



- (51) **International Patent Classification:**
A47L 15/42 (2006.01) *F24C 15/02* (2006.01)
- (21) **International Application Number:**
PCT/EP2014/079012
- (22) **International Filing Date:**
22 December 2014 (22.12.2014)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (71) **Applicant:** ARCELIK ANONIM SIRKETI [TR/TR]; E5
Ankara Asfalti Uzeri, Tuzla, 34950 Istanbul (TR).
- (72) **Inventors:** AKYILDIZ, Erdem; E5 Ankara Asfalti Uzeri,
Tuzla, 34950 Istanbul (TR). DEMIRCIUGLU, Ismail; E5
Ankara Asfalti Uzeri, Tuzla, 34950 Istanbul (TR). ALD-
AG, Ahmet; E5 Ankara Asfalti Uzeri, Tuzla, 34950 Istan-
bul (TR).
- (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.

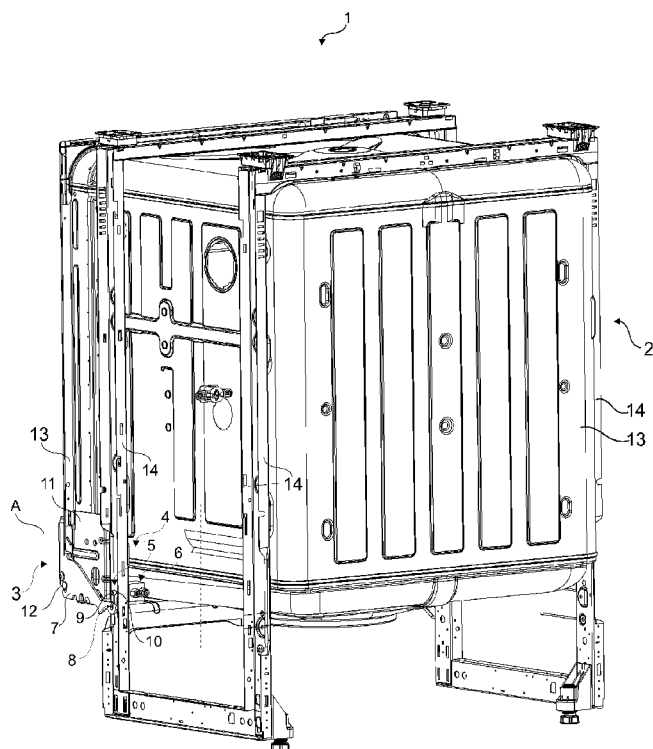
- (84) **Designated States** (*unless otherwise indicated, for every
kind of regional protection available*): ARIPO (BW, GH,
GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ,
TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU,
TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE,
DK, EE, ES, FI, FR, GB, GR, 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))

- (54) **Title:** HOUSEHOLD APPLIANCE WITH A CHILD SAFETY FACILITY

Fig. 1



- (57) **Abstract:** The present invention provides a household
appliance (1) comprising a main body (2), a door for access-
ing the interior of the main body (2) and a hinge mechanism
(3) which pivotally supports the door. The household appli-
ance (1) of the present invention further comprises a locking
mechanism (4) which comprises a locking member (5) for
directly locking/unlocking the hinge mechanism (3) and an
actuator (6) for driving the locking member (5).

Description**HOUSEHOLD APPLIANCE WITH A CHILD SAFETY FACILITY**

- [0001] The present invention relates to a household appliance, in particular a domestic dishwasher and an oven.
- [0002] Domestic dishwashers are commonly known. A domestic dishwasher generally comprises a tub which accommodates an upper pull-out rack, a lower pull-out rack and a cutlery basket. The pull-out racks and the cutlery basket can be easily accessed by opening the door. In general, the door of the domestic dishwasher is pivotally supported by a hinge mechanism about a horizontal axis. The items which can be cleaned with the domestic dishwasher generally include various kinds of kitchenware. It is commonly known that some kitchenware such as cutleries and glassware pose a severe threat to children. In a prior art domestic dishwasher, any dangerous kitchenware which has been loaded into the article racks and the basket can be easily accessed by a child by way of opening the door. The same also applies to an oven. Moreover, there is also a risk of skin burning/scalding when a child opens the door of the dishwasher or the oven during its operation.
- [0003] An objective of the present invention is to provide a household appliance which overcomes the aforementioned drawbacks of the prior art in a cost effective way and which safeguards the children.
- [0004] This objective has been achieved by the household appliance as defined in claim 1. Further achievements have been attained by the subject-matters respectively defined in the dependent claims.
- [0005] The household appliance of the present invention comprises a locking mechanism which has a locking member for directly locking/unlocking the hinge mechanism of the door and an actuator for driving the locking member.
- [0006] With the present invention, the children can be prevented from accessing the interior of a household appliance, in particular a washing tub, a cooking chamber or the like. Thereby, the children can be reliably protected from harmful accidents which may arise from any sharp items and/or hot surfaces inside the household appliance.

- [0007] In an embodiment, the locking member is driven by a motorized actuator which can be activated or deactivated by the user through a button of the control panel of the appliance or through wireless communication. In alternative versions of this embodiment, the actuator has a motor which is either one of an electrical motor, a hydraulic motor, a pneumatic motor or the like. In another alternative embodiment, the motor has been omitted and the actuator is manually driven by the user.
- [0008] In another embodiment, the locking member is movable by means of the actuator to a position at which it blocks the pivotal movement of the hinge by physically obstructing the same.
- [0009] In another embodiment, the household appliance has a door-weight compensating mechanism which has an elastic member such as a tension spring that is either directly or by means of a cable coupled to the hinge. In this embodiment, the locking member blocks/unblocks the movement of either one of the cable or the elastic member.
- [0010] In other alternative embodiments, the household appliance is respectively provided as a domestic dishwasher and an oven that has the locking mechanism of the present invention.
- [0011] Additional advantages of the household appliance according to the present invention will become apparent with the detailed description of the embodiments with reference to the accompanying drawings in which:
- [0012] Figure 1 – is a schematic partial perspective view of a dishwasher which has a locking mechanism according to an embodiment of the present invention;
- [0013] Figure 2 – is a schematic enlarged view of the detail A of Fig. 1;
- [0014] Figure 3 – is another schematic enlarged partial perspective view of the dishwasher which has the locking mechanism as shown in Fig. 1;
- [0015] Figure 4 – is a schematic enlarged partial perspective view of the dishwasher which has the locking mechanism as shown in Fig. 1, wherein the pivotal movement of the hinge is blocked by the locking member;
- [0016] Figure 5 – is a schematic enlarged perspective view of the locking mechanism of the dishwasher as shown in Fig. 1.
- [0017] The reference signs appearing on the drawings relate to the following

technical features.

1. Household appliance
2. Main body
3. Hinge mechanism
4. Locking mechanism
5. Locking member
6. Actuator
7. Hinge
8. Recess
9. Bar
10. Shaft
11. Hinge plate
12. Pin
13. Tub
14. Frame

- [0018] The household appliance (1) comprises a main body (2), an openable/closable door (not shown) for accessing the interior of the main body (2) and a hinge mechanism (3) which pivotally supports the door.
- [0019] The household appliance (1) of the present invention comprises a locking mechanism (4) which has a locking member (5) for directly locking/unlocking the hinge mechanism (3) and an actuator (6) for driving the locking member (5) (Fig. 1 to 5).
- [0020] In an embodiment, the hinge mechanism (3) comprises a hinge (7) which pivotally supports the door. In this embodiment, the locking member (5) is movable between an extended position and a retracted position. At the extended position, the locking member (5) blocks the pivotal movement of the hinge (7) whereas at the retracted position, the locking member (7) does not block the pivotal movement of the hinge (7). The locking member (5) can be moved to either one of the extended position and the retracted position by means of the actuator (6).
- [0021] In another embodiment, the hinge (7) comprises a recess (8) and the locking member (5) comprises a bar (9) which slides into the recess (8) at the extended position. The locking member (5) clears the recess (8) at the

retracted position. The recess (8) is formed into the free end of the hinge (7).

- [0022] In another embodiment, the household appliance (1) comprises a door-weight compensating mechanism (not shown) for at least partially compensating for the weight of the door. The door-weight compensating mechanism comprises: an elastic member (not shown) such as a tension spring or the like for acting a tension force on the hinge (7) and a cable (not shown) for transmitting the tension force to the hinge (7). In this embodiment, the locking member (4) blocks/unblocks the movement of either one of the cable or the elastic member. In an alternative embodiment, the cable has been omitted and the elastic member has been directly coupled to the hinge (7).
- [0023] In another embodiment, the actuator (6) comprises a motor (not shown) whose shaft (10) is connected to the locking member (5). In this embodiment, the actuator (6) can be controlled via the control panel (not shown) of the household appliance (1). In alternative versions of this embodiment, the motor is one of an electrical motor, a hydraulic motor, a pneumatic motor or the like. The electrical motor can be a linear motor or a rotational motor.
- [0024] In another alternative embodiment, the motor has been omitted. In this alternative embodiment, the actuator (6) can be manually operated by the user.
- [0025] In another embodiment, the hinge mechanism (3) comprises a rigid hinge plate (11) and a pin (12) which is disposed onto the hinge plate (11). The pin (12) pivotally supports the hinge (7). The hinge plate (11) is fixed to the main body (2).
- [0026] In another embodiment, the household appliance (1) is provided in form of a domestic dishwasher which has the locking mechanism (4). In the domestic dishwasher, the main body (2) comprises a tub (13). The door is disposed onto the main body (2) for opening/closing the tub (13).
- [0027] In another embodiment, the main body (2) comprises a frame (14) which supports the tub (13) and the locking mechanism (4).
- [0028] With the present invention, a household appliance (1) has been provided

which is safe for children. Thereby, a consumer satisfaction can be increased.

Claims

1. A household appliance (1), in particular a domestic dishwasher comprising a main body (2), a door for accessing the interior of the main body (2) and a hinge mechanism (3) which pivotally supports the door, **characterized in that** a locking mechanism (4) comprising a locking member (5) for directly locking/unlocking the hinge mechanism (3) and an actuator (6) for driving the locking member (5).
2. The household appliance (1) according to claim 1, **characterized in that** the hinge mechanism (3) comprising a hinge (7) which pivotally supports the door, wherein the locking member (5) is movable between an extended position whereat the locking member (5) blocks the pivotal movement of the hinge (7) and a retracted position whereat the locking member (7) does not block the pivotal movement of the hinge (6) and wherein the actuator (6) is further adapted to move the locking member (6) to either one of the extended position and the retracted position.
3. The household appliance (1) according to claim 2, **characterized in that** the hinge (7) comprising a recess (8) and the locking member (5) comprising a bar (9) which is slidable into and out of the recess (8).
4. The household appliance (1) according to claim 1, **characterized in that** a door-weight compensating mechanism for at least partially compensating for the weight of the door, wherein the hinge mechanism (3) comprising a hinge (7) which pivotally supports the door and wherein the door-weight compensating mechanism comprising a tension spring for acting a tension force onto the hinge (7) and a cable for transmitting the tension force to the hinge (7), wherein the locking member (4) is further adapted to block/unblock the movement of either one of the cable or the elastic member.
5. The household appliance (1) according to any one of claims 1 to 4, **characterized in that** the actuator (6) comprising a motor whose shaft (10) is connected to the locking member (5).
6. The household appliance (1) according to claim 5, **characterized in that** a control panel for receiving a user input for locking/unlocking the hinge mechanism (4), wherein the actuator (6) is further adapted to drive the locking member (5) on the basis of the user input.

7. The household appliance (1) according to any one of claims 2 to 6, **characterized in that** the hinge mechanism (3) comprising a hinge plate (11) and a pin (12) which is disposed onto the hinge plate (11) for pivotally supporting the hinge (7), wherein the hinge plate (11) is fixed to the main body (2).
8. A household appliance (1) according to any one of claims 1 to 7, **characterized in that** the household appliance (1) is provided as a domestic dishwasher, wherein the main body (2) comprising a tub (13) and wherein the door is disposed onto the main body (2) for opening/closing the tub (13).
9. The household appliance (1) according to claim 8, **characterized in that** the main body (2) comprising a frame (14) which supports the tub (13) and the locking mechanism (4).

Fig. 1

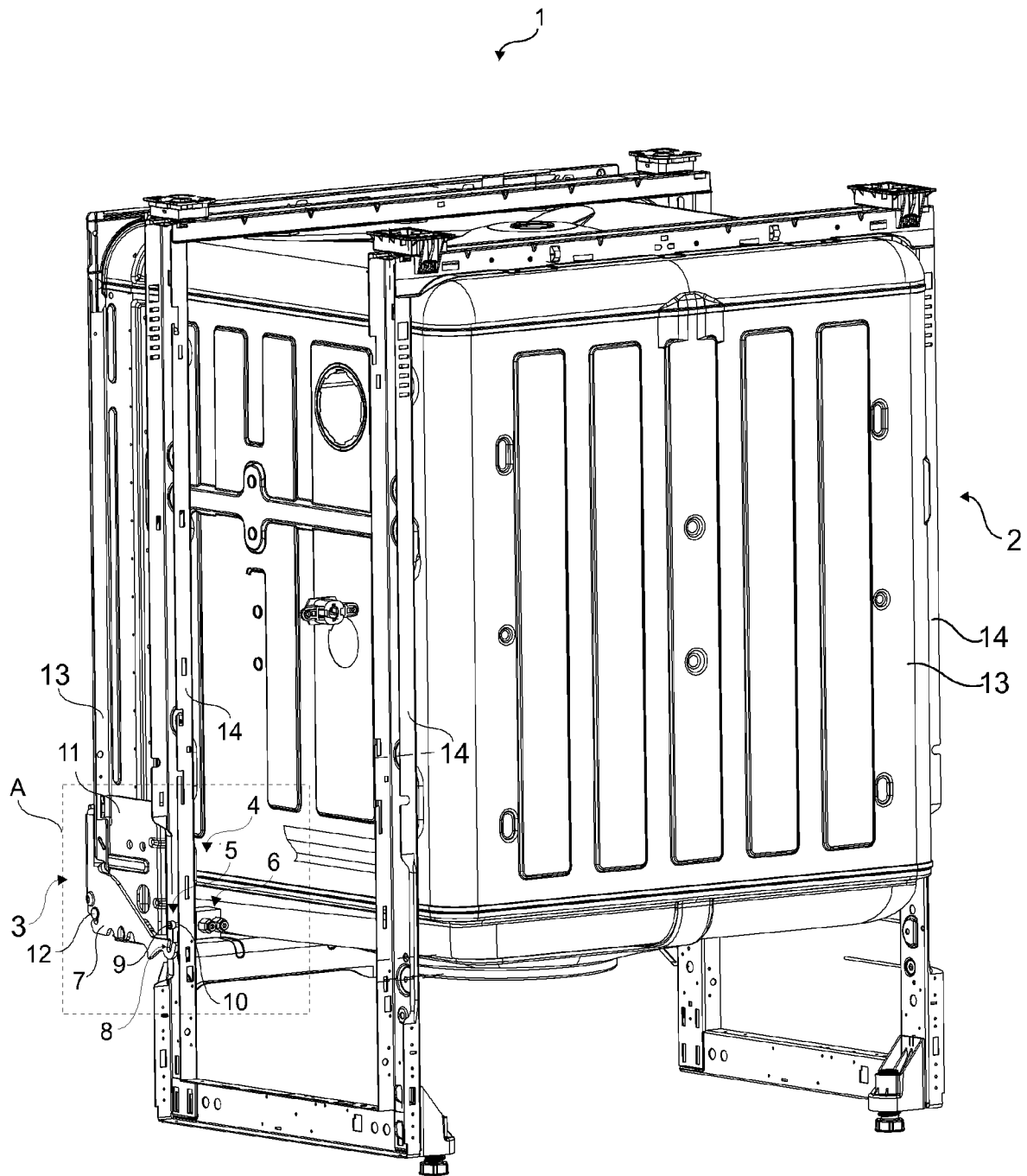


Fig. 2

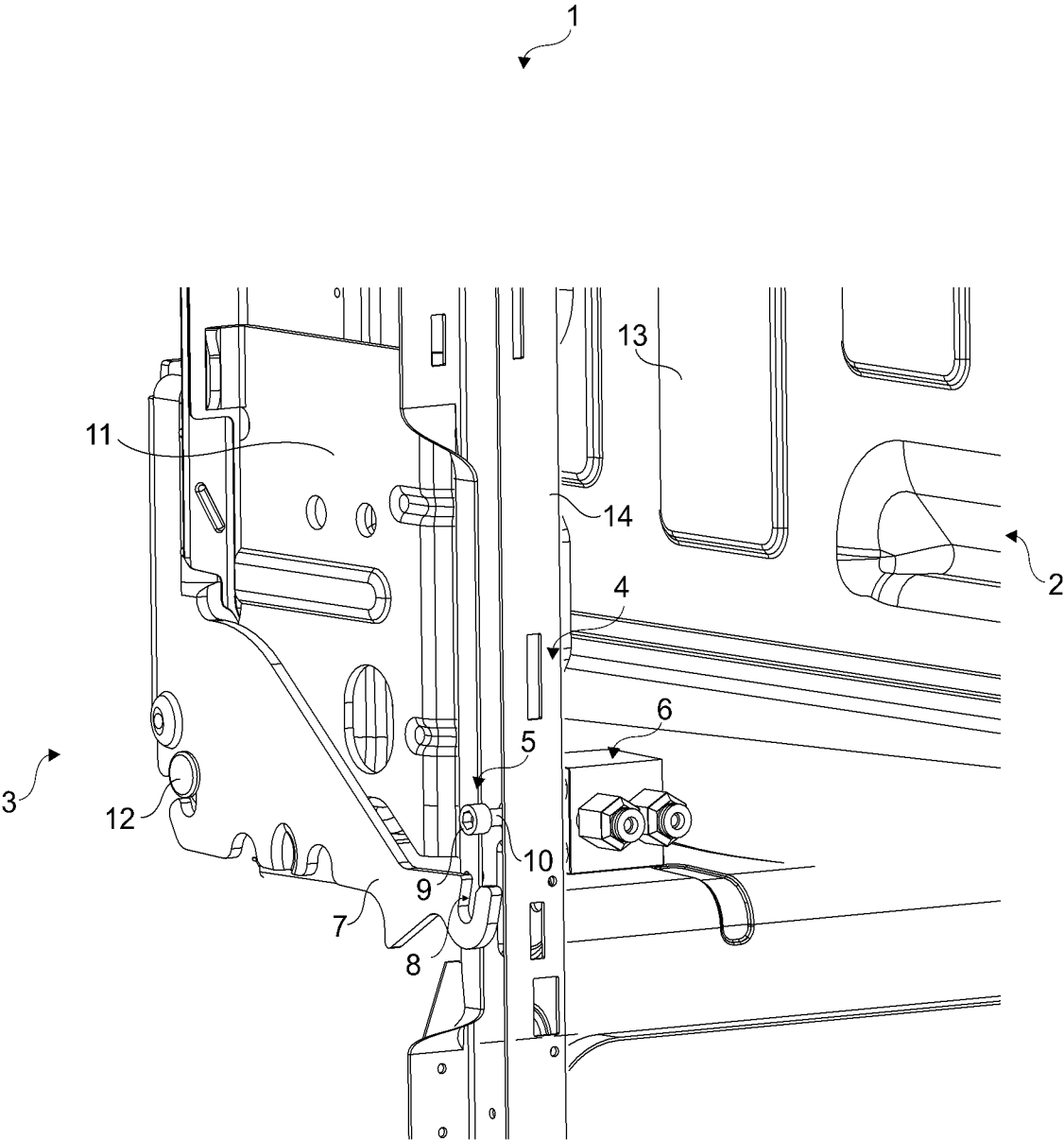


Fig. 3

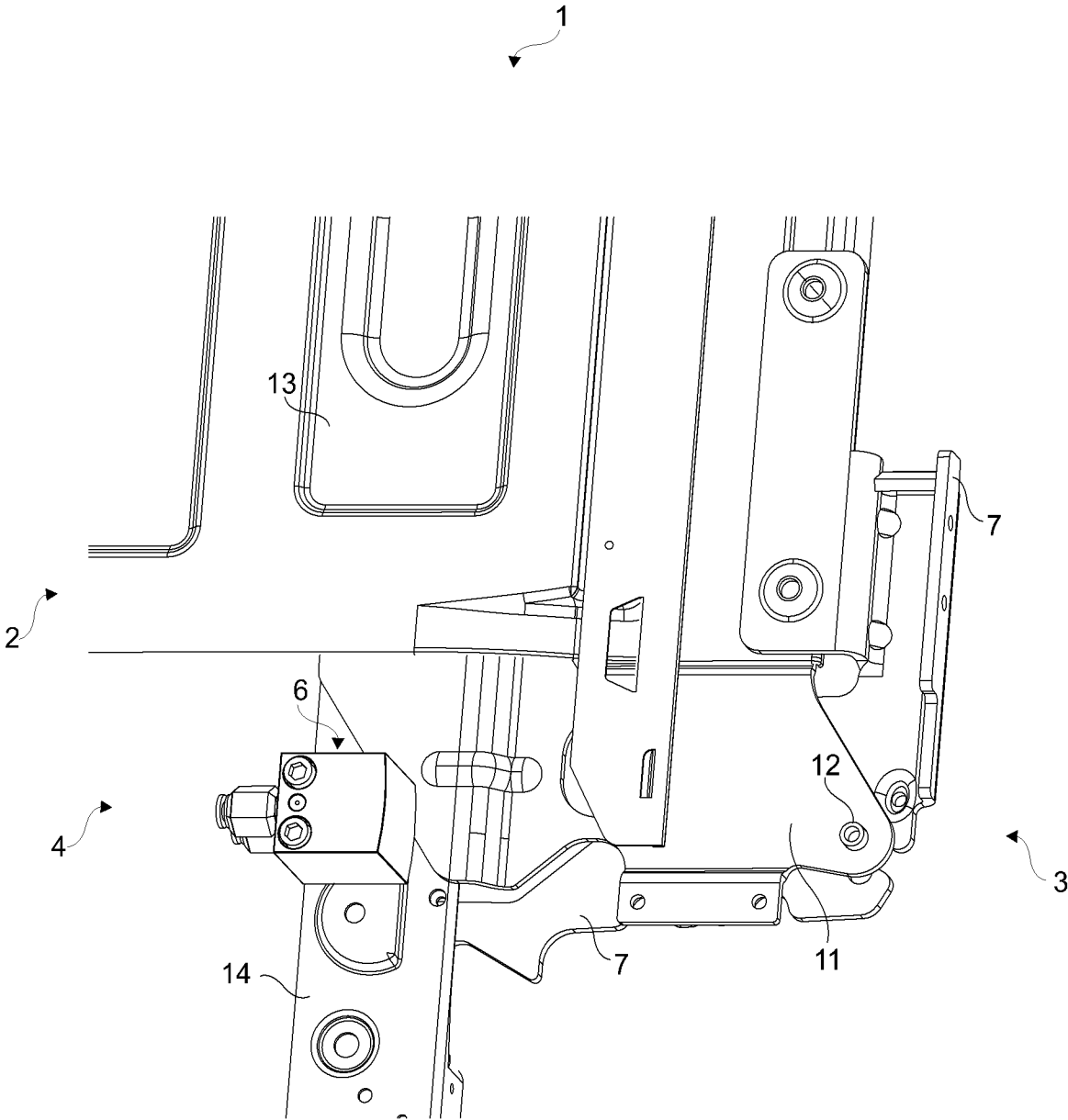


Fig. 4

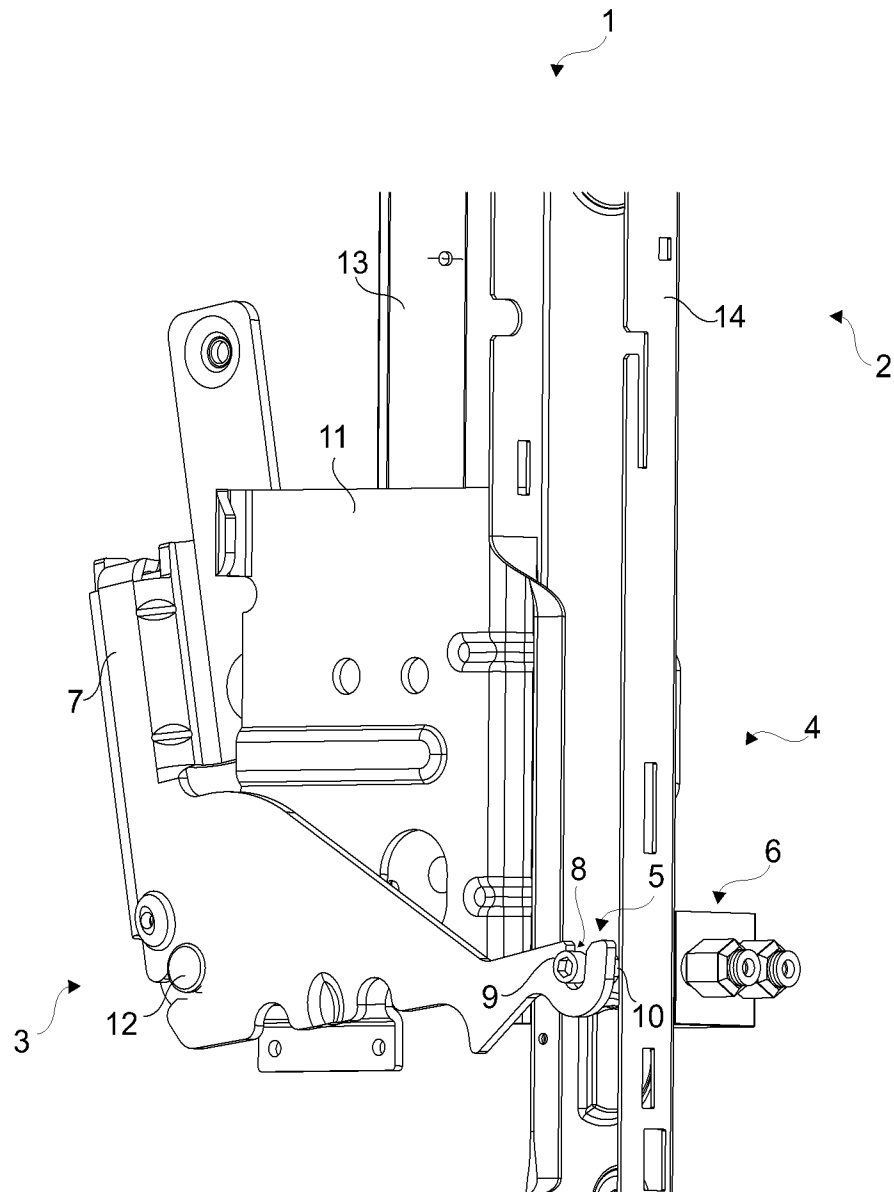
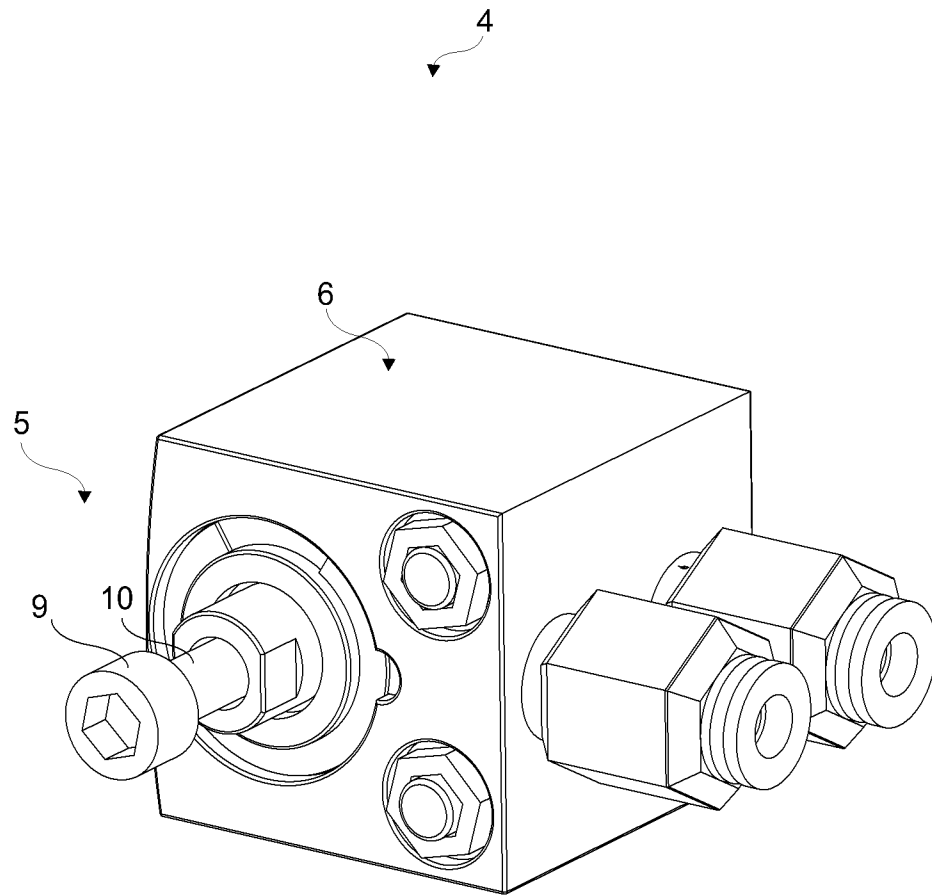


Fig. 5



INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2014/079012

A. CLASSIFICATION OF SUBJECT MATTER
INV. A47L15/42 F24C15/02
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)
A47L F24C

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 10 2012 208435 A1 (BSH BOSCH SIEMENS HAUSGERAETE [DE]) 21 November 2013 (2013-11-21) the whole document	1-9
A	US 2007/256715 A1 (OPPEL ANTON [DE] ET AL) 8 November 2007 (2007-11-08) the whole document	1-9
A	EP 2 690 366 A1 (ELECTROLUX HOME PROD CORP [BE]) 29 January 2014 (2014-01-29) paragraph [0020] - paragraph [0028]	1-9
A	WO 2013/098327 A1 (ARCELIK AS [TR]; UNVERDI UYGAR [TR]; KONUKSEVEN ERHAN ILHAN [TR]) 4 July 2013 (2013-07-04) the whole document	1-9



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

20 March 2015

Date of mailing of the international search report

31/03/2015

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Jezierski, Krzysztof

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2014/079012

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 102012208435 A1	21-11-2013	NONE	

US 2007256715 A1	08-11-2007	AT 371076 T	15-09-2007
		EP 1697607 A1	06-09-2006
		ES 2293388 T3	16-03-2008
		US 2007256715 A1	08-11-2007
		WO 2005047630 A1	26-05-2005

EP 2690366 A1	29-01-2014	NONE	

WO 2013098327 A1	04-07-2013	AU 2012360835 A1	24-07-2014
		EP 2797477 A1	05-11-2014
		WO 2013098327 A1	04-07-2013
