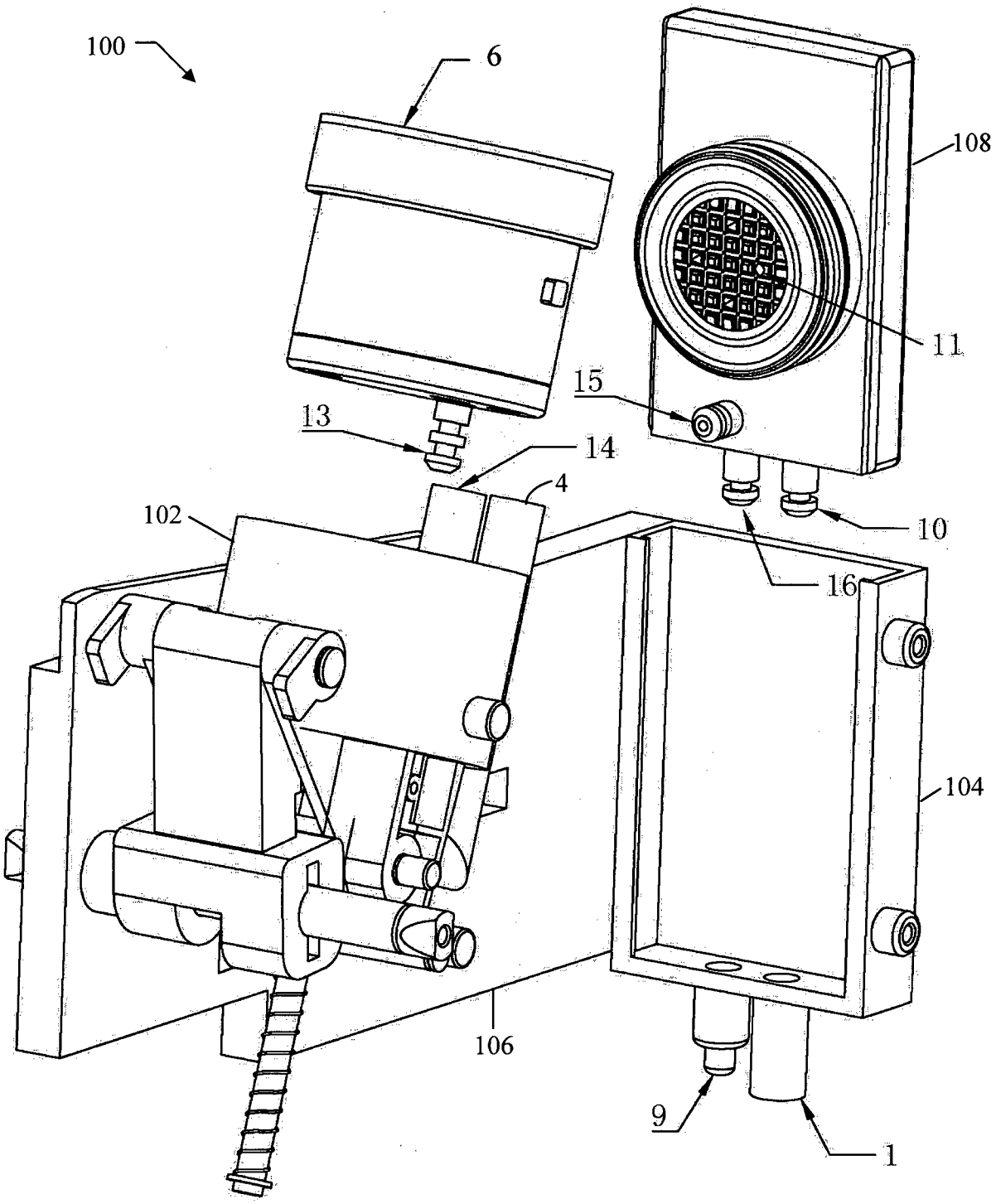

Figure 5

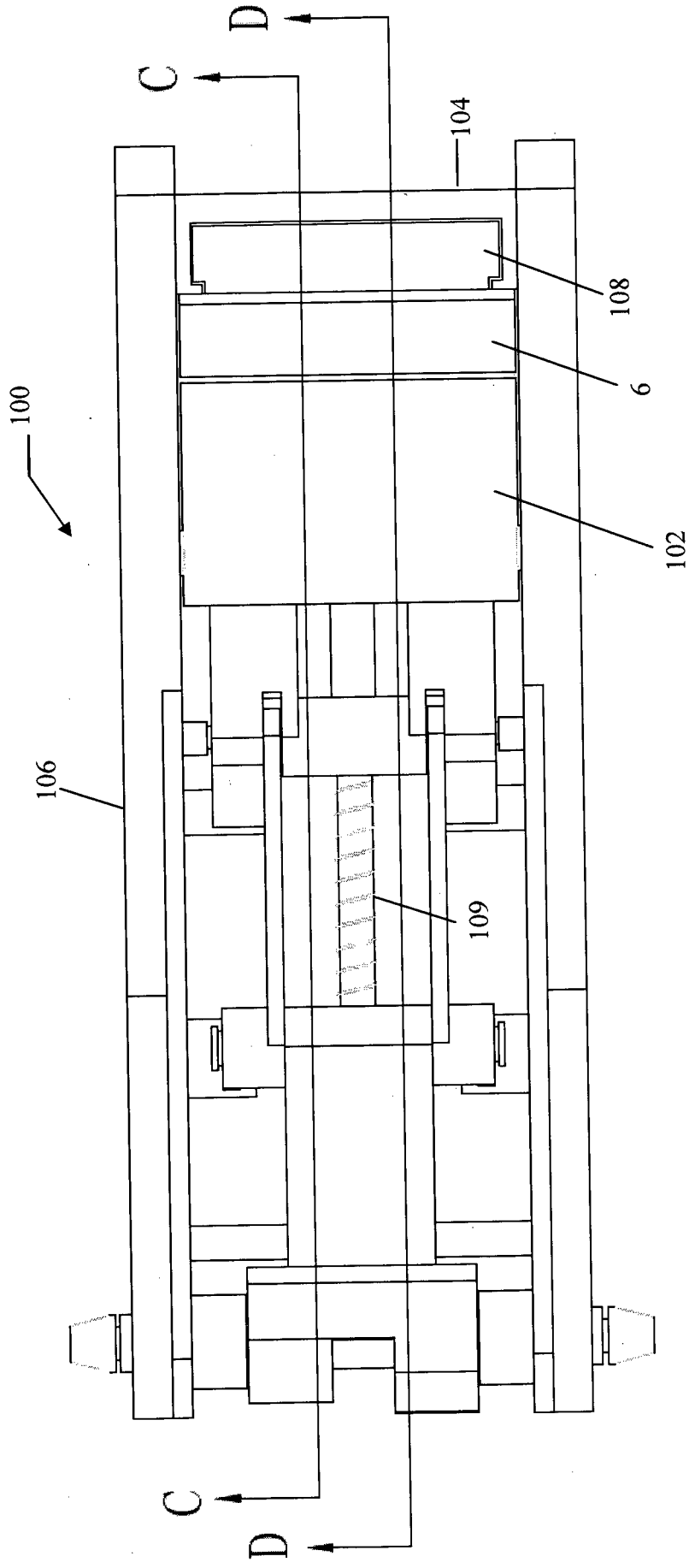

Figure 6

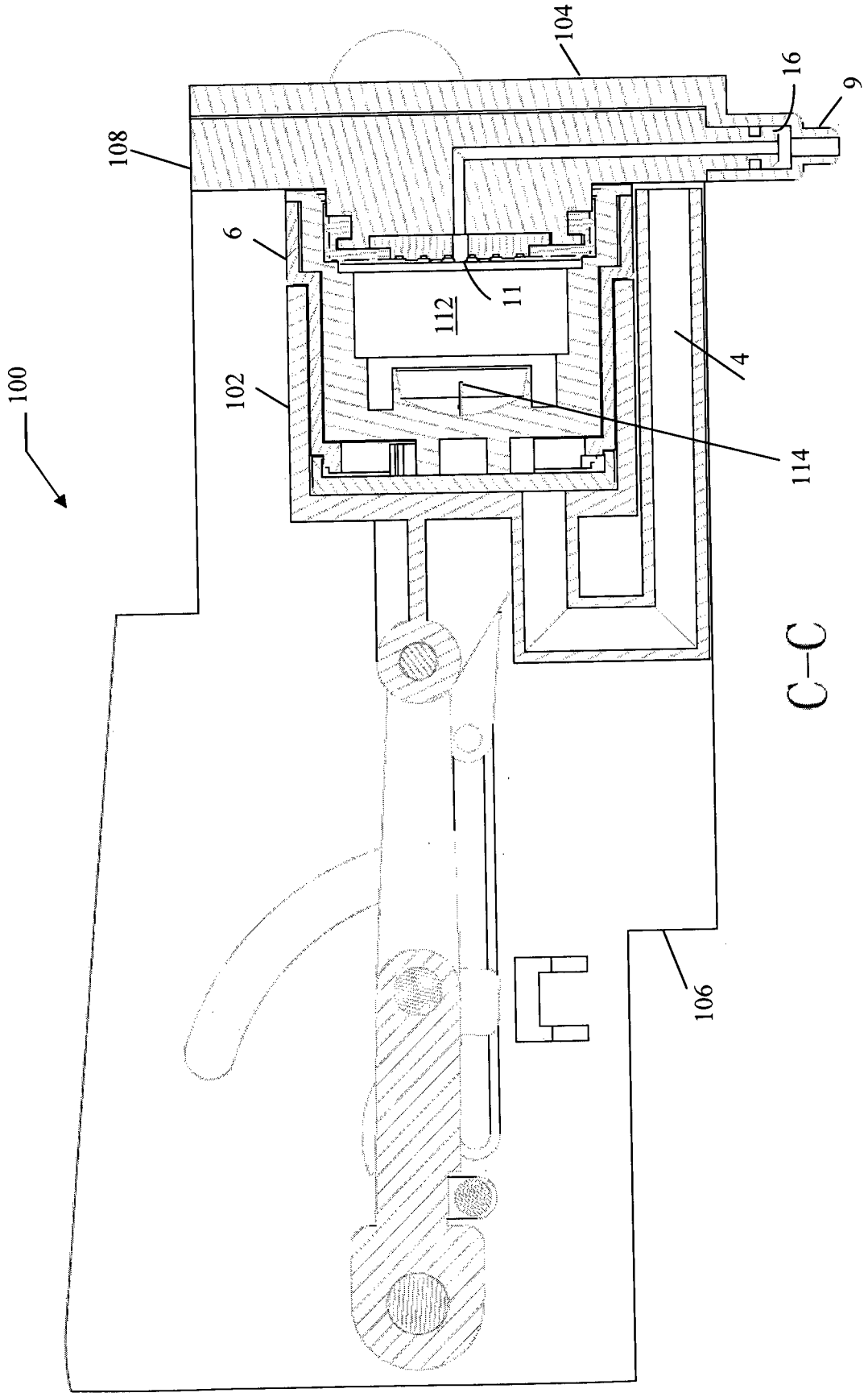

Figure 7

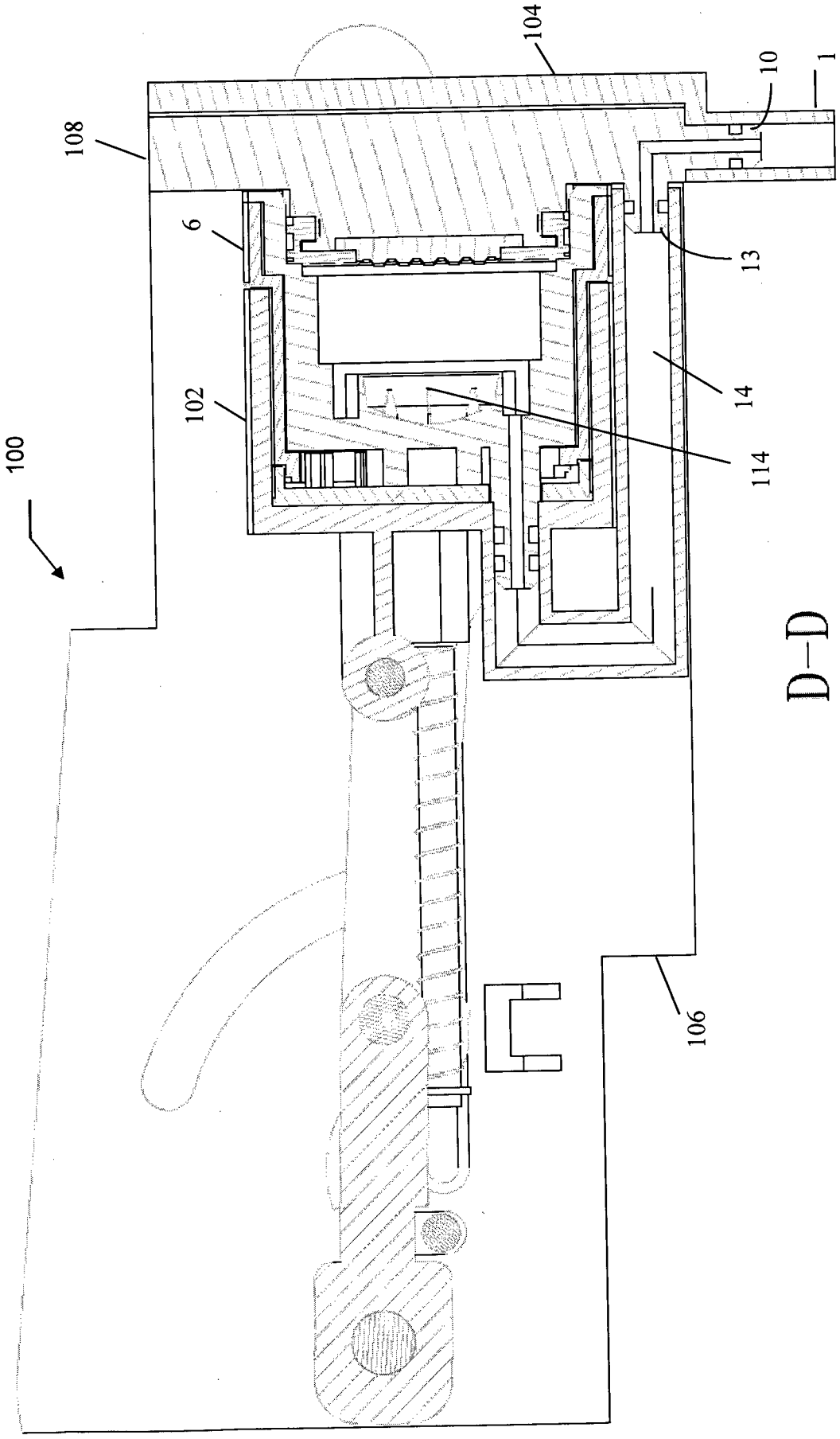

Figure 8

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2014/000090

A. CLASSIFICATION OF SUBJECT MATTER

A47J 31/18 (2006.01) A47J 31/44 (2006.01)

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)

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)

CLUSTER: TXTE; DATABASES: EPODOC, WPI; IPC: A47J31; CPC: A47J31/3623; UC: 99/295 & KEYWORDS: POD, HOLDER, MOUNT, PRESSURE, PLATE, BREW, HEAD, INTERCHANGE, DIFFERENT, ALTERNATE, FLOW, DIRECTION, PATH & SIMILAR TERMS.

ESPACENET: IPC: A47J31 & KEYWORDS: CAPSULE, INTERCHANGE, POD, CARTRIDGE & SIMILAR TERMS.

AUSPAT: APPLICANT NAME: AIRFLO; INVENTOR NAME: DELEO, was searched.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
	Documents are listed in the continuation of Box C	

[X] Further documents are listed in the continuation of Box C [X] See patent family annex

* Special categories of cited documents:

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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
26 June 2014	26 June 2014
Name and mailing address of the ISA/AU	**Authorised officer**
AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA Email address: pct@ipaustralia.gov.au	Conor O'Brien AUSTRALIAN PATENT OFFICE (ISO 9001 Quality Certified Service) Telephone No. 0262832901

INTERNATIONAL SEARCH REPORT		International application No.
C (Continuation).	DOCUMENTS CONSIDERED TO BE RELEVANT	**PCT/IB2014/000090**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 201346129 Y (NINGBO SHENGLAIDA ELECTRIC APPLIANCE CO., LTD) 18 November 2009 See whole document	
P,A	CN 202960132 U (JOSEPH DERIAUD et al.) 05 June 2013 See whole document	
P,A	CN 203016697 U (JOSEPH DERIAUD) 26 June 2013 See whole document	

INTERNATIONAL SEARCH REPORT Information on patent family members	International application No. **PCT/IB2014/000090**

This Annex lists known patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document/s Cited in Search Report		Patent Family Member/s	
Publication Number	**Publication Date**	**Publication Number**	**Publication Date**
CN 201346129 Y	18 November 2009	None	
CN 202960132 U	05 June 2013	None	
CN 203016697 U	26 June 2013	None	

End of Annex

Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.

(19)中华人民共和国国家知识产权局

(12)发明专利申请

(10)申请公布号 CN 105142469 A
(43)申请公布日 2015.12.09

(21)申请号 201480022955.5

(22)申请日 2014.01.31

(30)优先权数据
2013900592 2013.02.22 AU
61/770,059 2013.02.27 US

(85)PCT国际申请进入国家阶段日
2015.10.22

(86)PCT国际申请的申请数据
PCT/IB2014/000090 2014.01.31

(87)PCT国际申请的公布数据
WO2014/128542 EN 2014.08.28

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(51)Int.Cl.
A47J 31/18(2006.01)
A47J 31/44(2006.01)

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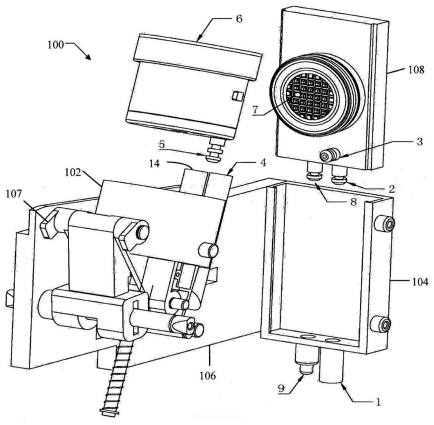
(54)发明名称

咖啡包适配器系统

(57)摘要

一种系统，包括：可相对于彼此往复移动的咖啡包保持器支座和压板支座以及可更换的多对包保持器和压板，分别可移动地收纳在包保持器支座和压板支座中并且与包保持器支座和压板支座流体连通，以限定单个咖啡包的提取室；其中每一对包保持器和压板被构造和布置成限定流体通道，该流体通道选择性地与包保持器支座和压板支座中的流体通道结合以提供替换流体通路，从而在提取室中沿两个相反的方向对单个咖啡包注入水和从中提取咖啡。



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1.一种系统,包括 :

包保持器支座和压板支座,包保持器支座和压板支座中的至少一个可相对另一个往复移动 ;和

可更换的多对包保持器和压板,分别可移动地收纳在包保持器支座和压板支座中并且与包保持器支座和压板支座流体连通,以限定单个咖啡包的提取室 ;

其中每对包保持器和压板构造和布置成限定流体通道,该流体通道选择性地与包保持器支座和压板支座中的流体通道结合以提供替换流体通路,从而在提取室中沿两个相反的方向对单个咖啡包注入水和从中提取咖啡。

2.根据权利要求 1 所述的系统,其特征在于,压板支座具有水入口和咖啡出口,且每个压板具有分别与压板支座的水入口和咖啡出口流体连通的水接头和咖啡接头。

3.根据权利要求 2 所述的系统,其特征在于,包保持器支座具有两条流体通道,且每个压板具有内部流体通道和流体接头,布置成允许流体沿一个方向流过包保持器支座中的一个流体通道,同时堵塞包保持器支座中的另一流体通道,从而阻止流体沿另一个方向流动,以便在压板支座的水入口和咖啡出口之间提供沿两个相反方向的替换流体通路。

4.根据权利要求 3 所述的系统,其特征在于,每个包保持器具有流体接头,所述流体接头布置成允许流体沿一个方向流过包保持器支座中的一个流体通道,同时堵塞包保持器支座中的另一个流体通道,从而阻止流体沿另一个方向流动,以便在压板支座的水入口和咖啡出口之间提供沿两个相反方向的替换流体通路。

5.根据前述权利要求中任一项所述的系统,其特征在于,每对包保持器和压板中的其一或二者构造和布置成在提取室中选择性地沿两个相反方向的其中一个方向刺穿单个咖啡包。

6.根据前述权利要求中任一项所述的系统,其特征在于,每对包保持器和压板以颜色编码,以可视地标示二者彼此以及与单个咖啡包的兼容性。

7.根据前述权利要求中任一项所述的系统,其特征在于,包保持器支座通过杠杆在用于装载和卸载单个咖啡包的开放位置和用于从单个咖啡包提取咖啡的闭合位置之间可相对压板支座往复移动。

8.根据前述权利要求中任一项所述的系统,其特征在于,所述系统进一步包括包推动器,所述包推动器布置成在系统从闭合位置返回到开放位置时从提取室中推出单个咖啡包。

9.根据前述权利要求中任一项所述的系统,其特征在于,单个咖啡包保持器具有与单个咖啡包外部形状相对应的内部形状。

10.根据前述权利要求中任一项所述的系统,其特征在于,包保持器支座和压板支座由包括在咖啡包机中或可操作地连接至咖啡包机的支架支撑。

11.根据权利要求2至10中任一项所述的系统,其特征在于,压板支座的水入口流体连通至咖啡包机的热水回路,且咖啡出口流体连通至咖啡包机的咖啡分配回路。

12.一种咖啡包机,所述咖啡包机包括根据前述权利要求中任一项所述的系统。

咖啡包适配器系统

技术领域

[0001] 本发明涉及一种用于咖啡包机的咖啡包适配器系统。

背景技术

[0002] 从预包装咖啡包（或胶囊）提取咖啡的咖啡包机变得越来越流行。咖啡包机供应商已研发出了它们自己的咖啡包专属型号，其具有与它们的特定咖啡包机相匹配的特有的形状、大小、刺穿方向以及水注入和咖啡提取方向。结果，来自一家供应商的咖啡包不能使用在其它供应商的咖啡包机上。

[0003] 故而存在一种需要：一种解决或缓解至少一些上述问题的解决方案。

发明内容

[0004] 根据本发明，这里提供了一个系统，其包括：

包保持器支座和压板支座，包保持器支座和压板支座中的至少一个可相对另一个往复移动；和

可更换的多对包保持器和压板分别可移动地收纳在包保持器支座和压板支座中并且与包保持器支座和压板支座流体连通，以限定单个咖啡包的提取室；

其中每一对包保持器和压板构造且布置成限定流体通道，该流体通道选择性地与包保持器支座和压板支座中的流体通道结合，以提供替换流体通路，从而在提取室中沿两个相反的方向对单个咖啡包注入水和从中提取咖啡。

[0005] 压板支座可具有水入口和咖啡出口，且每个压板可具有分别与压板支座的水入口和咖啡出口流体连通的水接头和咖啡接头。

[0006] 包保持器支座可具有两条流体通道，且每个压板可具有内部流体通道和流体接头，布置成允许流体沿一个方向流过包保持器支座中的一个流体通道，同时堵塞包保持器支座中的另一流体通道，从而阻止流体沿另一个方向流动，以便在压板支座的水入口和咖啡出口间提供沿两个相反方向的替换流体通路。

[0007] 每个包保持器可具有流体接头，流体接头布置成允许流体沿一个方向流过在保持器支座中的一个流体通道，同时堵塞包保持器支座中的另一个流体通道，从而阻止流体沿另一个方向流动，以便在压板支座的水入口和咖啡出口之间提供沿两个相反方向的替换流体通路。

[0008] 每对包保持器和压板中的其一或二者可构造和布置成在提取室中选择性地沿两个相反方向的一个方向刺穿单个咖啡包。

[0009] 每对包保持器和压板可以颜色编码，以可视地标示二者彼此以及与单个咖啡包的兼容性。

[0010] 包保持器支座可通过杠杆在用于装载和卸载单个咖啡包的开放位置和用于从单个咖啡包提取咖啡的闭合位置之间相对压板支座往复移动。

[0011] 本系统还可包括包推动器，包推动器布置成在系统从闭合位置返回到开放位置时

从提取室中推出单个咖啡包。

[0012] 单个包保持器可具有与单个咖啡包外部形状相对应的内部形状。

[0013] 包保持器支座和压板支座可由包括在咖啡包机中或可操作地连接至咖啡包机的支架支撑。

[0014] 压板支座的水入口可流体连通至咖啡包机的热水回路，且咖啡出口流体连通至咖啡包机的咖啡分配回路。

[0015] 本发明还提供了一种包含上述系统的咖啡包机。

附图说明

[0016] 现在将仅参照附图通过举例方式描述本发明的实施例，其中：

图 1 是根据本发明的一个实施例的处于开放位置且被构造为水和咖啡沿第一方向流动的咖啡包适配器系统的透视图；

图 2 是图 1 中的系统处于闭合位置的仰视图；

图 3 是图 2 中沿线 A-A 的系统的剖视图；

图 4 是图 2 沿线 B-B 的系统的剖视图；

图 5 是处于开放位置且被构造为水和咖啡沿与图 1 中的方向相反的第二方向流动的系统的透视图；

图 6 是图 5 中的系统处于闭合位置的仰视图；

图 7 是沿图 5 中的线 C-C 的系统的剖视图；以及

图 8 是沿图 5 中线 D-D 的系统的剖视图。

具体实施方式

[0017] 图 1 和图 5 示出了处于开放位置的根据本发明一个实施例的咖啡包适配器系统 100。系统 100 一般包括咖啡包保持器支座 102 和压板支座 104，咖啡包保持器支座和压板支座中的至少一个可相对另一个往复移动。包保持器支座 102 和压板支座 104 由支架（或支撑托架）106 支撑，支架 106 包括在咖啡包机中或可操作地连接至咖啡包机（未示出）。在示出的实施例中，包保持器支座 102 例如通过杠杆机构 107 在用于装载和卸载单个咖啡包的开放位置和用于从单个咖啡包提取咖啡的闭合位置之间可相对压板支座 104 往复移动（即，可前后移动）。参照图 2，包推动器 109 与杠杆机构 107 可操作地连接并布置成当包保持器支座 102 缩回，系统 100 返回开放位置时推出单个咖啡包。还可以使用用于支撑和使得包保持器支座 102 和压板支座 104 中的至少一个相对于另一个往复移动的其它等同装置。

[0018] 系统 100 还包括可更换的多对包保持器 6 和压板 108，分别可移动地收纳在包保持器支座 102 和压板支座 104 中并且与包保持器支座 102 和压板支座 104 流体连通，以限定单个咖啡包的提取室。每一对包保持器 6 和压板 108 构造和布置成限定流体通道，该流体通道选择性地与包保持器支座 102 和压板支座 104 中的流体通道结合，以提供替换流体通路，从而在提取室中沿两个相反的方向注入水和从单个咖啡包提取咖啡。

[0019] 另外，每对包保持器 6 和压板 108 构造和布置成在闭合位置时密封地装入具有不同的相应的形状、大小、刺穿方向和流体流向的单个咖啡包。每对包保持器 6 和压板 108 与

特定型号的相应的或补充的单个咖啡包的兼容性以可视方式标示，例如，通过颜色编码。单个包保持器 6 具有与单个咖啡包外部形状对应的内部形状。例如，图 3 和图 4 示出了包保持器 6，其具有外部圆柱形状和与单个咖啡包 110 具有的大体上地截头圆锥外部形状相对应的内部形状。图 7 和图 8 示出了不同的包保持器 6，其具有与单个咖啡包 112 具有的大体上地圆柱外部形状相对应的内部形状。

[0020] 此外，每对包保持器 6 和压板 108 构造和布置成在提取室中选择性地沿两个相反方向的其中一个方向刺穿单个咖啡包。例如，刺穿元件 114 选择性设置在每对包保持器 6 或压板 108 中的其一或二者之内或之上。图 3 和图 4 示出了设置在压板 108 之上的刺穿元件 114，而图 7 和图 8 则示出了设置在包保持器 6 内的刺穿元件 114。

[0021] 上述系统 100 的替换流体通路为以下所限定：设置在系统 100 的各构件之内或之上的流体通道、流体口和流体接头。压板支座 104 具有水入口 1 和咖啡出口 9，其分别流体连通至咖啡包机的热水回路和咖啡分配回路。向单个咖啡包注水和从中提取咖啡的方向选择性地由布置在单独一对包保持器 6 和压板 108 上的流体通道和流体接头决定。例如，包保持器支座 102 具有两条替换流体通道 4 和 14，且每对包保持器 6 和压板 108 构造和布置成选择性地允许流体沿一个方向流过包保持器支座 102 中的一个流体通道，同时堵塞包保持器支座 102 中的另一个流体通道，从而阻止流体沿另一个方向流动，以便在压板支座 104 的水入口 1 和咖啡出口 9 之间提供沿相反方向的替换流体通路。

[0022] 例如，图 1 至图 4 示出了系统 100，其构造成沿第一方向通过包保持器支座 102 中的一个替换流体通道 4 向提取室中的截头圆锥形咖啡包 110 注入水并从中提取咖啡。在此种构造中，压板 108 具有外部水接头 2 和外部咖啡接头 8，它们分别与压板支座 104 的水入口 1 和咖啡出口 9 流体连通。参照图 1，压板 108 具有外部流体接头 3，接头 3 与包保持器支座 102 中两条流体通道 4 和 14 中的一条通道流体连通。例如图 3 示出了外部流体接头 3 与包保持器支座 102 内的流体通道 4 流体连通。包保持器支座 102 的另一个流体通道 14 被压板 108 的本体封住或堵塞，如图 4 中所示。包保持器支座 102 的开放流体通道 4 与设置在包保持器 6 上的外部流体接头 5 流体连通。在闭合位置，包保持器 6 与压板支座 108 中的内部流体通道 7 流体连通。用于允许流体沿第一方向流动的流体通路通过设置在压板支座 108 上的外部流体接头 8 完成，外部流体接头 8 将内部流体通道 7 流体连通至咖啡出口 9。

[0023] 图 5 至图 8 示出了系统 100，其构造成沿与第一方向相反的第二方向通过包保持器支座 102 的替换流体通道 4 和 14 中的另一条通道向提取室中的圆柱形咖啡包 112 注入水并从中提取咖啡。在此种构造中，压板 108 具有外部水接头 10，水接头 10 与压板支座 104 的水入口 1 流体连通。压板 108 具有外部流体接头 15，流体接头 15 与包保持器支座 102 之内的流体通道 14 流体连通，如图 8 所示。包保持器支座 102 的另一流体通道 4 被压板 108 的本体封住或堵塞，如图 7 所示。包保持器支座 102 的开放流体通道 14 与设置在包保持器 6 上的外部流体接头 13 流体连通。在闭合位置，包保持器 6 与压板支座 108 内的内部流体通道 11 流体连通。用于允许流体沿第一方向流动的流体通路通过设置在压板支座 108 上的外部流体接头 16 实现，外部流体接头 16 将内部流体通道 11 流体连通至咖啡出口 9。

[0024] 本发明的实施例提供咖啡包适配器系统，所述系统使得不同型号的咖啡包能够用于一个单独的咖啡包机中。该使用原因由三个功能方面决定。第一，在主注入机制下，包保

持器是可更换的，即能将不同形状的包装进包保持器。第二，前压板是可更换的，包被推向所述前压板以提取咖啡。第三，水的方向由包保持器和压板（或墙）内的槽道决定，使得咖啡包适配器系统能够控制水的向前或则向后的方向，从而提供双向水注入的能力。

[0025] 在某些实施例中，包保持器 6 为圆柱形部件，所述部件被装入包保持器支座（或注入托架）102 以向着压板 108 向前携带咖啡包 110。包保持器 6 装入包保持器支座 102 中且扭转锁定就位。随着包保持器 6 与咖啡包保持器支座 102 托架连接并锁定，包保持器 6 与入水通路对齐并允许水从中通过到达包保持器 6 保持的咖啡包 110。咖啡包 110 被定位于包保持器 6 时被刺穿以允许水通过，且分配包推动器 109 在缩回以推出使用的咖啡包 110 时使得其通过。包保持器 6 可以任何和全部形状制造并且大小尺寸设置成适配任何型号或品牌的市售咖啡包 110。可更换的压板 108 在与包保持器支座 102 相反的一端被插入咖啡机注入系统 100 的前部。压板 108 可更换为多种不同的大小以从大小上适配匹配的包保持器 6。压板 108 被插入与包保持器 6 匹配的位置，且注入系统 100 在处于注入闭合位置且将包保持器和压板闭合在一起时形成咖啡包 110 的密封室，使其能够被注入热水，以形成咖啡。

[0026] 双向水系统 100 允许水选择性地从前方或后方注入咖啡包 110。咖啡包 110 被以不同方向注入。存在沿两种相反方向用于向前流动和逆向流动的两个水槽道。向前注入时，包保持器 6 迫使水从前水槽道至相应的压板 108。水流方向通过相应水槽道永久设置为沿一个方向并通过压板 108 向前沿同一方向被收纳。反之亦然，即水被迫通过用于逆向水流方向的后槽道至相应的压板 108，改变水流方向使得水能够从后方注入。

[0027] 咖啡包 110 从前方或后方被注入；将它们以不同于它们的设计水流方向注入会导致注入失败。双向注入能够确保多包设计将依照它们的设计正确注入咖啡包 110。咖啡包 110 在插入包保持器 6 时被刺穿，每个版本具有其自身的刺穿方式，每个包保持器 6 插入的方式构成匹配的刺穿顺序。包保持器 6 插入包保持器支座 102 并锁定就位；然后，这将触发适合待注入的咖啡包 110 的水流方向。致动杠杆手柄 107 当处于闭合位置时将向前滑动包保持器 6 至压板 108 并锁定就位。被锁定时，咖啡包 110 准备好注入热水。然后水被注入咖啡包 110，对咖啡进行侵泡并在压力下迫使咖啡通过压板。液体咖啡然后行进至咖啡分配器，所述咖啡分配器然后将咖啡分配到杯中。用包保持器支座 102 的手柄 107 解除锁定位置，将使得包保持器 6 滑动返回至开始位置；这还将用推动杆 109 推出用完的咖啡包 110，推动杆 109 在咖啡包保持器 6 的中心通过，将用完的咖啡包 110 推出至已使用的咖啡包篮，以备丢弃。

[0028] 当更换为不同的品牌 / 形状的咖啡包 110 时，一起选择正确匹配的包保持器 6 与正确匹配的压板 108，且两部件被插入咖啡包机中，为该特定咖啡包 110 的注入做好准备。这将自动地选择用于注入的正确水槽道的方向，且咖啡机构造成用于该所选咖啡包 110 的正确注入。来自热水器的水通过管道连接至包保持器支座 102 和插入的包保持器 6，而两个水槽道连接至前方插入或后方插入的包保持器 6 以选择水流方向，水流方向对成功注入至关重要。压板 108 与包保持器 6 匹配；每个压板 108 在它的周围密封点处均有垫片，垫片根据咖啡包周长和咖啡包刺穿方式而在尺寸上有所不同。每个压板 108 均是颜色编码的（或以数字、字母、图案或颜色可视化地标示）以匹配每个包保持器 6，从而二者被选择而成匹配的互补的一对，例如红色包保持器 6 与红色压板 108 匹配。期望二者在它们将具有匹配的水槽道时能够对应，水槽道确定水流方向。例如，黄色对应的包保持器 6 和压板 108 将具

有其匹配的水槽道,所述水槽道用于水的逆向流动。

[0029] 仅以举例的方式对上述实施例进行了描述,且下面权利要求范围内的修改是可能的。

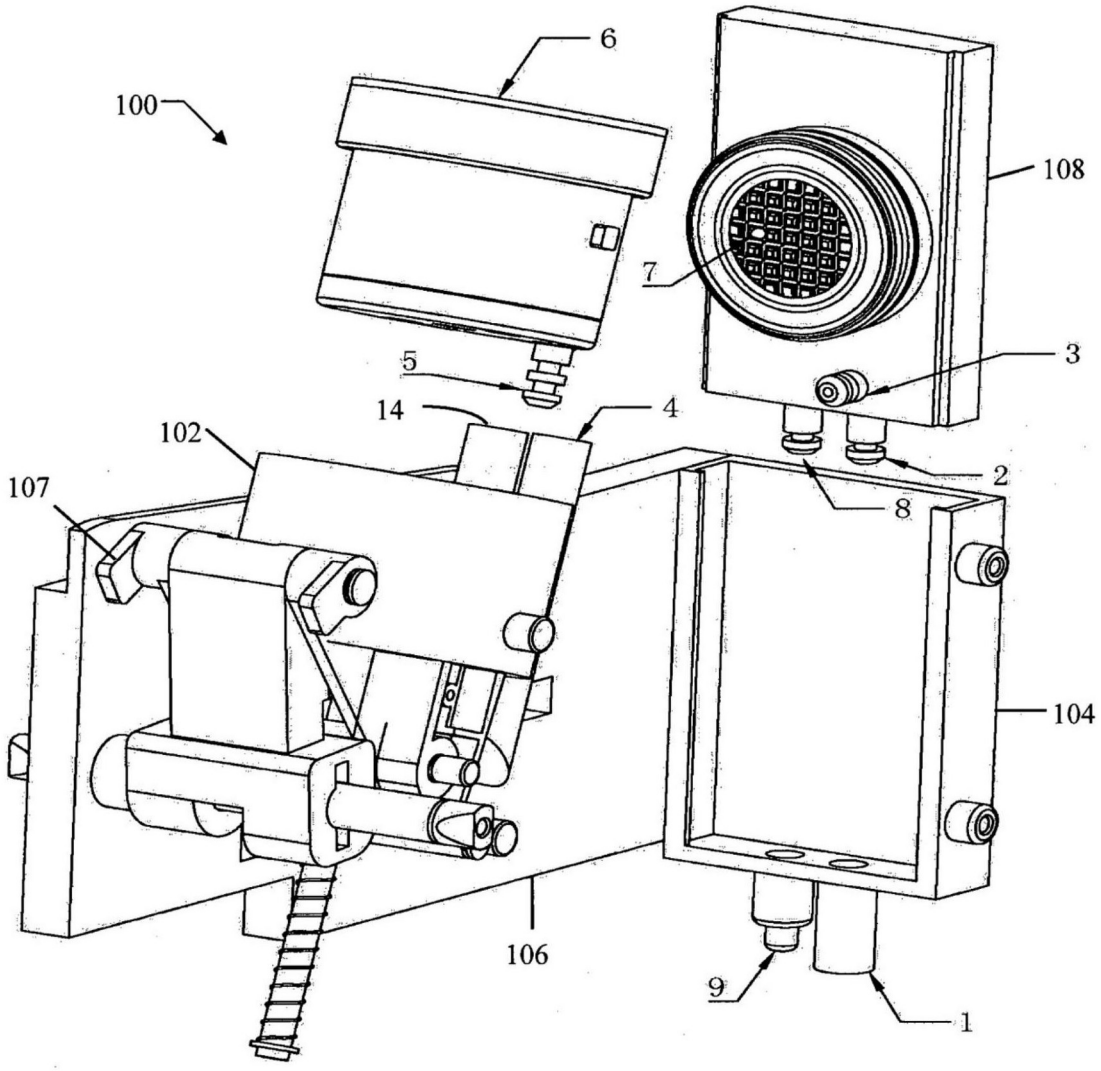

图 1

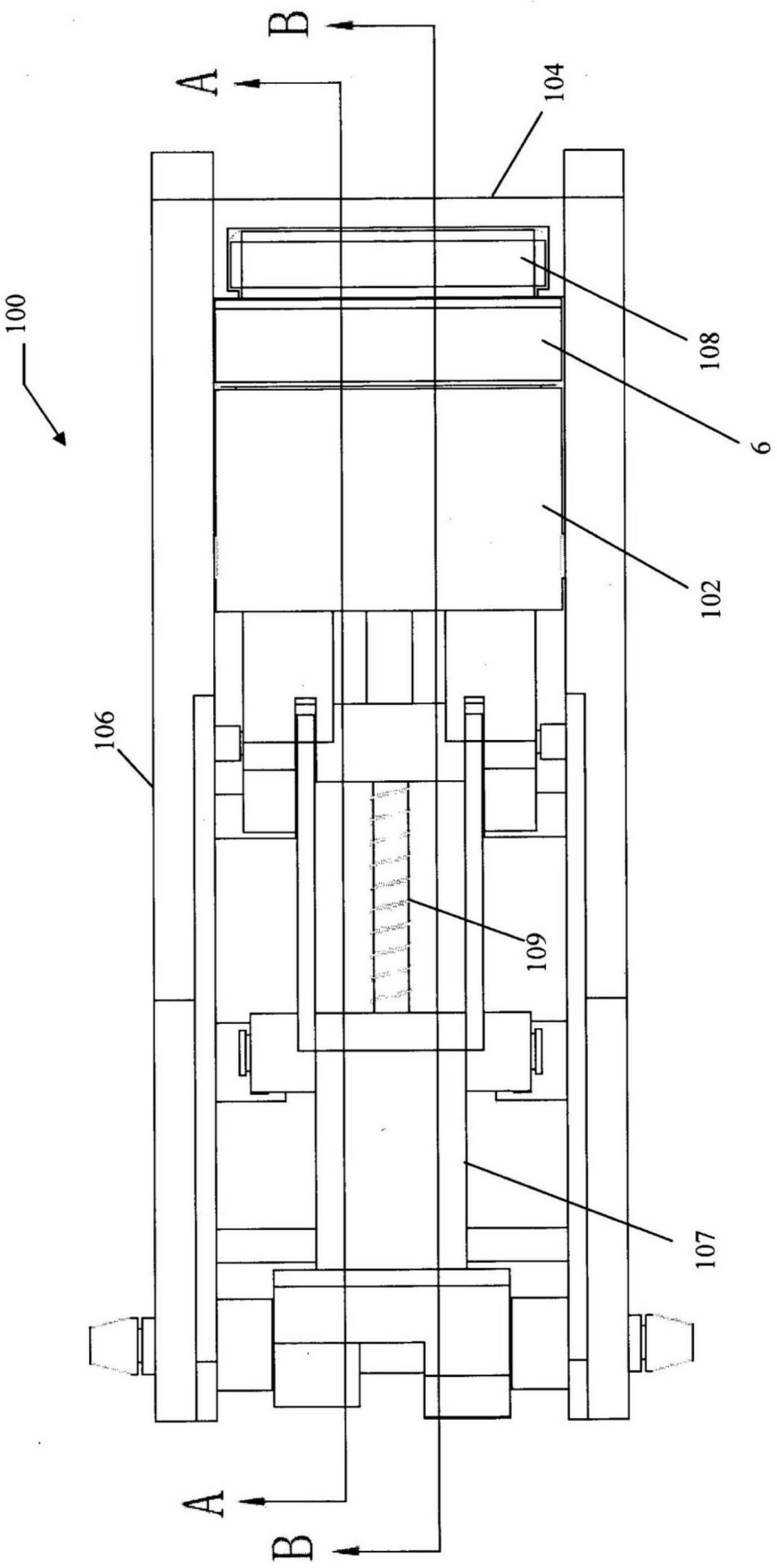

图 2

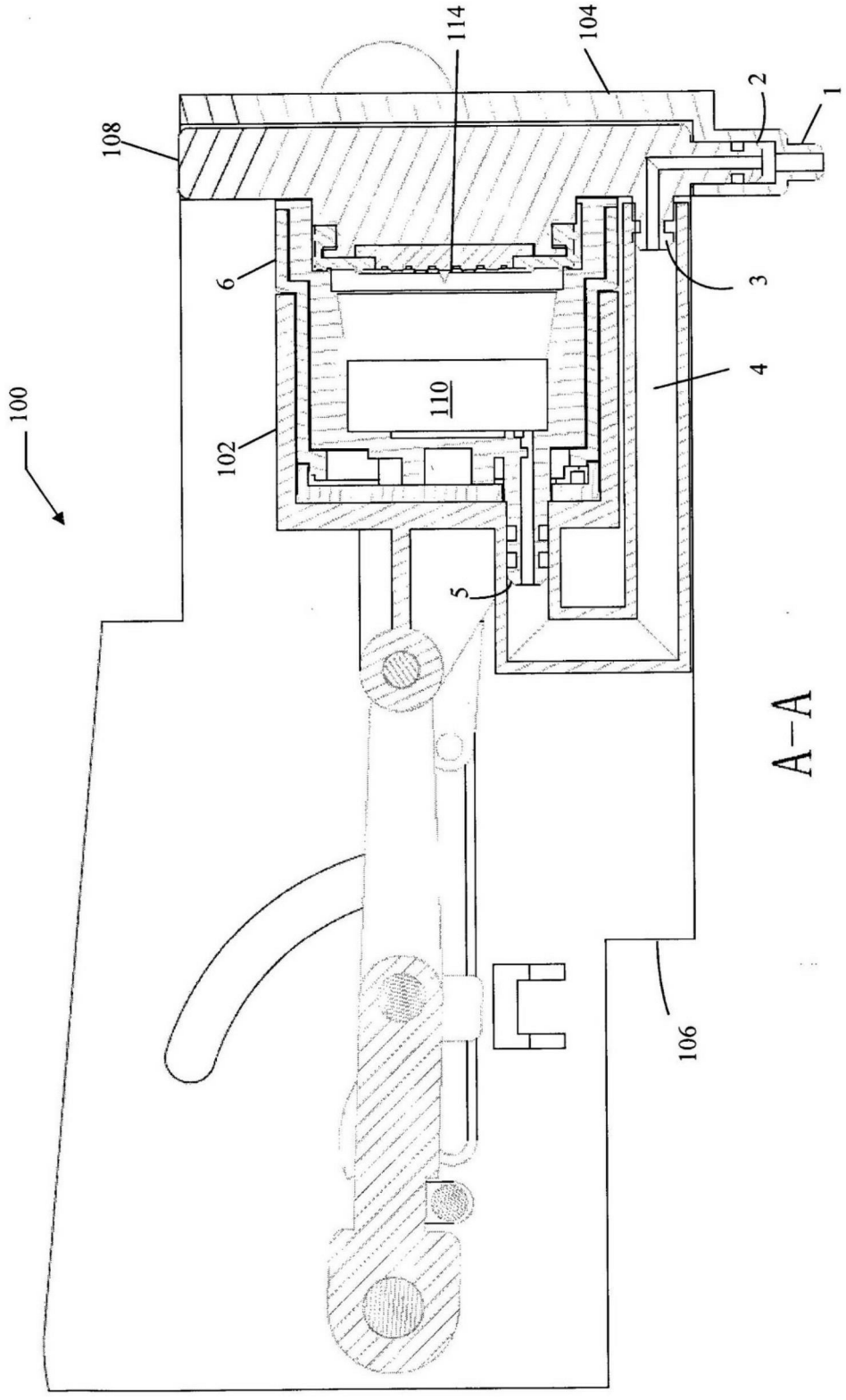

图 3

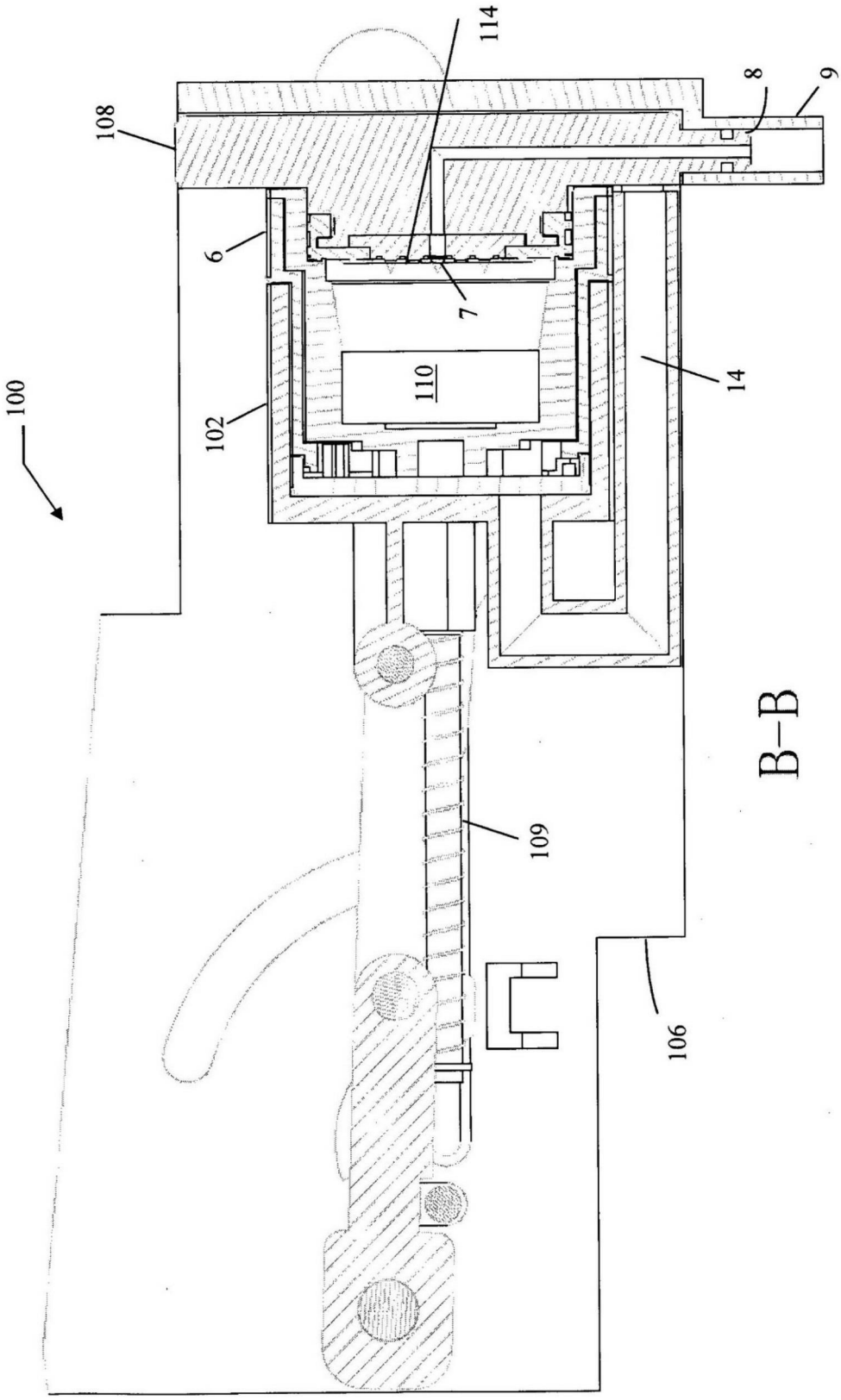

图 4

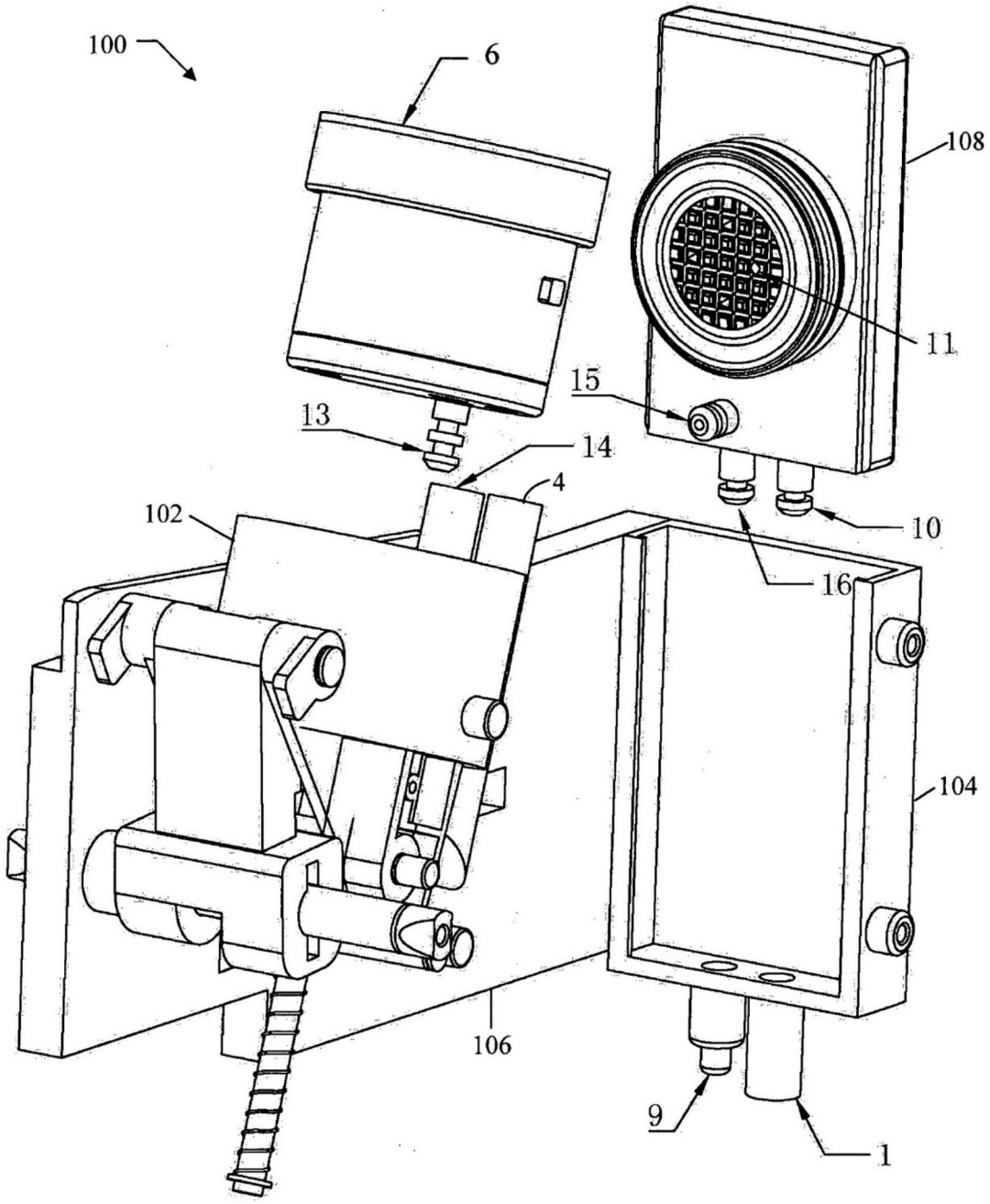

图 5

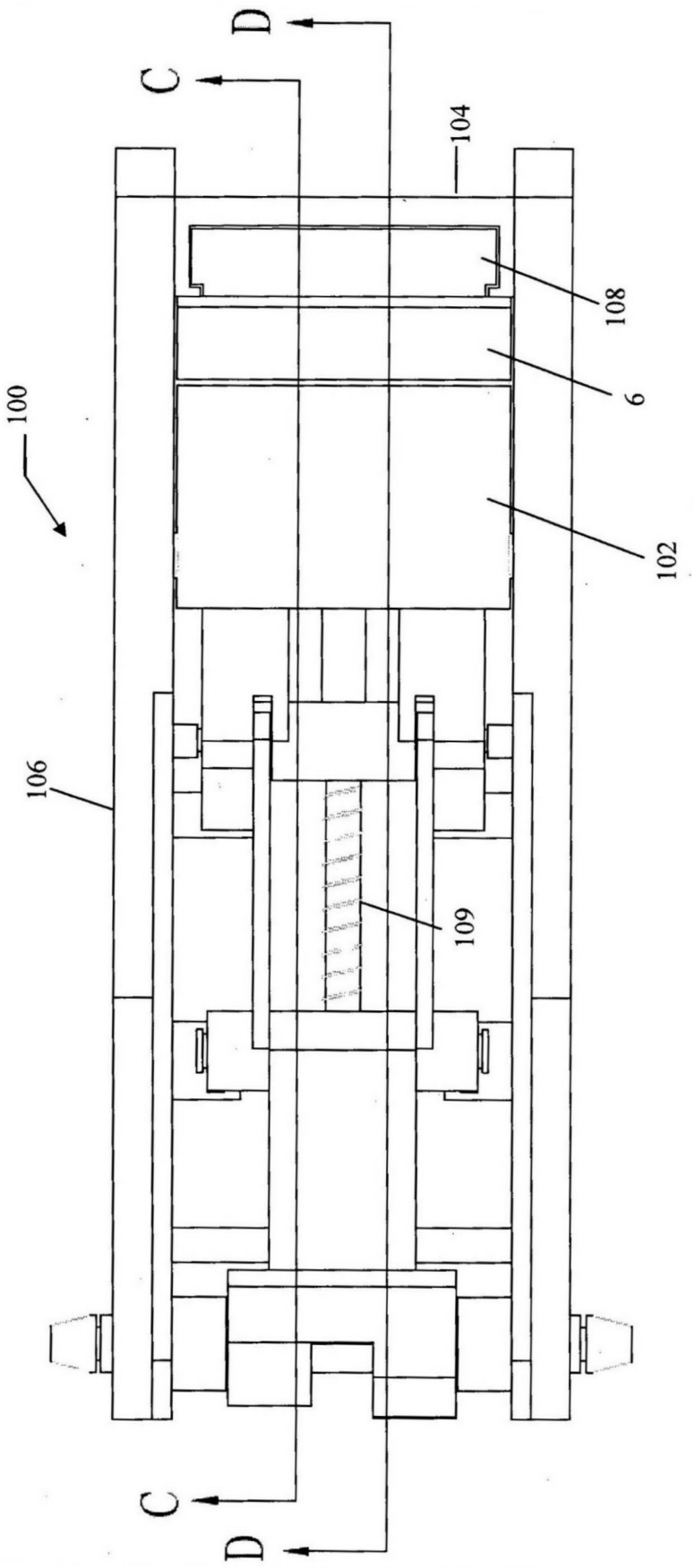

图 6

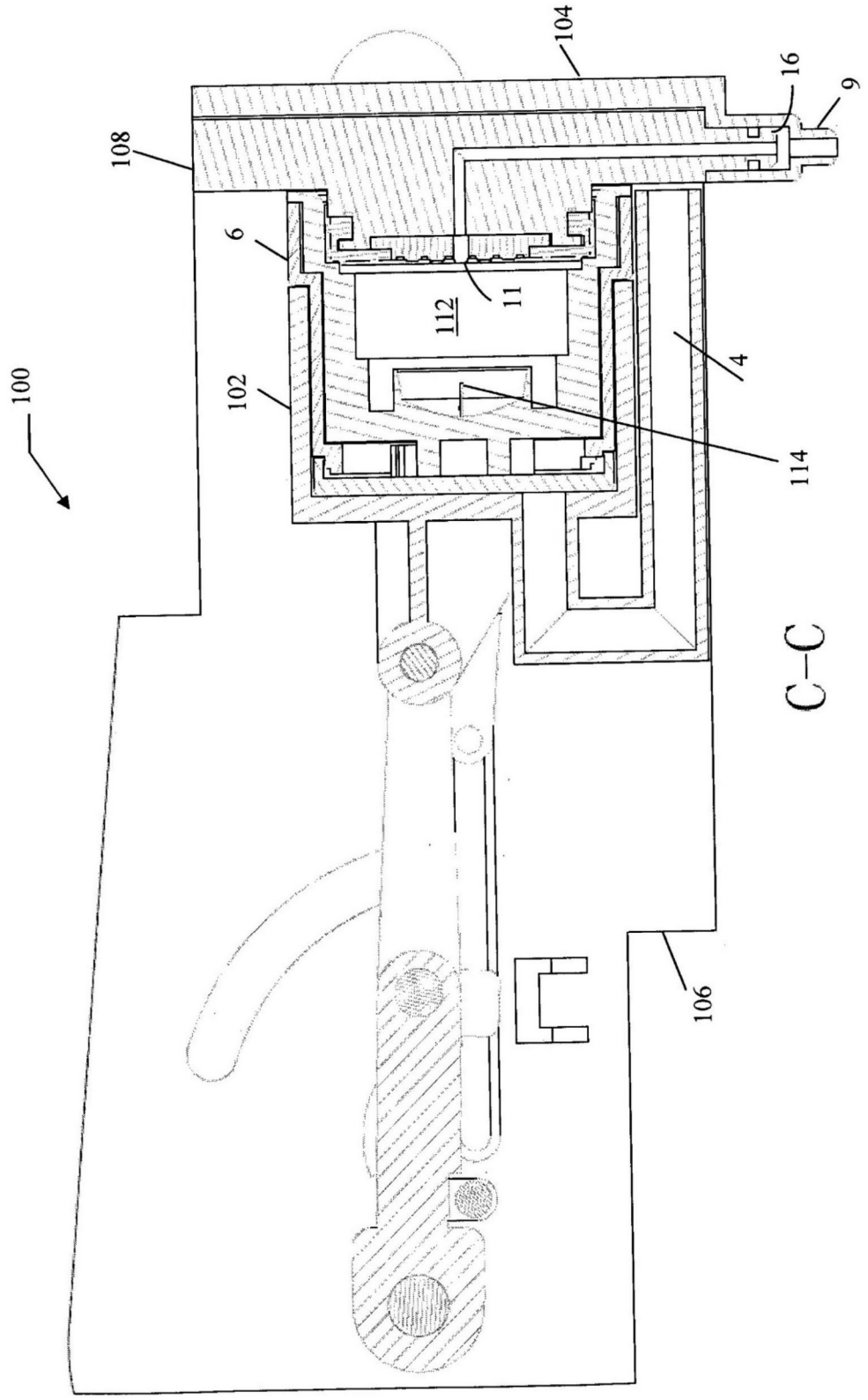

图 7

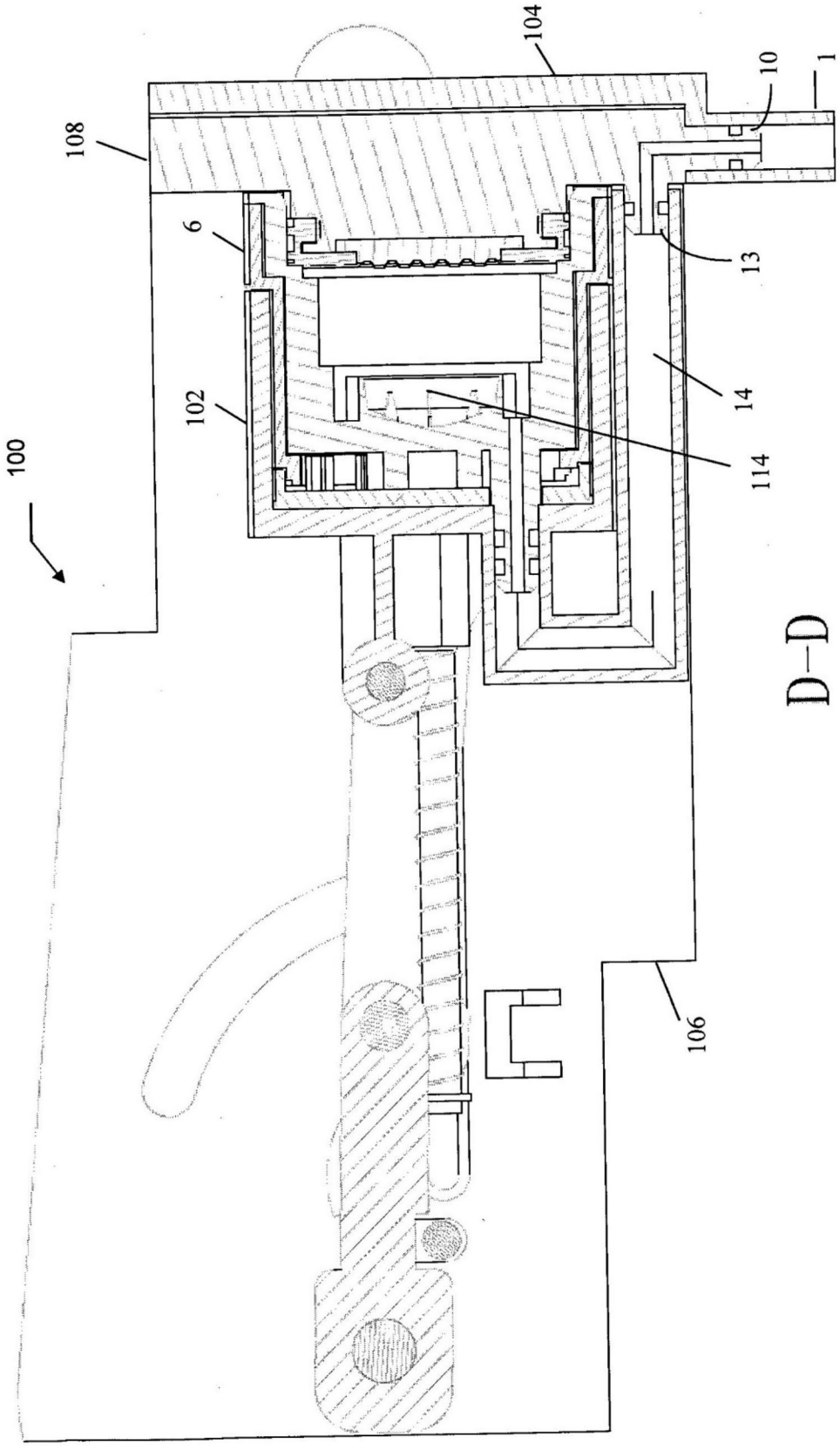

图 8