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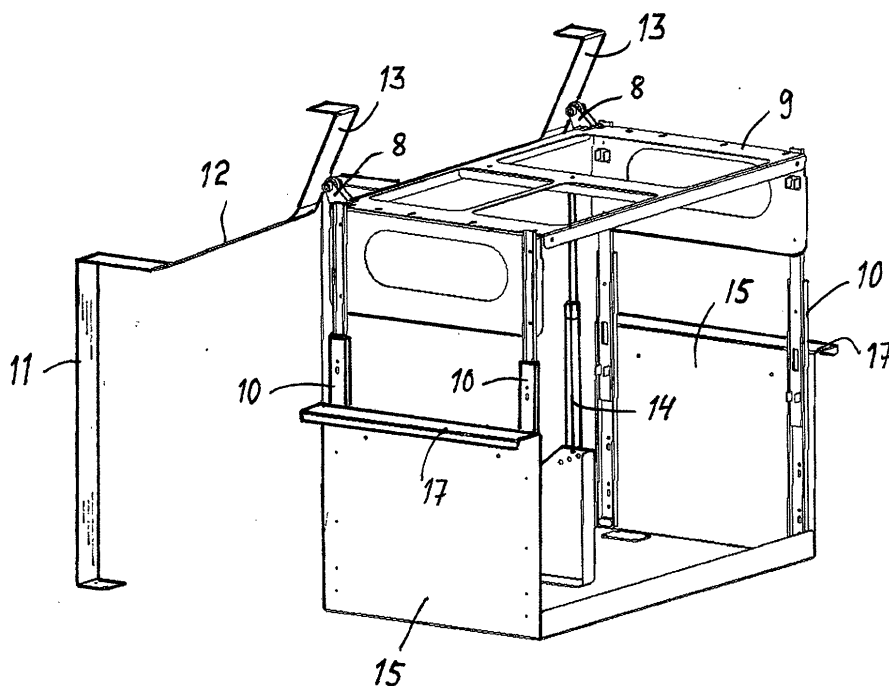
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(54) **AN ARRANGEMENT FOR MOVING A STORAGE SPACE IN A CABINET**

(57) An arrangement for moving a storage space, a bracket or a rack (4, 9) located in a cabinet (1), whereby, when opening a door or a drawer of the cabinet (1), it is possible by means of a mechanism related to the opening to implement the transfer of said storage space, bracket or rack (4, 9) fitted inside the cabinet (1) and arranged to move in there out of the cabinet to reveal them. For

said storage space, bracket or rack (4, 9) arranged moving is arranged a path by means of guiding surfaces (12, 13), mechanism combinations or arm mechanisms (3) on which path its motion is guidable outwards and upwards and that from the opening/closing motion of a door or equivalent of the cabinet (1) are arranged said motions to occur outwards and upwards.



*Fig. 4*

## Description

**[0001]** The invention relates to an arrangement for moving a storage space, a bracket or a waste-bag rack located in a cabinet, whereby, when opening a door or a drawer of the cabinet, it is possible by means of a mechanism related to the opening to implement the transfer of said storage space, bracket or rack fitted inside the cabinet and arranged to move in there out of the cabinet to reveal them.

**[0002]** Previously are known in connection with kitchen fittings e.g. mechanisms connected to a cabinet door in which, when opening the door, a shelf of the cabinet transfers outwards from the cabinet to facilitate the use of the shelf. Furthermore are known cabinet doors on the inner side of which are fastened shelves as large as possible but still so that they do not prevent the door from opening. Also in this case, goods from the cabinet can be taken out only by opening the door.

**[0003]** From patent US7794027 is known a storage-bin bracket with its base sliding on rails horizontally out of the cabinet. The sliding occurs by opening the door. The bracket and the base being out of the cabinet, the storage bin and its bracket are liftable to the top position, a pivot mechanism allowing the lifting. The lift is relieved by a spring. The gas spring also assists in relieving and dampening motion speed.

**[0004]** A disadvantage of the arrangement described in US patent 7794027 is arranging, first, the motion of the base and the storage-bin bracket outwards and then, separately, the motion of the storage-bin bracket upwards. When the storage bin is transferred back to the cabinet, it must be first pressed down to its base and the storage bin and its base must be then pushed into the cabinet.

**[0005]** A disadvantage of other known arrangements described above is that the shelf comes out on the same level as it is in the cabinet. Thus in these, only the topmost outcoming shelf is well on view. The other shelves are left below the topmost shelf and in the dark.

**[0006]** Almost invariably, kitchen fittings include a sink which takes a space below at its point in the cabinet. The sink prevents the use of the top part of the cabinet. Often at this point of the cabinet is located a waste bin set or a waste-bag rack for sorting, whereby it is naturally located in the bottom part of the cabinet. A waste-bag rack being on a lower level than normal is awkward to use, it being either behind a door to be opened or inside a drawer to be pulled out.

**[0007]** To eliminate these disadvantages and particularly making the waste-bag rack or the waste-bin set in question more accessible of its position, the present invention provides a substantial improvement to prior art. This improvement is achieved when e.g. a storage space, a bracket or a bag rack intended to be a waste station or some other storage space in a cabinet is arranged movable. It is characteristic of the invention that for said storage space, bracket or rack arranged moving is arranged

a path by means of guiding surfaces, mechanism combinations or arm mechanisms on which path its motion is guidable outwards and upwards and that from the opening/closing motion of a door or equivalent of the cabinet are arranged said motions to occur outwards and upwards.

**[0008]** An advantage of the invention is that, in addition to conventional shelf spaces, a shelf or drawer space or equivalent at the point of the sink can be made more accessible when it also transfers e.g. by pulling the front edge of the drawer outwards and, more importantly, upwards. The size of the kitchen waste station is precisely such that it fits below the sink. In this invention, it has been realised that it is easily transferrable by means of mechanisms outwards and upwards from there by supplying a motion for it from the front edge of the drawer. Also, storage spaces in other parts of the cabinet can be pulled out and better revealed in the way of the invention.

**[0009]** Next, the invention will be described in more detail with reference to the accompanying drawing in which

Fig. 1 shows a side view of a mechanism transferring a waste station located in a cabinet the waste-station being in the cabinet.

Fig. 2 shows the case of Fig. 1 the waste station having been moved outwards and upwards from the cabinet.

Fig. 3 shows a frame arrangement of a waste-bin rack to be located in a cabinet according to the invention the waste-bin rack being in the cabinet.

Fig. 4 shows the frame arrangement of Fig. 3 the waste-bag rack with its frame moved outwards and upwards from the cabinet.

Figs. 5-7 show a mechanism combination by means of which the horizontal motion of the base is transferred to be the vertical motion of a bracket.

**[0010]** Fig. 1 schematically shows an arrangement according to the present invention in a kitchen cabinet 1 at the point of a sink 2. To the frame of the cabinet 1 is fixedly fastened a telescopic slide rail 3. The out-coming end of the slide rail 3 is again fastened to a waste rack 4. The waste rack 4 is further fastened slidably to an out-pullable front wall 5, 6. When the wall 5, 6 is pulled outwards, the waste rack 4 is able to lift upwards supported by slide rails 7 fastened inside the front wall 5, 6. The slide rail 3 guides the waste rack 4 to lift, as shown in Fig. 2, at the same time as the waste rack 4 transfers outwards. The telescopic slide rail 3 is fixedly fast in the cabinet wall and keeps its direction.

**[0011]** Fig. 2 shows that the drawer front wall 5, 6 keeps its height position when pulled outwards, but the waste rack 4 lifts and becomes well revealed and accessible. To operate well, this arrangement requires e.g. in connection with the out-pulling a relieving spring, such as a

gas spring 16, which is shown in Fig. 2 beside the slide rail 3. The relieving spring can also be installed as fastened on the wall 5, 6 beside the slide rail 7 in the vertical direction, whereby its relieving force is conveyed from downwards to the waste rack 4 or the utmost end of the slide rail 3.

[0012] Fig. 3 shows another version which shows as an example the transfer of a waste-bag rack 9 outwards and upwards as the front wall (not in the figure) is being pulled upwards. Fig. 3 shows the waste-bag rack 9 moving according to the invention and its also moving bracket part comprising side parts 15 and slide rails 10 directed upwards from it supported by which rails the waste-bag rack 9 moves up and down. The bracket part only moves horizontally out of the cabinet 1 and into the cabinet. It makes this motion supported by rotated profiles 17 of the top edges of the side parts 15. These profiles have supportive counter shapes on the interior walls (not shown in the figure) of the cabinet. This arrangement is also intended to be located at the point of the sink and the waste-bag rack 9 is positioned below the sink when it is totally inside the cabinet.

[0013] When the bracket part starts to move from the position shown in Fig. 3 out of the cabinet in the direction of the arrow, follower rolls 8 being at the top edge behind the waste-bag rack start to roll along bent-to-shape plate rails 11. The plate rails 11 have obliquely upwards directed sections 12 and 13 based on which the waste-bag rack 9 lifts at the same time as it moves out of the cabinet. Instead of the follower rolls 8, it is also possible to use slipper pads. In this case, a gas spring 14 is in the middle of the rack and it ensures that the waste-bag rack 9 lifts along with it when the follower rolls 8 allow it to move upwards. The plate rails 11 with their sections 12 and 13 are fixedly connected to the cabinet and they are the only non-moving parts in Fig. 3.

[0014] Fig. 4 shows how the waste-bag rack 9 has moved with its bracket parts outwards from the cabinet and, at the same time, the waste-bag rack 9 has lifted upwards supported by the slide rails 10 and lifted by the gas spring 14.

[0015] Figs. 5-7 show the lifting of a storage-bin bracket 25 implemented by means of a mechanism combination to the top position at the same time as a moving bottom part 24 of the storage-bin bracket 25 transfers out along with a cabinet front wall 26. A first toothed bar 18 is fastened on the inner surface of the cabinet wall. A second toothed bar 19 is connected to the storage-bin bracket 25. There are slide rails 28 for the storage-bin bracket 25 for a vertical motion in said moving bottom part 24. Between the toothed bars 18 and 19 on a common axis 22 are arranged cog wheels 20 and 21 which, when being in contact with their corresponding toothed bars 18, 19, convey from the horizontal motion of the bottom part 24 of the storage-bin bracket 25 the vertical motion to the storage-bin bracket 25. Here is also shown a gas spring 27 which relieves the opening of the cabinet door and, at the same time, the lifting of all of the mass

being lifted upwards.

[0016] The transfer of the interior part of the cabinet outwards and upwards according to the invention can also be used in other parts of the cabinet than at the point of the sink. The moving interior part of the cabinet can be a part of a drawer or a space behind the cabinet door. The invention will not be limited to the described embodiments but it can be varied within the scope of the inventive idea presented in the claims.

## Claims

1. An arrangement for moving a storage space, a bracket or a rack (4, 9) located in a cabinet (1), whereby, when opening a door or a drawer of the cabinet (1), it is implementable by means of a mechanism related to the opening to transfer said storage space, bracket or rack (4, 9) arranged inside the cabinet (1) and arranged to move there out of the cabinet (1) to reveal these, **characterised in that** a path has been arranged for said movably arranged storage space, bracket or rack (4, 9) by means of guiding surfaces (12, 13), mechanism combinations or arm mechanisms (3) on which path its motion is guidable outwards and upwards and that from the opening/closing motion of the door or equivalent of the cabinet (1) are arranged said motions to occur outwards and upwards.
2. An arrangement according to claim 1, **characterised in that** the path includes guiding surfaces (12, 13) and rolls (8) or slipper pads moving along with them in contact which are fastened to the storage space, bracket or rack (9) included in the arrangement.
3. An arrangement according to claim 1, **characterised in that** the path is formed by means of an arm mechanism (3) fixedly included in the drawer frame which is telescopically extendable, directed obliquely upwards and the utmost moving end of which is fastened to said storage space, bracket or rack (4, 9).
4. An arrangement according to claim 1, **characterised in that** a gas spring (14, 16), a spring or a counter-weight arrangement is arranged to relieve the moving of said storage space, bracket or rack (4, 9) outwards and/or upwards.
5. An arrangement according to claim 1, **characterised in that** the path is linear or comprises different levels of linear or curved ascending sections.
6. An arrangement according to claim 1, **characterised in that** on the path are arranged in addition to guide elements toothed bars (18, 19) and between them cog wheels (20, 21) to convey the horizontal

motion of the base (24) to the vertical motion of the up-lifting parts (19, 25, 28).

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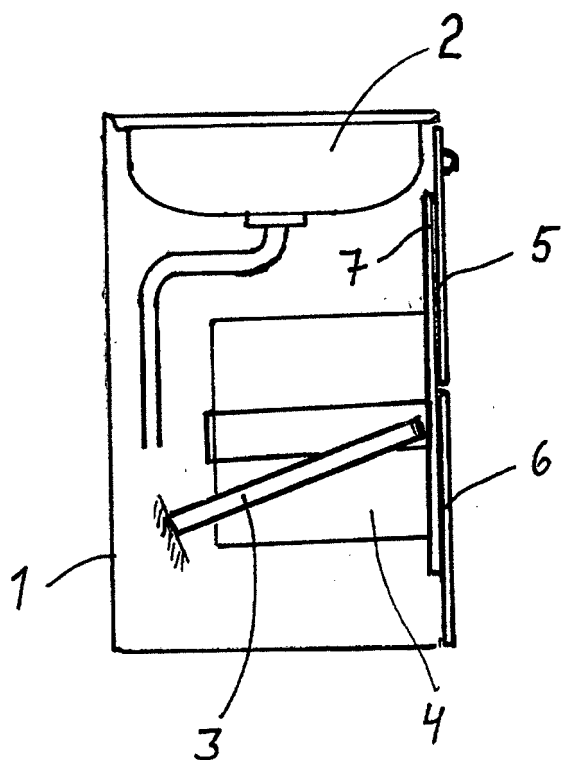


Fig. 1

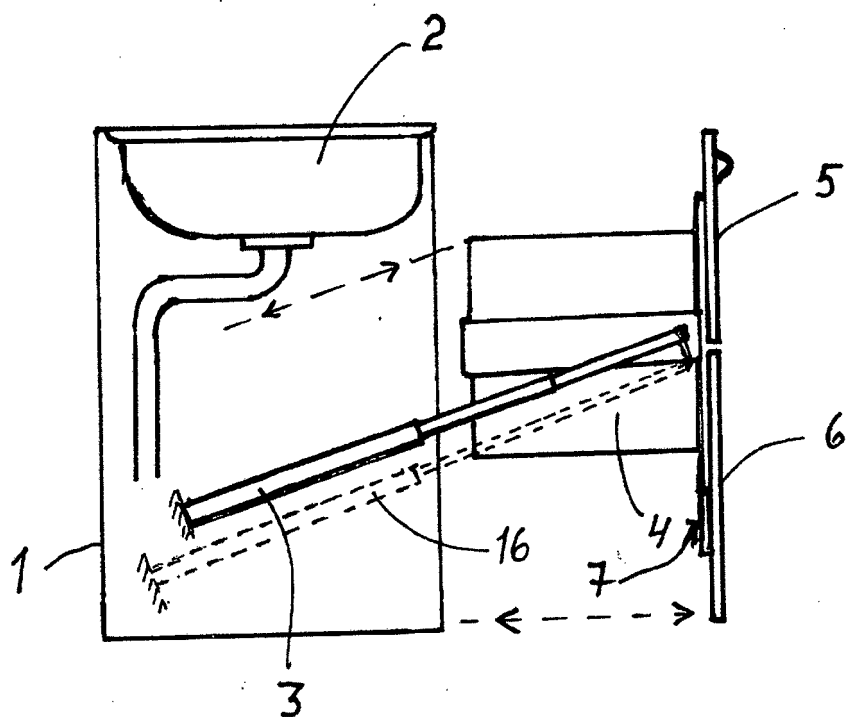
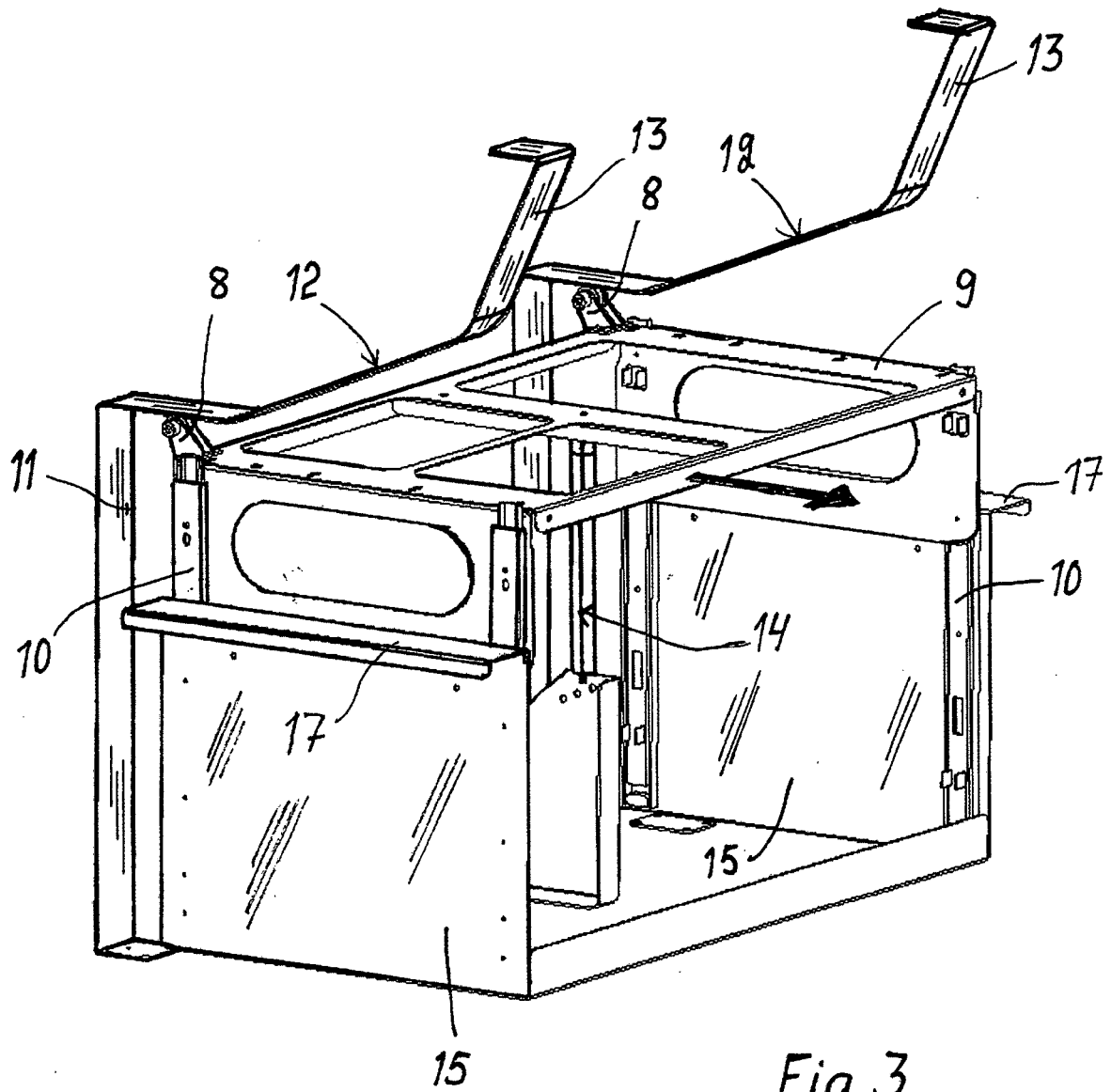


Fig. 2



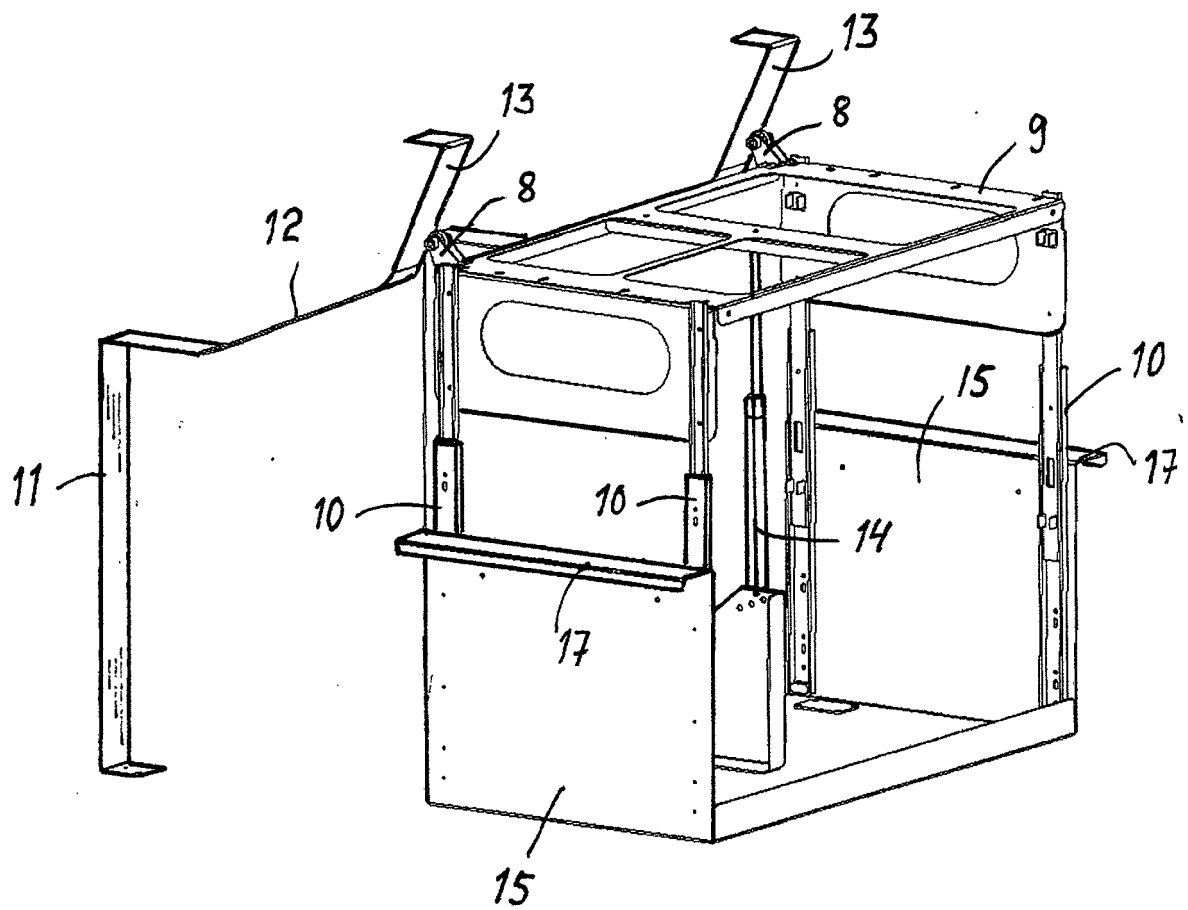


Fig. 4

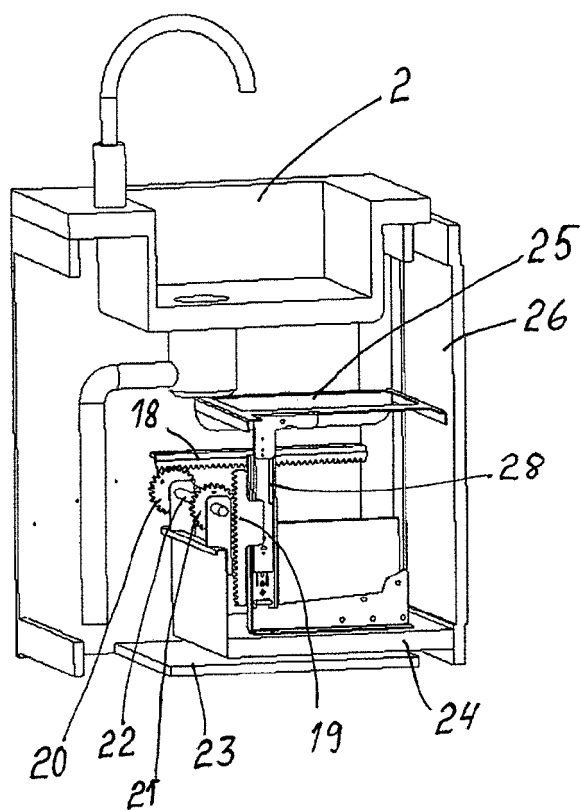


FIG. 5

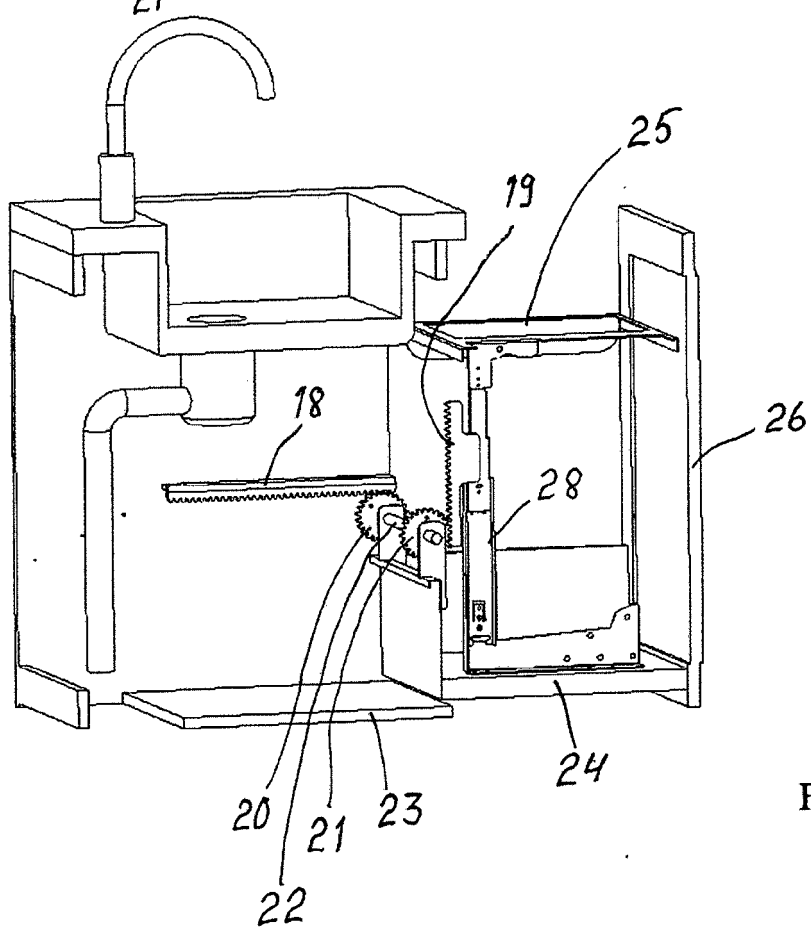
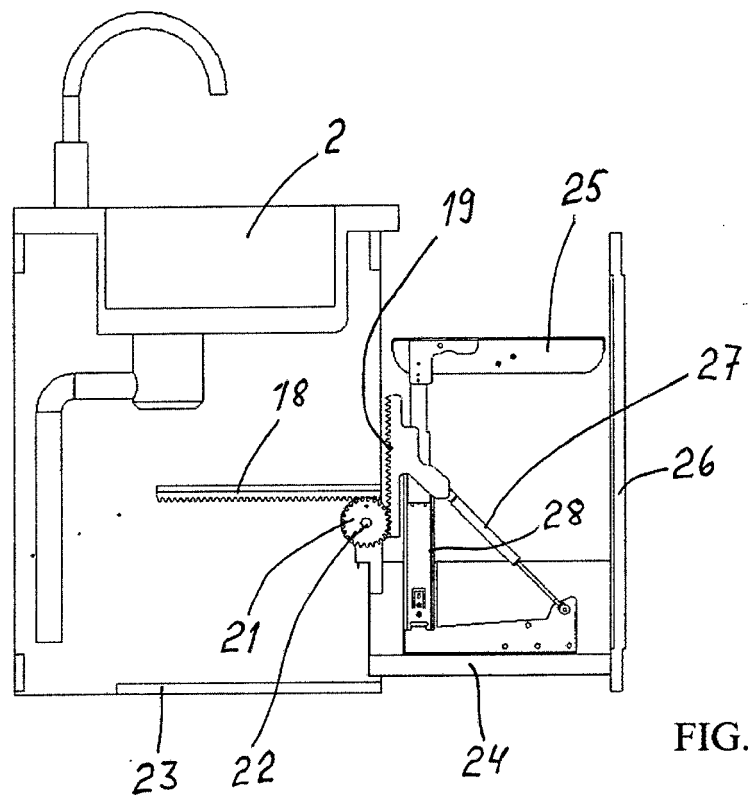


FIG. 6





## EUROPEAN SEARCH REPORT

Application Number  
EP 17 39 6004

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EPO FORM 1503 03.82 (P04C01)

| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                    |                                                                                                                                       |                                                                                                                                                                                                                                                                              |                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| Category                                                                                                                                                                                                                                               | Citation of document with indication, where appropriate, of relevant passages                                                         | Relevant to claim                                                                                                                                                                                                                                                            | CLASSIFICATION OF THE APPLICATION (IPC)                                |
| X                                                                                                                                                                                                                                                      | DE 30 01 707 A1 (ALNO MOEBEL [DE])<br>23 July 1981 (1981-07-23)<br>* page 3 - page 4; figures 1,2 *                                   | 1-5                                                                                                                                                                                                                                                                          | INV.<br>A47B77/10<br>B65F1/14                                          |
| X                                                                                                                                                                                                                                                      | EP 1 881 282 A2 (MAYTAG CORP [US])<br>23 January 2008 (2008-01-23)<br>* paragraph [0006] - paragraph [0020];<br>figures 1-7 *         | 1-5                                                                                                                                                                                                                                                                          |                                                                        |
| X                                                                                                                                                                                                                                                      | US 5 215 363 A (WARWICK III WILLIAM C [US])<br>1 June 1993 (1993-06-01)<br>* column 3, line 19 - column 6, line 39;<br>figures 1-6 *  | 1-3,5,6                                                                                                                                                                                                                                                                      |                                                                        |
| X                                                                                                                                                                                                                                                      | EP 1 617 160 A1 (LG ELECTRONICS INC [KR])<br>18 January 2006 (2006-01-18)<br>* paragraph [0002] - paragraph [0075];<br>figures 1-14 * | 1,2,4,5                                                                                                                                                                                                                                                                      |                                                                        |
| X                                                                                                                                                                                                                                                      | WO 2016/103689 A1 (PANASONIC IP MAN CO LTD [JP])<br>30 June 2016 (2016-06-30)<br>* figures 1-11 *                                     | 1,2,4,5                                                                                                                                                                                                                                                                      | TECHNICAL FIELDS<br>SEARCHED (IPC)<br><br>B65F<br>F25B<br>F25D<br>A47B |
| The present search report has been drawn up for all claims                                                                                                                                                                                             |                                                                                                                                       |                                                                                                                                                                                                                                                                              |                                                                        |
| Place of search<br><b>The Hague</b>                                                                                                                                                                                                                    |                                                                                                                                       | Date of completion of the search<br><b>1 March 2018</b>                                                                                                                                                                                                                      | Examiner<br><b>Kohler, Pierre</b>                                      |
| CATEGORY OF CITED DOCUMENTS<br>X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document |                                                                                                                                       | T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>& : member of the same patent family, corresponding document |                                                                        |

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

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**REFERENCES CITED IN THE DESCRIPTION**

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