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(71) Applicant *(for all designated States except US)*: **ARCELIK ANONIM SIRKETI** [TR/TR]; E5 Ankara Asfalti Uzeri, Tuzla, 34950 Istanbul (TR).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: **KODAZ, Tugrul** [TR/TR]; E5 Ankara Asfalti Uzeri, Tuzla, 34950 Istanbul (TR).

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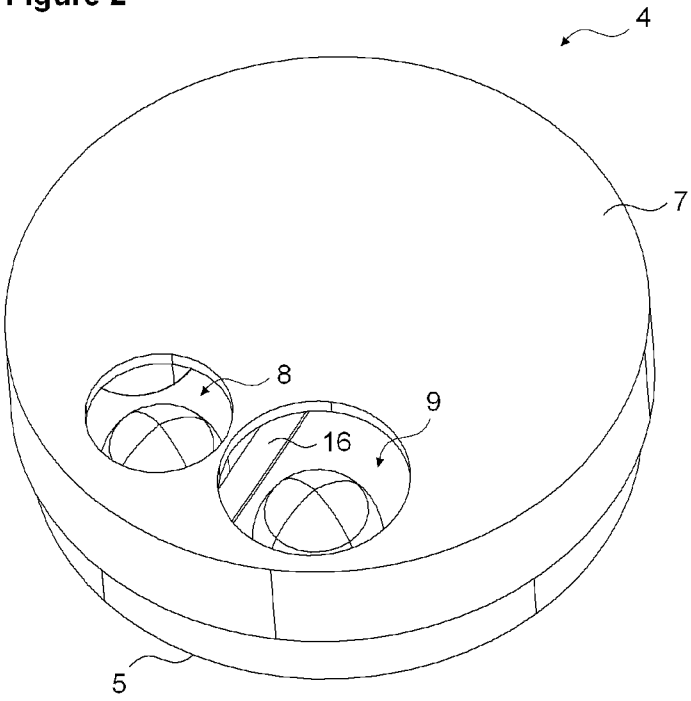
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(54) Title: A REFRIGERATOR COMPRISING AN EGG TRAY

Figure 2



(57) Abstract: The refrigerator (1) of the present invention comprises a body (2) wherein items to be cooled are placed, a door (3) which allows access into the body (2) and a closed egg tray (4) which is placed into the body (2). The egg tray (4) enables the eggs to be taken in the order they are placed. The egg tray (4) comprises a circular lower lid (5) that has more than one pocket (6), a circular upper lid (7) with a loading hole (8) and a delivery hole (9). The upper lid (7) rotates in a single direction.

Description

A REFRIGERATOR COMPRISING AN EGG TRAY

[0001] The present invention relates to a refrigerator comprising an egg tray wherein eggs are stored.

[0002] In conventional refrigerators, generally similar type of egg trays is used for storing eggs. These egg trays enable 4, 6, 8 or more eggs to be stored. The user places the eggs he/she bought into the pockets in the egg tray and in case of need, consumes them by taking them out of the egg tray.

[0003] The eggs are taken from the egg tray at random and new eggs are placed into the emptied egg pockets again at random. Therefore, the risk is present that some eggs stay in the egg tray for a long time. This type of egg trays, which enable eggs to be loaded and unloaded at random, cause some eggs to spoil. Preventing this situation is possible by providing the eggs to be consumed in the order that they are placed into the egg tray.

[0004] In the state of the art Japanese Patent Applications No JP2003240425 and JP2000241067, refrigerators, comprising a mobile egg case which provides the egg that is placed first to be taken by a movement mechanism, are explained.

[0005] In the state of the art Japanese Patent Applications No JP2000088446 and JP9152262, refrigerators, comprising an egg tray which provides eggs to be taken according to prioritization by being operated by a system with a wheel-like belt mechanism, are explained.

[0006] The aim of the present invention is the realization of a refrigerator having an egg tray which enables the eggs to be taken in the order they are placed.

[0007] The refrigerator realized in order to attain the aim of the present invention, explicated in the first claim and the respective claims thereof, comprises an egg tray having two circular lids, on the fixed one of which eggs are loaded, and the other one of which can rotate 360 degrees in a single direction in accordance with the fixed lid, and on the rotating circular lid, a loading hole which enables the eggs to be loaded one by one and a delivery hole which only enables the eggs to be taken out.

[0008] Thus, eggs are provided to be stored in an almost completely closed

volume, and at the same time, the egg, which is loaded first, is provided to be taken first.

[0009] While the loading hole has a width that only one egg is allowed to pass therethrough, the delivery hole has a width that the user is allowed to take the egg out of the egg tray by holding the egg by means of his/her fingers. The delivery hole is in front of the loading hole with respect to the direction of rotation.

[0010] The refrigerator comprises a stopper in order to prevent eggs from being loaded to the egg tray through the delivery hole. The stopper is connected to the upper lid and extends towards the delivery hole such that it will cover the delivery hole. Thus, the user cannot perform loading through the closed delivery hole and therefore, he/she is obliged to use the loading hole to perform loading.

[0011] The refrigerator comprises a rotating means which provides the upper lid to be rotated in one direction in accordance with the lower lid. In an embodiment of the present invention, the rotating means comprises two telescopic and concentric shafts, one of which extends towards the lower lid from the upper lid and the other one of which extends towards the upper lid from the lower lid. The upper lid can rotate 360 degrees around the rotational axis which is formed as a result of these two shafts joining together.

[0012] The refrigerator, furthermore, comprises a lock means which provides the upper lid to rotate only in one direction and not to rotate in the other direction.

[0013] In an embodiment of the present invention, the lock means is shaped as recesses and protrusions which are formed on the shaft walls contacting each other. While these shapes allow the upper lid to rotate in one direction, they prevent the rotation in the opposite direction by bearing against each other when the upper lid is rotated in the opposite direction.

[0014] In another embodiment of the present invention, the lock means comprises detent shaped protrusions that extend on the first shaft at certain intervals and a recess that surrounds the second shaft, and that has a contact surface whereon the protrusions move, and a resistance surface, against

which the protrusion bears in the opposite direction and thus, which prevents the upper lid from rotating in the opposite direction.

[0015] By means of the present invention, in a closed volume, the egg that is placed first is enabled to be taken first.

[0016] A refrigerator realized in order to attain the aim of the present invention is illustrated in the attached figures, where:

[0017] Figure 1 – is the perspective view of a refrigerator.

[0018] Figure 2 – is the perspective view of an egg tray when it is full.

[0019] Figure 3 – is the perspective view of the egg tray when one of its pockets is empty.

[0020] Figure 4 – is the top view of the egg tray.

[0021] Figure 5 – is the sideways view of the egg tray.

[0022] Figure 6 – is the perspective view of a lock means.

[0023] The elements illustrated in the figures are numbered as follows:

1. Refrigerator
2. Body
3. Door
4. Egg tray
5. Lower lid
6. Pocket
7. Upper lid
8. Loading hole
9. Delivery hole
10. Rotating means
11. First shaft
12. Second shaft
13. Lock means
14. Protrusion
15. Recess
16. Stopper
17. Handle

[0024] The refrigerator (1) of the present invention comprises a body (2) wherein items to be cooled are placed, a door (3) which allows access into the

body (2) and an egg tray (4) which is placed into the body (2) (Figure 1).

[0025] The egg tray (4) comprises a circular lower lid (5) which has more than one pocket (6) arranged in the radial direction at certain intervals, and a circular upper lid (7) which covers the lower lid (5) and the pockets (6) by being concentrically mounted to the lower lid (5) and which rotates in a single direction around the axis wherefrom it is mounted to the lower lid (5) and which has a loading hole (8) in alignment with one of the pockets (6) and having a width that an egg can pass therethrough, and a delivery hole (9) in alignment with one of the other pockets (6) (Figure 2 and Figure 3).

[0026] Thus, eggs are provided to be stored in an almost completely closed volume, and at the same time, the egg, which is loaded first, is provided to be taken first.

[0027] The loading hole (8) has a width that only one egg can pass therethrough and the egg tray (4) is used by the user in order that eggs can be loaded one by one. Removing the egg from of the egg tray (4) by using the loading hole (8) is not possible.

[0028] The loading hole (8) and the delivery hole (9) are radially aligned and when the upper lid (7) is immobile, each of them is vertically aligned with a pocket (6) situated on the lower lid (5). The distance between the loading hole (8) and the delivery hole (9) is determined such that to one of the preferably two adjacent pockets (6) the loading hole (8) will correspond and to the other the delivery hole (9) will correspond. The delivery hole (9) is located in front of the loading hole (8) with respect to the direction of rotation (Figure 4).

[0029] The refrigerator (1) comprises a rotating means (10) which concentrically joins the lower lid (5) and the upper lid (7) from their centers and thus, forms the rotational axis of the upper lid (7). The rotating means (10) has a hollow first shaft (11) which is fixed to the center of the upper lid (7) and extends towards the lower lid (5), and which moves together with the upper lid (7), and a second shaft (12) which is fixed to the center of the lower lid (5) and extends towards the upper lid (7), and which enters into the first shaft (11). The upper lid (7) is mounted to the lower lid (5) such that the first shaft (11) will wrap around the second shaft (12) and the axes

of the shafts will overlap. The first shaft (11) and the second shaft (12) form the rotational axis of the upper lid (7) and therefore, the upper lid (7) can rotate 360 degrees around the rotational axis formed by the shafts (Figure 5).

[0030] The refrigerator (1), furthermore, comprises a lock means (13) which contacts the rotating means (10) and thus, which provides the upper lid (7) to rotate only in one direction and prevents it from rotating in the other direction. Thus, the eggs (4) being loaded to the egg tray (4) are provided to be loaded in a certain order and the egg, which is loaded first, is provided to be taken first from among the loaded eggs.

[0031] The refrigerator (1) comprises a stopper (16) which rotates together with the upper lid (7) by being mounted onto the first shaft (11), and which partially or completely closes the delivery hole (9) by extending to the delivery hole (9) when no egg is situated in the pocket (6) that corresponds to the delivery hole (9). Thus, loading eggs through the delivery hole (9) is prevented. Furthermore, the stopper (16) prevents the upper lid (7) from rotating by bearing against the egg, which is loaded to the egg tray (4) first, during the rotation of the upper lid (7). Thus, loading is enabled only through the loading hole (8) by the rotation of the upper lid (7) until the stopper (16) bears against the egg that is loaded to the egg tray (4) first, and when the stopper (16) bears against the egg that is loaded first, another egg is prevented from being taken out of the egg tray (4) before the first egg is removed from the egg tray (4) since no empty pocket (6) is left for loading.

[0032] In this embodiment of the present invention, the refrigerator (1) comprises a spring which is mounted to the stopper (16) and has the flexibility that it will provide the stopper (16) to be removed from the front part of the delivery hole (9) when the stopper (16) contacts the egg. When the stopper (16) bears against the egg, the stopper (16) bends in the opposite direction of the direction of rotation by the rotation of the upper lid (7) and since the stopper (16) bears against the egg as soon as being removed from the front part of the delivery hole (9), the stopper (16) stops itself and also the upper lid (7). The egg, corresponding to the delivery hole (9) in

this situation, can be taken out of the egg tray (4) through the delivery hole (9). When the egg is taken out through the delivery hole (9), the spring, which is stretched by the stopper (16) bearing against the egg, and hence the stopper (16) return to their initial position and the delivery hole (9) is again closed by the stopper (16) such that the user will be prevented from loading therein.

[0033] The refrigerator (1) comprises a handle (17) which is on the upper lid (7) and which enables the user to rotate the upper lid (7) by holding the handle (17). On the upper lid (7) surface, the handle (17) forms a protrusion which can be held by the user. Thus, by means of the handle (17) serving as an effort arm, the upper lid (7) can be rotated around the rotational axis.

[0034] When the user desires to perform loading, he/she is obliged to insert an egg into the egg tray (4) through the loading hole (8) since the delivery hole (9) is closed by the stopper (16). The egg, passing through the loading hole (8), is seated in the pocket (6) which is located right under the loading hole (8). When another egg is desired to be loaded, the upper lid (7) is rotated by means of the handle (17) and when the loading hole (8) corresponds to the next or to one of the other pockets (6) located in the direction of rotation, the egg is loaded to the egg tray (4) in a similar way. Since the stopper (16) moves together with the upper lid (7) in this situation, the stopper (16) again covers the delivery hole (9) such that it will prevent the loading to be performed through the delivery hole (9).

[0035] When an egg is desired to be taken out of the egg tray (4), the upper lid (7) is rotated in one direction by means of the handle (17). This rotating process continues until the stopper (16) contacts the egg which is loaded to the egg tray (4) first. In other words, the egg, which contacts the stopper (16) when the upper lid (7) is rotated, is the egg that is loaded to the egg tray (4) first. When the stopper (16) contacts the egg, the stopper (16) stretches in the opposite direction of the direction of rotation by means of the spring and is removed from the front part of the delivery hole (9) and stops together with the upper lid (7). In this position, the delivery hole (9) is in alignment with the egg which is loaded to the egg tray (4) first. Since the

stopper (16) contacts the egg, the upper lid (7) cannot be rotated. In order that the upper lid (7) can be rotated, the egg, which is in alignment with the delivery hole (9), is required to be taken out.

[0036] In another embodiment of the present invention, the delivery hole (9) is wider than the loading hole (8) and thus, provides the eggs, which are loaded to the egg tray (4) priorly by the user, to be taken out of the egg tray (4) one by one. The delivery hole (9) has a width that the user is enabled to hold the egg by using his/her fingers in an easy manner. Thus, loading can be performed through the loading hole (8) but the eggs cannot be delivered out of the egg tray (4) through the loading hole (8). Only the delivery hole (9) can be used for taking the eggs out of the egg tray (4).

[0037] In another embodiment of the present invention, the lock means (13) has one or more detent shaped, flexible protrusions (14) that are located all around on the end of the first shaft (11) at certain intervals and a recess (15) that is formed around the second shaft (12) at certain intervals and that has a contact surface (C) whereon the protrusion (14) moves forward in the direction of rotation of the first shaft (11) and an almost vertical resistance surface (R) which is at the end of the contact surface (C) and against which the protrusion (14) bears by the movement of the protrusion (14) in the opposite direction. By means of the recess (15) and protrusions (14), the upper lid (7) is provided to move in steps such that the loading hole (8) and the delivery hole (9) will correspond to a pocket (6) each (Figure 6).

[0038] In another embodiment of the present invention, the refrigerator (1) comprises a cover which has a form that is suitable for the shape of the delivery hole (9) and which is mounted on the stopper (16) end that extends to the delivery hole (9). Thus, when the delivery hole (9) is empty, it is completely closed by means of the cover.

[0039] In yet another embodiment of the present invention, the egg tray (4) is folded onto the body (2). Thus, the egg tray (4) is provided to occupy less space when not in use.

[0040] By means of the present invention, by the egg tray (4) having an almost completely closed volume, eggs are enabled to be loaded thereto and the

egg, which is loaded first, is enabled to be taken out of the egg tray (4) in the loading order.

[0041] It is to be understood that the said present invention is not limited to the embodiments disclosed above and an expert in the technique can easily introduce different embodiments. These different embodiments should be considered within the scope of the claims of the present invention, too.

Claims

1. A refrigerator (1) **comprising** a body (2) wherein items to be cooled are placed, a door (3) which allows access into the body (2) and an egg tray (4) which is placed into the body (2), **characterized by** an egg tray (4)
   - which comprises a circular lower lid (5) that has more than one pocket (6) arranged in the radial direction at certain intervals, and
   - which comprises a circular upper lid (7) that has a loading hole (8) in alignment with one of the pockets (6) and having a width that an egg can pass therethrough, and that has a delivery hole (9) in alignment with one of the other pockets (6), and that covers the lower lid (5) and the pockets (6) by being concentrically mounted to the lower lid (5), and that rotates in a single direction around the axis wherefrom it is mounted to the lower lid (5).
2. A refrigerator (1) as in Claim 1, **characterized by** the loading hole (8) and the delivery hole (9) which are radially aligned and each of which is vertically aligned with two adjacent pockets (6) situated on the lower lid (5), when the upper lid (7) is immobile.
3. A refrigerator (1) as in Claim 1 or 2, **characterized by** the delivery hole (9) which is located in front of the loading hole (8) with respect to the direction of rotation.
4. A refrigerator (1) as in any one of the above Claims, **characterized by** a rotating means (10) which concentrically joins the lower lid (5) and the upper lid (7) from their centers and thus, forms the rotational axis of the upper lid (7).
5. A refrigerator (1) as in Claim 4, **characterized by** the rotating means (10) that comprises a hollow first shaft (11) which is fixed to the center of the upper lid (7) and extends towards the lower lid (5), and which moves together with the upper lid (7), and a second shaft (12) which is fixed to the center of the lower lid (5) and extends towards the upper lid (7), and which enters into the first shaft (11).
6. A refrigerator (1) as in Claim 4 or 5, **characterized by** a lock means (13) which contacts the rotating means (10) and thus, which provides the upper lid (7) to rotate only in one direction and prevents it from rotating in the other direction.
7. A refrigerator (1) as in Claim 5 or 6, **characterized by** the lock means (13) having one or more detent shaped, flexible protrusions (14) that are located all

around on the end of the first shaft (11) at certain intervals and a recess (15) that is formed around the second shaft (12) at certain intervals and that has a contact surface (C) whereon the protrusion (14) moves forward in the direction of rotation of the first shaft (11) and an almost vertical resistance surface (R) which is at the end of the contact surface (C) and against which the protrusion (14) bears by the movement of the protrusion (14) in the opposite direction.

8. A refrigerator (1) as in any one of the Claims 5 to 7, **characterized by** a stopper (16) which rotates together with the upper lid (7) by being mounted onto the first shaft (11), and which partially or completely closes the delivery hole (9) by extending to the delivery hole (9) when no egg is situated in the pocket (6) that corresponds to the delivery hole (9).
9. A refrigerator (1) as in Claim 8, **characterized by** a spring which is mounted to the stopper (16) and has the flexibility that it will provide the stopper (16) to be removed from the front part of the delivery hole (9) when the stopper (16) contacts the egg.
10. A cooling device (1) as in any one of the above Claims, **characterized by** a handle (17) which is on the upper lid (7) and which enables the user to rotate the upper lid (7) by holding the handle (17).
11. A refrigerator (1) as in any one of the above Claims, **characterized by** the delivery hole (9) which is wider than the loading hole (8).

Figure 1

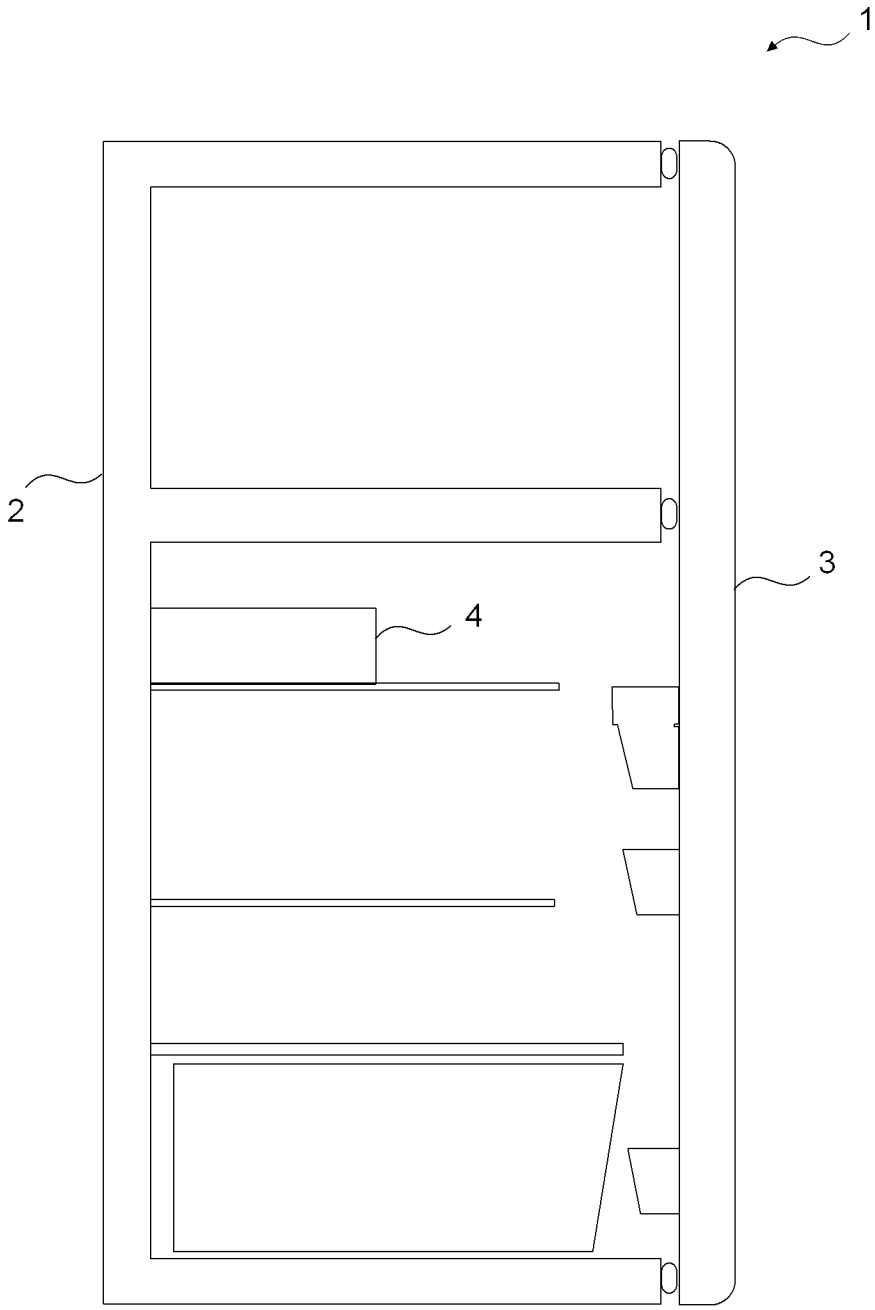


Figure 2

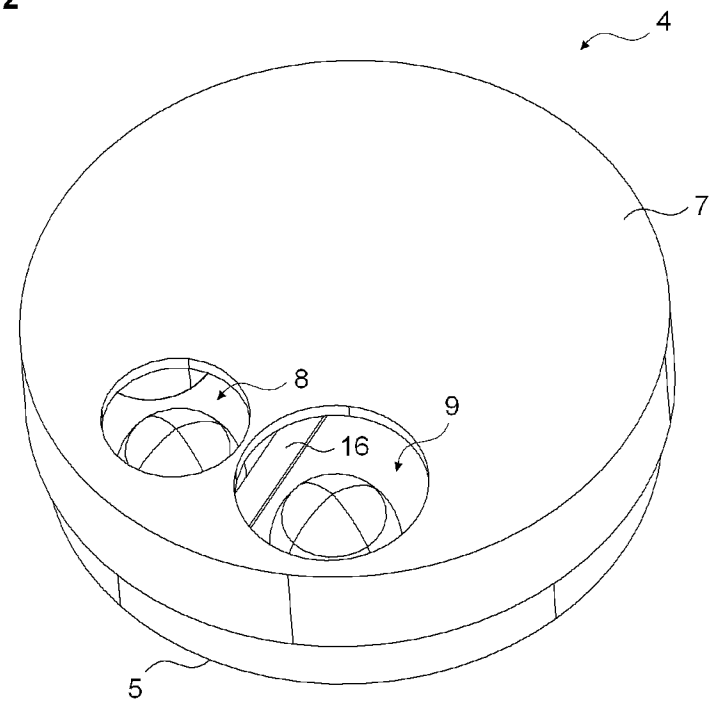


Figure 3

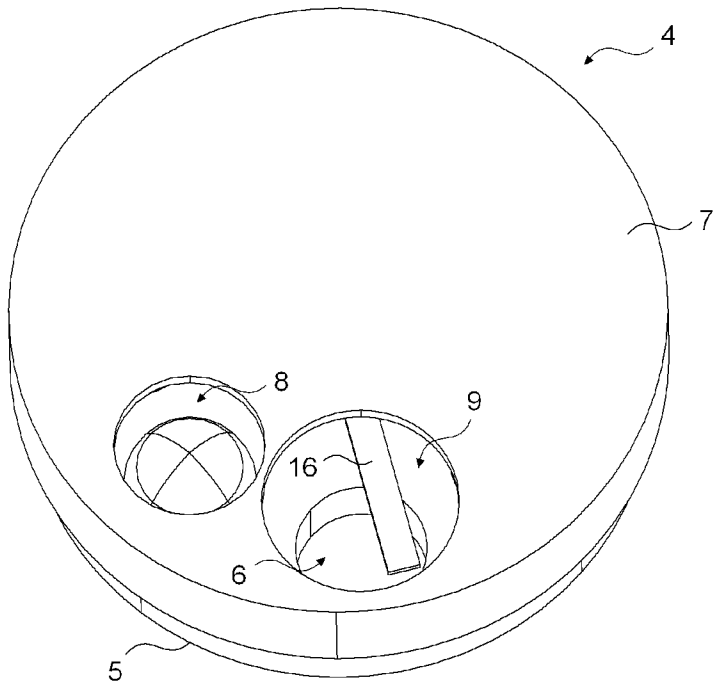


Figure 4

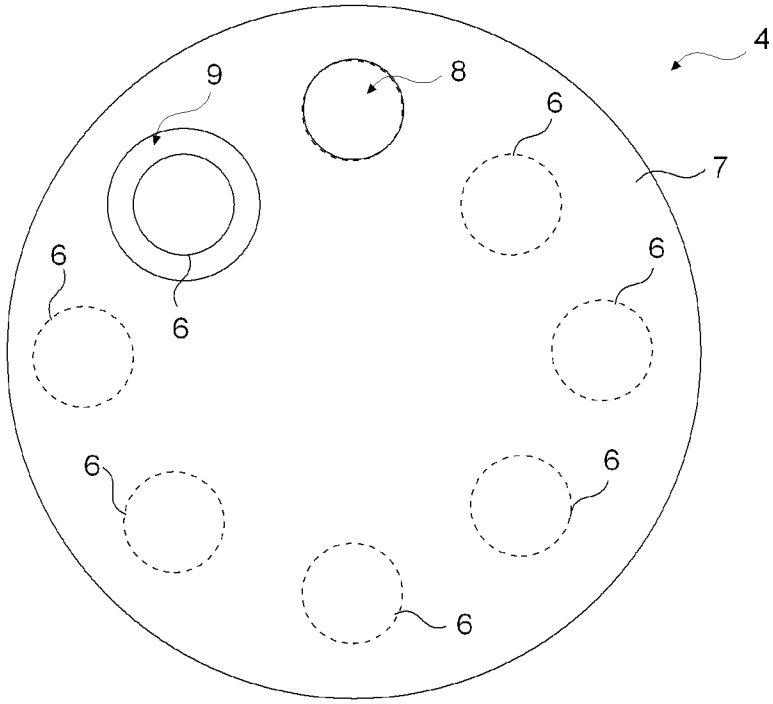


Figure 5

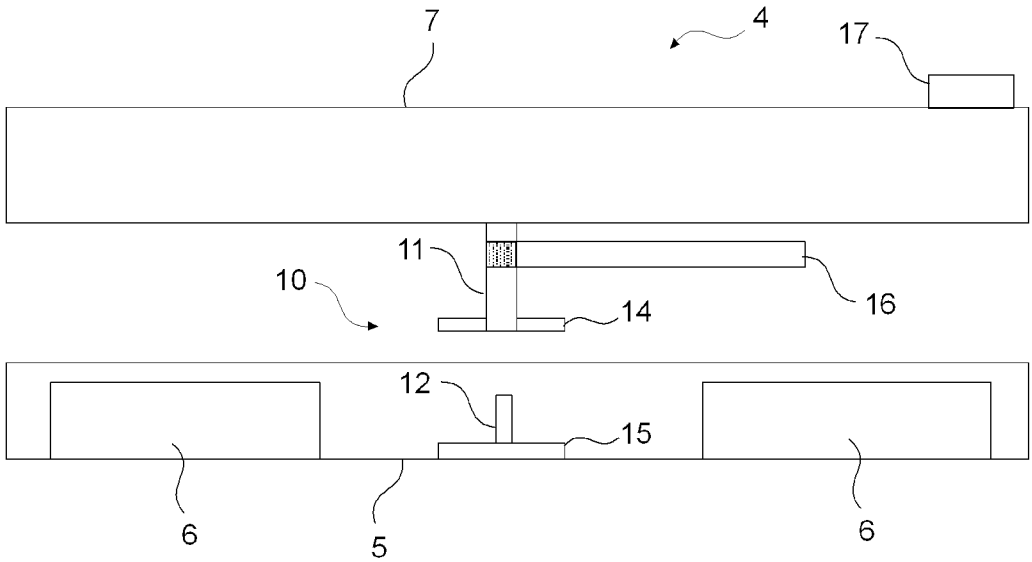
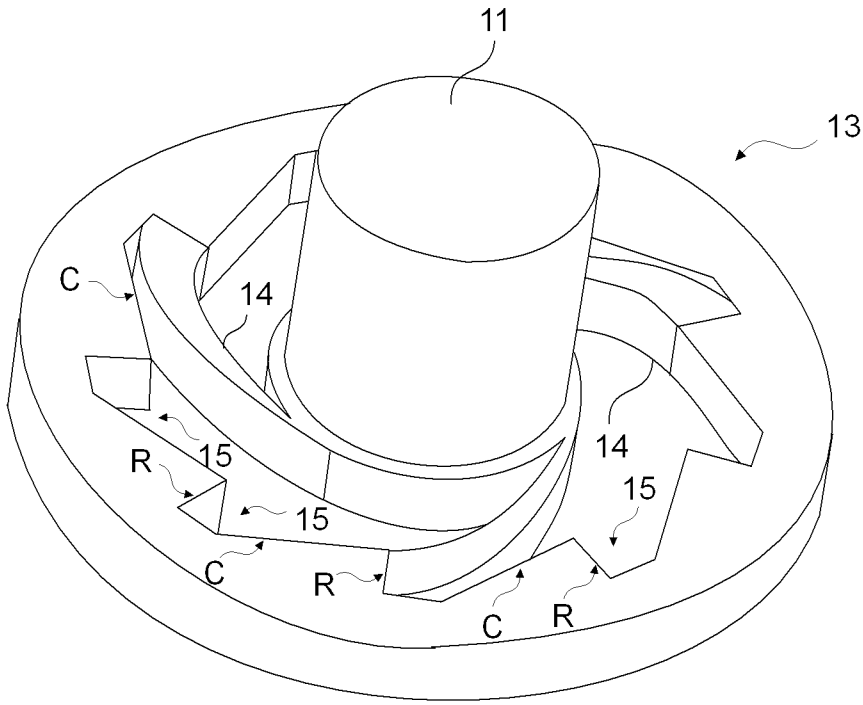


Figure 6



INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2009/066940

A. CLASSIFICATION OF SUBJECT MATTER
INV. F25D25/00

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)
F25D

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 practical, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 2003 240425 A (NEGISHI KAORU) 27 August 2003 (2003-08-27) cited in the application abstract; figures 1-9	1-11
A	WO 2008/043783 A1 (ARCELIK ANONIM SIRKETI [TR]; SARIOGLU FATMA G [TR]; ARISOY EMRE [TR];) 17 April 2008 (2008-04-17) abstract; figures 1-4	1-11
A	JP 2006 089078 A (ENDO SETSUKO) 6 April 2006 (2006-04-06) abstract; figures 1-6	1-11

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

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Date of the actual completion of the international search	Date of mailing of the international search report
22 March 2010	08/04/2010

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Fax: (+31–70) 340–3016	Yousufi, Stefanie

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2009/066940

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 2003240425 A	27-08-2003	NONE	
WO 2008043783 A1	17-04-2008	NONE	
JP 2006089078 A	06-04-2006	NONE	