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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
12 January 2017 (12.01.2017)

WIPO | PCT

(10) International Publication Number
WO 2017/005548 A1

(51) International Patent Classification:
A47J 37/04 (2006.01) *A47J 37/07* (2006.01)
A47J 37/06 (2006.01) *A47J 43/18* (2006.01)

(21) International Application Number:
PCT/EP2016/064989

(22) International Filing Date:
28 June 2016 (28.06.2016)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
A 2015/08480 8 July 2015 (08.07.2015) TR

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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, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

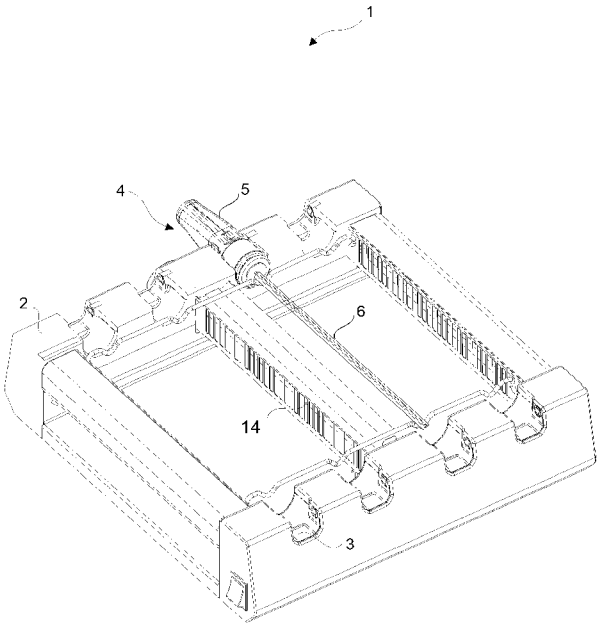
Published:

— *with international search report (Art. 21(3))*

WO 2017/005548 A1

(54) Title: A PORTABLE ELECTRIC GRILL

Figure 1



(57) Abstract: The present invention relates to an electric grill (1) comprising a body (2); at least one heater (14) disposed in the body (2); at least one housing (3) disposed on the body (2), and at least one skewer (4) that has a handle (5) disposed in the housing (3) and a rod (6) that is connected to the handle (5) from one end and whereon the foodstuffs are placed.

Description

A PORTABLE ELECTRIC GRILL

[0001] The present invention relates to a portable electric grill.

[0002] In portable electric grills foodstuffs are cooked either on the grill surface or by being spat on skewers. In some electric grills, skewers are rotated by various means in order to both provide ease of use for the user and to enable the food to be cooked in a homogenous way. Skewers can be rotated either separately by motors that are disposed on the body or by rotation mechanisms like pulleys and gears that are connected to a single motor. Disposing complex mechanisms that enable the skewers to be rotated or more than one motor each corresponding to a skewer on the body limits the portability of the grill by causing the size of the body to get bigger and clunkier. Moreover, food residues and grease accumulated in the parts where skewers are connected to the rotation mechanism or to the motor may make the cleaning difficult or affect the operational performance of the grill.

[0003] In the state of the art United States Patent Document No. US5172628, a cooking appliance is disclosed, comprising a skewer being rotated by the motor, and gears directing the rotational movement of the skewer to the other skewers.

[0004] The aim of the present invention is the realization of a portable electric grill wherein ease of use is provided.

[0005] The electric grill realized in order to attain the aim of the present invention, explicated in the claims comprises a body; at least one heater disposed in the body; at least one housing disposed on the body, and at least one skewer that has a handle disposed in the housing and a rod connected to the handle with one end and whereon the food is placed. The handle enables the rod heating up during the cooking process to be held in a safe manner by the user, and enables the skewer to be placed in the body by being seated in the housing.

[0006] The electric grill of the present invention comprises a motor that is disposed in the handle and that is energized by the electrical current provided from the body by means of placing the handle in the housing and

the rod rotated by means of the rotational movement transferred from the motor. When the handle is placed in the housing, the electrical current received from the mains is transferred from the body to the handle and is passed through the motor disposed in the handle. Thus, when the handle is placed in the housing, the electric circuit is completed and the motor transfers the rotational movement to the rod by means of a shaft. The portability of the body is improved by means of the motors that enable the rods to be rotated being disposed in the handles.

[0007] In an embodiment of the present invention, the electric grill comprises at least two first connectors that are disposed on the housing and that are supplied with the voltage provided from the body; and more than one second connectors that are disposed on the handle and that supply the electric ends of the motor with the voltage provided from the body with at least two of them contacting one first connector each when the handle is placed in the housing. In the situation the handle is in the housing, the first connectors that have a potential difference between each other contact the second connectors that are connected to the electric ends of the motor. The electrical current is transferred to the handle from the body by means of the second connector that contacts the high potential first connector. The current transferred to the handle is delivered back to the body by being passed over the motor by means of the second connector that contacts the low potential first connector. Thus, the use of skewers is facilitated.

[0008] In an embodiment of the present invention, the cross-section of the housing in the vertical plane is in U form and at least two first connectors are oppositely disposed on the surfaces that face each other. When the handle is placed into the housing so that the second connectors disposed on the opposite surfaces of the handle contact the first connectors, energy is transferred to the motor from the body and the rod is automatically rotated. When the skewer is rotated 90 degrees around its own axis and placed back in the housing, the second connectors and the first connectors do not contact each other, thus energy is not transferred to the motor and the rod remains stationary. Thus, the skewers can be used both

automatically and manually.

[0009] In another embodiment of the present invention, the electric grill comprises at least one second connector with a concave curve; and at least one first connector with a convex curve that is in a matching form with the curve of the second connector. The first connector that rubs the edge of the handle while the handle is being placed in the housing moves towards the space in the body to be pushed towards the body. In the moment the handle is seated in the housing, the force acting on the first connector opposite to the concave second connector disappears and the first connector is seated in the second connector by at least partially returning to the free position. Thus, the second connector and the first connector are enabled to contact each other in a continuous and complete manner by preventing the movement of the handle in the housing.

[0010] In another embodiment of the current invention, the handle comprises at least one flat edge preventing the rotation of the handle in the housing by bearing against the inner surface of the housing. When the handle is placed in the housing, the flat edge of the handle is seated in the housing and thus in the situation where the rotational movement is transferred to the handle, the rotation of the handle in the housing is prevented by enabling the edge of the handle to be held by the wall of the housing.

[0011] In another embodiment of the present invention, the electric grill comprises at least one magnet disposed on the housing and at least one metal plate that surrounds the handle and that is produced from ferromagnetic material. While the handle is being placed in the housing, the magnet pulls the metal plate and enables the handle to be accurately positioned in the housing.

[0012] In another embodiment of the current invention, the magnet is disposed in the housing so as to partially surround the handle. When the handle is in the housing, the magnets that at least partially extend along the housing pull the handle towards the housing in different directions. Thus, the position of the handle in the housing is fixed.

[0013] In another embodiment of the current invention, the electric grill comprises a sensor that is disposed on the body and that detects the presence of the

handle in the housing and a control unit that controls the operational status of the heater according to the data received from the sensor. When the sensor detects that the handle is in the housing, the control unit activates at least one heater close to the skewer. Thus, energy saving is provided by activating only the heaters needed for the cooking process.

[0014] In another embodiment of the current invention, the skewer comprises at least one light source that is energized with the electrical current that is transferred from the body to the handle. When the handle is placed in the housing, the electrical current transferred from the body to the handle is passed over the light source and the light is turned on. Thus, the user is informed that the skewer is correctly placed.

[0015] By means of the present invention, the mechanism that enables the foodstuffs disposed on the skewers to be rotated is simplified and the cleaning of the grill is facilitated.

[0016] The electric grill 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 the electric grill related to an embodiment of the present invention.

[0018] Figure 2 – is the partial perspective view of the electric grill related to an embodiment of the present invention.

[0019] Figure 3 – is the perspective view of the skewer related to an embodiment of the present invention.

[0020] Figure 4 – is the partial perspective view of the electric grill related to another embodiment of the present invention.

[0021] The elements illustrated in the figures are numbered as follows:

1. Electric grill
2. Body
3. Housing
4. Skewer
5. Handle
6. Rod
7. First connector
8. Second connector

9. Motor
10. Magnet
11. Plate
12. Sensor
13. Light source
14. Heater
15. Control unit

[0022] The electric grill (1) comprises a body (2); at least one heater (14) disposed in the body (2); at least one housing (3) disposed on the body (2), and at least one skewer (4) that has a handle (5) disposed in the housing (3) and a rod (6) that is connected to the handle (5) from one end and whereon the foodstuffs are placed. The food to be cooked is spat on the rod (6) by being passed from one end of the rod (6). The handle (5) enabling the rod (6) heating up during the cooking process to be safely held by the user is disposed on the other end of the rod (6). The skewer (4) is placed on the body (2) by seating the handle (5) in the housing (3). The body (2) is supplied with the electrical current received from the mains, and the electrical current is distributed to various components like heaters (14) that enable the food to be cooked.

[0023] The electric grill (1) of the present invention comprises a motor (9) that is disposed in the handle (5) and that is energized by the electrical current provided from the body (2) when the handle (5) is placed in the housing (3), and a rod (6) rotated by means of the rotational movement received from the motor (9). The motor (9) is connected to the rod (6) by means of a shaft. When the handle (5) is placed in the housing (3), the electrical current received from the mains is transferred to the handle (5) from the body (2) and passed through the motor (9). Thus, when the handle (5) is placed in the housing (3), the electric circuit is completed and the motor (9) is supplied with the electrical current received from the body (2) and transfers the rotational movement to the rod (6) by means of the shaft. When the rods (6) are rotated, each surface of the food is cooked directly and homogenously by the heater (14). Thus, the portability of the body (2) is improved and the use of the electric grill (1) is facilitated.

[0024] In an embodiment of the present invention, the electric grill (1) comprises at least two first connectors (7) that are disposed on the housing (3) and that are supplied with different electrical potentials received from the body (2) and more than one second connectors (8) that enable the transfer of the electrical current between the body (2) and the motor (9) when the handle (5) is placed in the housing (3) with at least two thereof each contacting one first connector (7). The second connectors (8) connected to the electrical inlets and outlets of the motor (9) contact the first connectors (7) if the handle (5) is in the housing (3). The second connector (8) contacting the high potential first connector (7) transfers the electrical current received from the body (2) to the motor (9). The current passed through the motor (9) reaches the second connector (8) contacting the low potential first connector (7) and is transferred back to the body (2) by passing through the first connector (7). Thus, the use of the skewer (4) is facilitated.

[0025] In an embodiment of the current invention, the cross-section of the housing (3) in the vertical plane is in U form and the housing (3) comprises at least two first connectors (7) that are disposed opposite to each other on the opposite surfaces thereof. The second connectors (8) are disposed on the handle (5) surfaces facing opposite directions. When the handle (5) is placed in the housing (3) so that the second connectors (8) contact the first connectors (7), the motor (9) is energized and the rod (6) is automatically rotated. When the handle (5) is placed in the housing (3) so that one of the second connectors (8) face the outside of the housing (3) and the other face the base of the housing (3), the motor (9) is not energized and the rod (6) remains stationary since the second connectors (8) and the first connectors (7) do not contact each other. Thus, when desired to be used manually, the automatically operating skewer (4) needs to be placed back into the body (2) by being rotated a quarter turn around its own axis. Thus, the skewers (4) are enabled to be used both automatically and manually.

[0026] In an embodiment of the present invention, the electric grill (1) comprises at least one second connector (8) with a concave curve and at least one

first connector (7) with a convex curve that is in a matching form with the curve of the second connector (8). The body (2) comprises a space that allows the first connector (7) to move therein. While the handle (5) is being placed in the housing (3), the first connector (7) that rubs the edge of the handle (5) moves in the space to be pushed towards the body (2). When the handle (5) is seated in the housing (3), the force acting on the first connector (7) that is disposed opposite to the concave second connector (8) disappears and the first connector (7) is seated in the second connector by returning to the free position. While the handle (5) is being taken out of the housing (3), the first connector (7) that rubs the edge of the second connector (8) moves in the space to be pushed back towards the body (2) by and returns to the free position in the moment that the first connector (7) passes over the edge of the handle (5). Thus, a continuous contact is provided between the first connector (7) and the second connector (8).

[0027] In an embodiment of the current invention, the handle (5) comprises at least one flat edge that prevents the handle (5) from rotating in the housing (3) by bearing against the inner surface of the housing (3). At least a portion of the handle (5) seated in the housing (3) has a cornered form such as a rectangle. In the situations like the overloading of the rod (6) where the rotating force of the motor (9) is transferred to the handle (5), the edge of the handle (5) is held by the wall of the housing (3) and the rotation of the handle (5) in the housing (3) is prevented. Thus, a constant transfer of the rotational movement to the rod (6) is provided.

[0028] In an embodiment of the present invention, the electric grill (1) comprises at least one magnet (10) disposed on the housing (3) and at least one metal plate (11) that is disposed on the handle (5) and that is produced from ferromagnetic material While the handle (5) is being seated in the housing (3), the magnet (10) pulls the metal plate (11). Thus, the handle (5) is pulled towards the correct position in the housing (3) when the skewer (4) is placed in the body (2), and the perception of the user that the skewer (4) is correctly located is provided.

[0029] In another embodiment of the current invention, the electric grill (1)

comprises a magnet (10) disposed in the housing (3) so as to partially surround the handle (5). The magnet (10) disposed along the housing (3) pulls the metal plate (11) while the handle (5) is in the housing (3). The radial directed movement of the handle (5) in the housing (3) is prevented and its position is fixed by means of differently directed magnetic forces pulling the plate (11) towards the housing (3).

[0030] In another embodiment of the present invention, the electric grill (1) comprises a sensor (12) that is disposed on the body and that detects the presence of the skewer (4) in the housing (3) and a control unit (15) that controls the heater (14) according to the data received from the sensor (12). When the sensor (12) detects that the skewer (4) is in the housing (3), at least one heater (14) that is close to skewer (4) is energized. Energy saving is provided by means of activating only the heaters (14) that are close to the skewers (4) disposed in the body (2).

[0031] In another embodiment of the current invention, the skewer (4) comprises at least one light source (13) that is energized with the electrical current that is transferred from the body (2) to the handle (5). When the skewer (4) is seated in the body (2) in a correct manner, the second connectors (8) and the first connectors (7) contact each other and the electrical current provided from the body (2) is passed over the light source (13) and the light disposed on the handle (5) is turned on Thus, the user can detect that the handle (5) is seated in the housing (3) in a correct manner.

[0032] In the electric grill (1) of the present invention, the motor (9) disposed in the handle (5) is enabled to be automatically energized by means of the electrical current provided from the body (2) when the skewer (4) is placed on the body (2). Thus, a portable electric grill (1) whereof the use is facilitated is realized.

Claims

1. An electric grill (1) **comprising** a body (2); at least one heater (14) disposed in the body (2); at least one housing (3) disposed on the body (2), and at least one skewer (4) that has a handle (5) disposed in the housing (3) and a rod (6) that is connected to the handle (5) from one end and whereon the foodstuffs are placed, **characterized by** a motor (9) that is disposed in the handle (5) and that is energized by the electrical current provided from the body (2) when the handle (5) is placed in the housing (3), and a rod (6) rotated by means of the rotational movement received from the motor (9).
2. An electric grill (1) as in Claim 1, **characterized by** at least two first connectors (7) that are disposed on the housing (3) and that are supplied with different electrical potentials received from the body (2) and more than one second connectors (8) that enable the transfer of the electrical current between the body (2) and the motor (9) when the handle (5) is placed in the housing (3) with at least two thereof each contacting one first connector (7).
3. An electric grill (1) as in Claim 2, **characterized by** the housing (3) whereof the cross-section in the vertical plane is in U form and that has at least two first connectors (7) disposed opposite to each other on the opposite surfaces thereof.
4. An electric grill (1) as in Claim 2 or Claim 3, **characterized by** the second connector (8) with a concave curve and the first connector (7) with a convex curve that is in a matching form with the curve of the second connector (8).
5. An electric grill (1) as in any one of the above claims, **characterized by** the handle (5) comprising at least one flat edge that prevents the handle (5) from rotating in the housing (3) by bearing against the inner surface of the housing (3).
6. An electric grill (1) as in any one of the above claims, **characterized by** at least one magnet (10) disposed on the housing (3) and at least one plate (11) that is disposed on the handle (5) and that is produced from a ferromagnetic material.
7. An electric grill (1) as in Claim 6, **characterized by** a magnet (10) disposed in the housing (3) so as to partially surround the handle (5).
8. An electric grill (1) as in any one of the above claims, **characterized by** a sensor (12) that is disposed on the body (2) and that detects the presence of

the skewer (4) in the housing (3) and a control unit (15) that controls the heater (14) according to the data received from the sensor (12).

9. An electric grill (1) as in any one of the above claims, **characterized by** a light source (13) that is disposed on the skewer (4) and that is energized with the electrical current transferred from the body (2) to the handle (5).

Figure 1

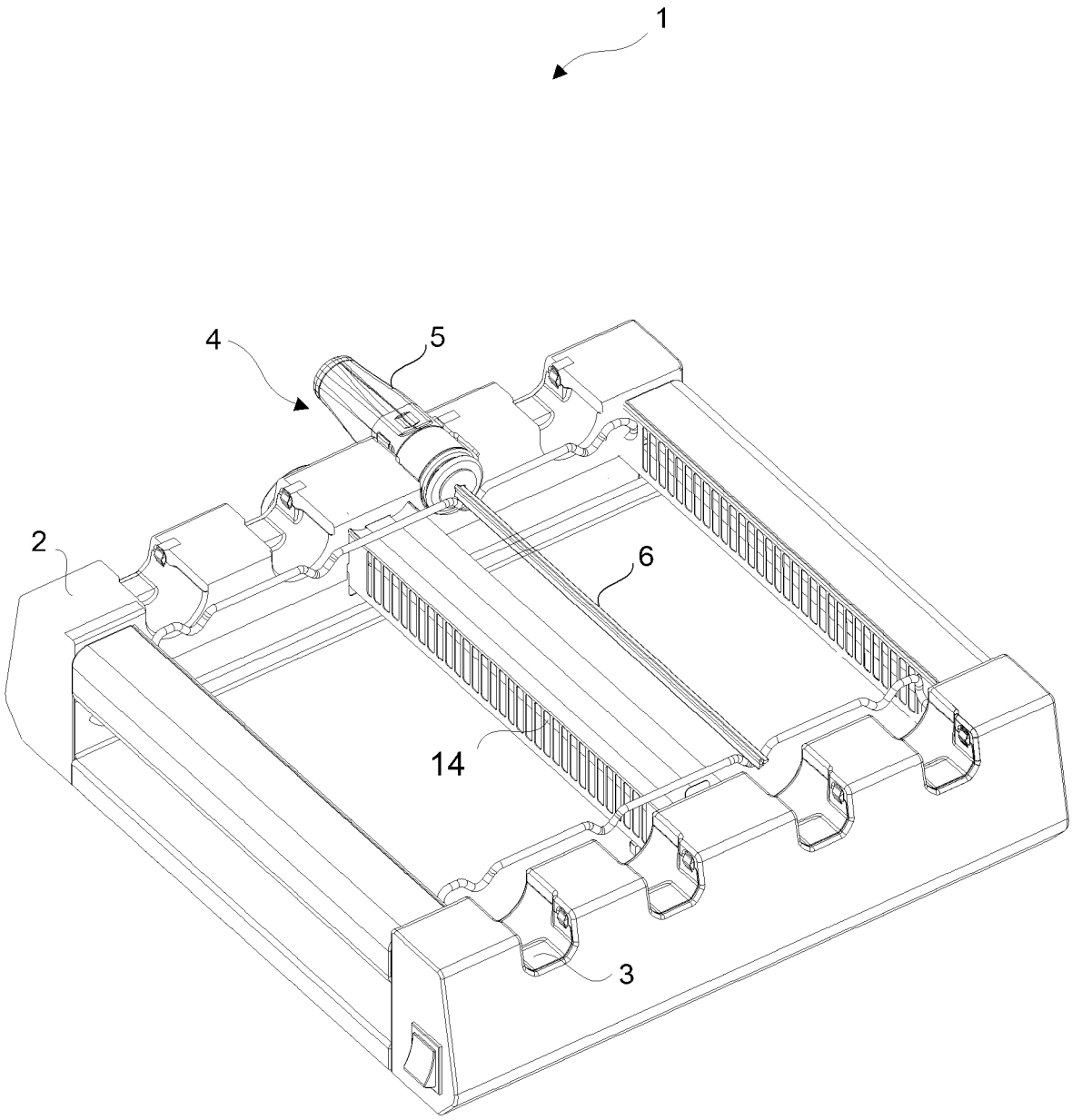


Figure 2

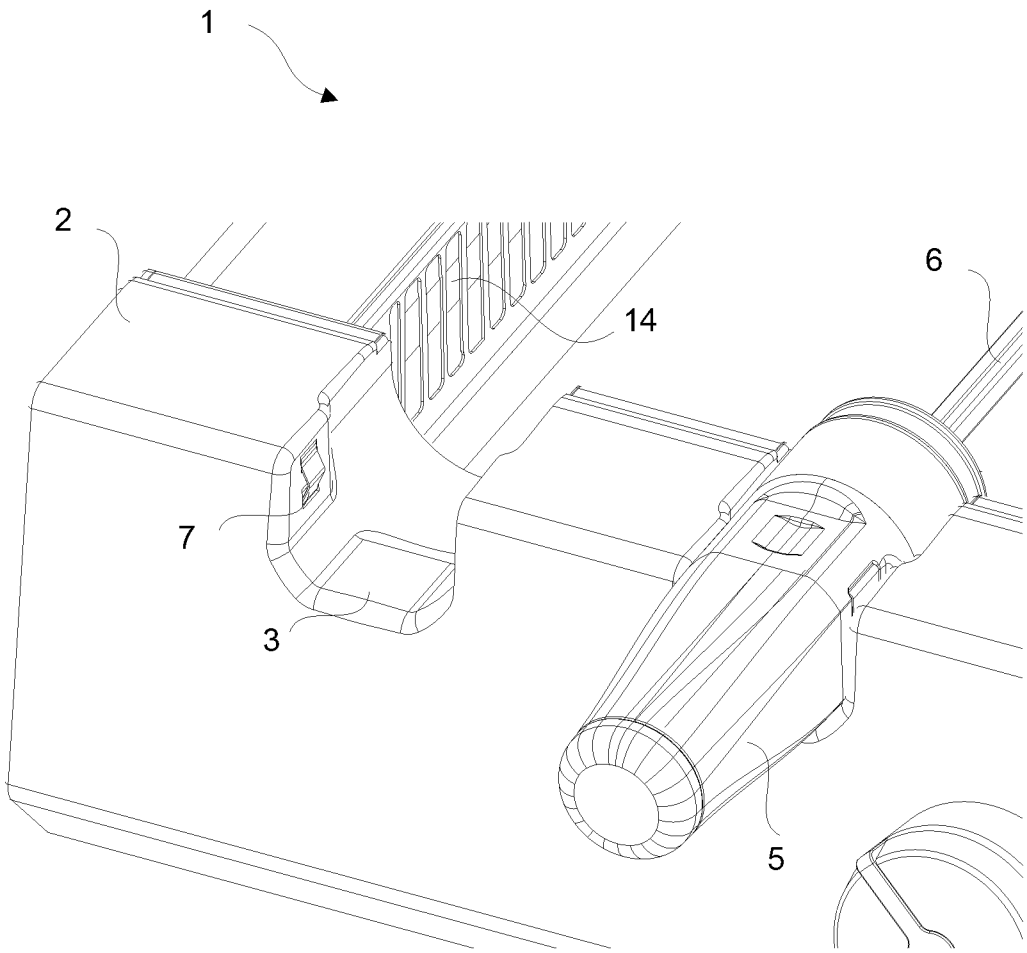


Figure 3

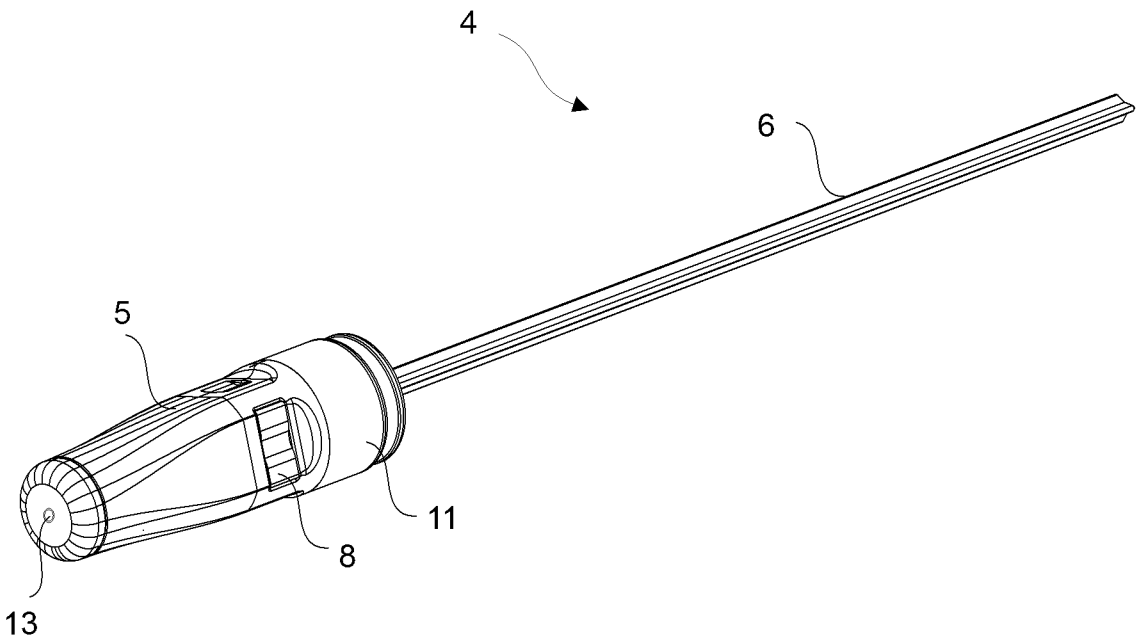
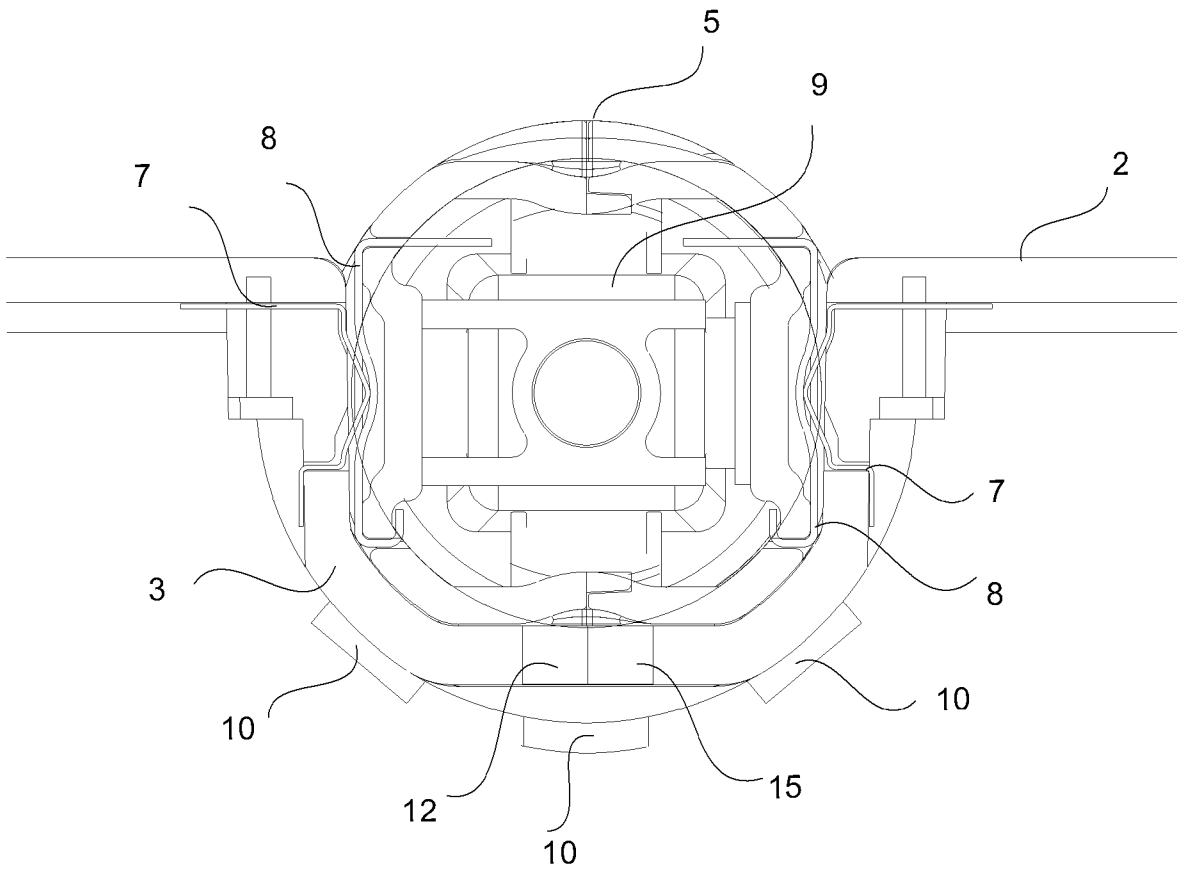


Figure 4



INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2016/064989

A. CLASSIFICATION OF SUBJECT MATTER
INV. A47J37/04 A47J37/06 A47J37/07 A47J43/18
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A47J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2004/099146 A1 (SEKIYA MASAYUKI [JP]) 27 May 2004 (2004-05-27)	1
A	paragraphs [0099], [0103] - [0108], [0111]; figures 1-4	2-9
A	US 3 089 407 A (KINKLE ROBERT A) 14 May 1963 (1963-05-14) column 2, lines 6-69 - column 4, lines 10-16; figures 1,2	1-9
A	US 2 827 848 A (ALDEN BLAIR S) 25 March 1958 (1958-03-25) column 1, line 48 - column 2, line 18; figures 1-4	1-9
A	US 2 821 905 A (CULLIGAN DUANE O) 4 February 1958 (1958-02-04) column 1, line 63 - column 3, line 67; figure 1	1-9

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

☒ See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
20 September 2016	30/09/2016

Name and mailing address of the ISA/	Authorized officer
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2016/064989

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2004099146 A1	27-05-2004	NONE	
US 3089407 A	14-05-1963	NONE	
US 2827848 A	25-03-1958	NONE	
US 2821905 A	04-02-1958	NONE	