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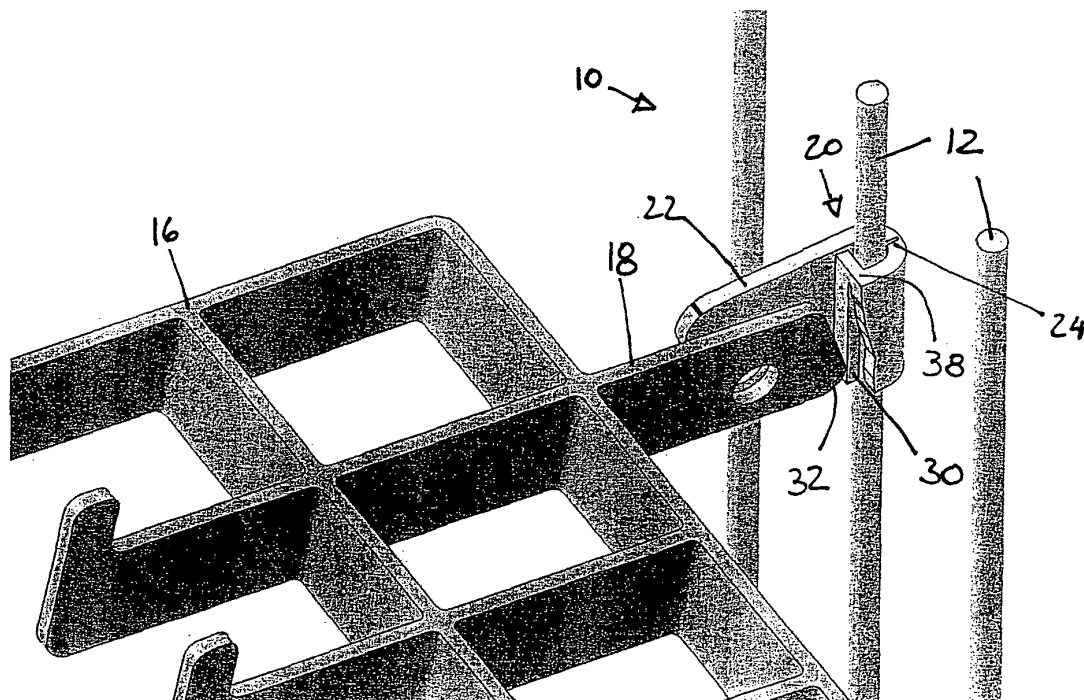
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**(54) Height-adjustable shelf assembly for a dishwasher basket**

(57) A height-adjustable shelf assembly for a dishwasher basket, comprising a shelf (16) and at least two attachment sleeves (20) each connected to the shelf and adapted to take up a vertically oriented bar (12) of the dishwasher basket (10), wherein:  
each attachment sleeve (20) comprises a friction mem-

ber (30; 36) which in a locking position engages the bar (12) to prevent movement of the sleeve along the bar and which in a release position allows movement of the sleeve along the bar, and  
that the assembly further comprises an engagement member (32; 34) for displacing the friction member between the release position and the locking position.



**FIG. 1**

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## Description

**[0001]** The present invention relates to a height-adjustable shelf assembly for a dishwasher basket, comprising a shelf and at least two attachment sleeves, each connected to the shelf and adapted to take up a vertically oriented bar of the dishwasher basket.

**[0002]** From WO 2005/037050 A1 there is known a dishwasher basket, which comprises a series of hooks that are arranged along vertical bars of the basket, at which hooks shelves can be attached. In the arrangement shown in WO 2005/037050 A1 the shelves thus can be arranged only at a limited number of different heights that are determined by the number and position of the hooks provided at the basket.

**[0003]** A similar dishwasher basket is disclosed in WO 01/87133 A1, which shows a dishwasher basket where the cup shelves are provided with a number of attachment sleeves which can be clipped onto vertically oriented bars of the dishwasher basket, wherein a sliding down of the attachment sleeves along the bars of the basket is prevented by horizontally oriented bars that are fixedly provided at different heights of the basket.

**[0004]** Whereas the above two documents thus show dishwasher baskets wherein the shelves can be attached only at a few distinct heights, from DE 30 22 484 A1 there is known a steplessly height-adjustable shelf assembly for a dishwasher basket. Herein a shelf that is made of wire bars is attached to vertically oriented bars of a dishwasher basket via plastic attachment sleeves, which slideably take up the vertically oriented bars of the basket and which are provided with a U-shaped recess in which there is arranged a horizontally oriented base bar of the shelf. In order to provide for a clamping action at a selected height of the shelf with respect to the dishwasher basket, the base bar extends beyond the attachment sleeves and is bent twice into a generally U-shape, wherein in a generally horizontal use position of the shelf the free U-shaped ends of the base bar press against the vertically oriented bars of the dishwasher basket, so as to prevent that the shelf slides down along the bars of the dishwasher basket when loaded. While in the dishwasher basket suggested in DE 3 022 484 A1 the shelf can be arranged steplessly at any selected height along the vertical bars of the dishwasher basket, the clamping action of the U-shaped free ends of the base bar of the shelf do not provide for a reliable fixing of the shelf with respect to the basket.

**[0005]** It is an object of the present invention to provide for a dishwasher basket comprising a shelf that can be arranged steplessly at a desired height with respect to the dishwasher basket, wherein the height of the shelf with respect to the basket is secured in a reliable manner.

**[0006]** In a height-adjustable shelf assembly for a dishwasher basket, comprising a shelf and at least two attachment sleeves, each connected to the shelf and adapted to take up a vertically oriented bar of the dishwasher basket, this object is solved in accordance with

the present invention in that each attachment sleeve comprises a friction member, which in a locking position engages the bar to prevent movement of the sleeve along the bar and which in a release position allows movement of the sleeve along the bar, wherein the assembly further comprises an engagement member for displacing the friction member between the release position and the locking position.

**[0007]** In the height-adjustable shelf assembly in accordance with the present invention the height of the shelf with respect to the dishwasher basket is fixed in a reliable manner by the provision of the friction member that is provided at the attachment sleeve. Since in such an arrangement the holding force that is created by engaging the friction member of the attachment sleeve and the bar of the dishwasher basket is determined by the friction between the friction member and the bar, which in turn is determined by the area of contact between the friction member and the bar, which area of contact is not restricted to an essentially punctual contact as in above-cited DE 30 22 484 A1 but rather can be freely selected by appropriate design of the attachment sleeve, much higher holding forces can be realized in the present invention than in the prior art solutions.

**[0008]** Preferred embodiments of the invention are defined in the dependent claims.

**[0009]** In particular, if the friction member is designed to be an integral part of the attachment sleeve, the attachment sleeve and the friction member can be fabricated in a single manufacturing step, for example by injection moulding of a plastics material.

**[0010]** Preferably, the friction member is a tongue which extends in the axial direction of the attachment sleeve, i.e. in a direction parallel to the vertically oriented bar of the dishwasher basket, which is taken up by the attachment sleeve. Since, as mentioned above, the holding force at least in part is determined by the area of contact between the friction member and the bar, a higher holding force can be implemented by providing for an increased length of such tongue. Alternatively or in addition the friction and hence the holding force could be increased by providing for a higher coefficient of friction at the area of contact, such as by providing for a surface roughening at the area of contact or by selecting materials for the friction member and/or the corresponding bar of the basket which counteract sliding of the friction member along the bar.

**[0011]** In preferred embodiments of the invention, the shelf is hinged to the attachment sleeves so as to be foldable between a substantially horizontally use position and a substantially vertical non-use position. In such embodiments the attachment sleeve preferably comprises a projection to which the shelf is hinged.

**[0012]** In a first embodiment of the present invention the engagement member of such a shelf assembly is a lever arm that is connected to the shelf, wherein, when the shelf is folded into its use position, the lever arm is located between the hinge and the friction member and

presses against the friction member. In this embodiment the lever arm, which may be a projection of the shelf in the plane of the shelf rests against the friction member when the shelf in its use position, so that the friction member acts as a stop for the rotational folding movement of the shelf. In such embodiments, the force with which the friction member is pressed against the bar of the basket is proportional to the weight of the shelf as such as well as the weight of any items that are placed onto the shelf.

**[0013]** In these embodiments the lever arm preferably has an eccentric circumferential shape, as it can be implemented by providing the lever arm with a slanted end that projects further from the shelf in a region of the lever arm that, when the shelf is in its substantially horizontal use position, is below the pivot point of the shelf. Alternatively, an eccentric circumferential shape, could be implemented, for example, by providing for an ovoid shape of the end of the lever arm.

**[0014]** In an alternative embodiment of the invention the engagement member is a foldable lever means comprising a first lever member and a second lever member, which are foldably connected to each other, wherein the first lever member is hinged to the shelf and the second member is hinged to the friction member. In such embodiments, wherein the shelf either can be fixedly or pivotally connected to the attachment sleeves, the holding force is independent of the weight of the shelf and of the items placed thereon, but rather is entirely defined by the design of the foldable lever means. Thus, large holding forces can be achieved also with few or even no articles placed onto the shelf.

**[0015]** In particularly preferred embodiments the foldable lever means is designed as an over-center spring, as it can be implemented by designing the foldable lever means such that the combined length of the first lever member and the second lever member is slightly greater than the distance between the point where the first and second lever members are hinged to the shelf and the friction member, respectively, so that the foldable lever means can be brought by a click-type operation into a locking position by pushing the lever means through its centre position. Similarly, the lever means again can be released by pulling it back through the centre position.

**[0016]** In further preferred embodiments of the height-adjustable shelf assembly of the invention, wherein the engagement member is a foldable lever means, the shelf is hinged to the attachment sleeves to be foldable between a substantially horizontal use position and a substantially vertical non-use position, wherein the attachment sleeve further comprises a stop to limit rotation of the shelf in the use position. Since in these embodiments the vertical fixing of the shelf at a desired height is decoupled from the folding motion of the shelf with respect to the basket, the stop can be designed irrespective of the friction member. Thus, whereas in embodiments where the friction member is pressed against the bar by an eccentric tip of the lever arm provided at the shelf, which tip inherently will have a relatively small surface

area and hence may be subject to deformation during use or increased wear, in the present embodiments the stop surface provided at the attachment sleeve and correspondingly the abutting surface associated to the shelf can be designed with a larger surface area and/or of a material with higher rigidity. In this manner a deformation of the abutment surface upon engaging the stop at the relatively high operational temperatures that maybe experienced within a dishwasher can be prevented or at least reduced to a considerable extent so that a misorientation of the shelf with respect to the dishwasher basket is avoided.

**[0017]** In a further preferred embodiment the second lever member comprises an extension extending beyond the hinge of the second lever member to the shelf, which extension thus forms a release lever, by which the foldable lever means easily can be brought from a locked position, in which the hinge between the first and the second lever has been pressed through its centre position so as to lock the friction member in abutment against the bar of the dishwasher basket, back into a release position by pressing down the extension, which thus lifts the hinge between the first and the second lever member to thus fold the lever means.

**[0018]** Manufacturing of the lever means is made most simple, when the foldable lever means is designed as a film hinge, i.e. as an integral part wherein the first lever member, the second lever member and the friction member are all part of the same element that are connected to each other by means of sections of such element with reduced thickness which act as hinges.

**[0019]** Preferably, the second lever member at its end facing away from the first lever member is hinged to a clamp, which during assembling of the shelf assembly is fitted onto the shelf. In this manner, assembling of the shelf assembly can be further simplified, since for mounting of the foldable lever means, which can be designed to be integrally connected to the attachment sleeve, no further assembling steps are required other than clamping the clamp onto the shelf, at a predetermined location.

**[0020]** The shelf and the attachment sleeves can be moulded plastic parts, and for example, can be made of polypropylene (PP). While polypropylene is advantageous in terms of its ease of manufacturing as well as of costs, polypropylene is a relatively soft material, which at the relatively high operating temperatures within a dishwasher may experience deformation. Therefore, in areas of the shelf assembly, where stability in dimension is an issue, such as it may apply to the region where a foldable shelf abuts against a stop of the attachment sleeve, which limits the rotational movement of the shelf, materials of higher rigidity may be used such as polytetrafluoroethylene (PTFE), which also is known under the tradenames Hostaflon, Teflon or Algoflon.

**[0021]** In order to allow an easy mounting of the attachment sleeves to vertically oriented bars of the dishwasher basket, the attachment sleeves preferably comprise as hinge so that the sleeves can be opened for

mounting thereof on a bar of the basket, whereupon the sleeves are closed and are kept close either by a separate member or by using the force that is applied onto the friction member also for keeping the attachment sleeve closed.

**[0022]** Preferred embodiments of the present invention will be described below by preference to the drawings, in which:

- FIG. 1 shows a perspective view, partially broken away, of a first embodiment of a height-adjustable shelf assembly in accordance with the present invention;
- FIG. 2 is a view similar to FIG. 1, wherein the parts that in FIG. 1 were shown broken away are shown complete;
- FIG. 3 is a perspective view, partially broken away, of another embodiment of the height-adjustable shelf assembly in accordance with the present invention;
- FIG. 4 is a view similar to FIG. 3 with the attachment sleeve shown in full;
- FIG. 5 is a modified embodiment of the height-adjustable shelf assembly shown in FIG. 3;
- FIG. 6 is a sectional view of the shelf assembly shown in FIG. 4; and
- FIGS. 7 to 10 illustrate operation of the foldable lever means of the height-adjustable shelf assembly shown in FIGS. 3 to 6.

**[0023]** FIG. 1 shows in perspective view a section of a dishwasher basket 10, of which for the ease of illustration in FIG. 1 only three vertically oriented bars 12 are shown. Bars 12 are part of a sidewall of the dishwasher basket, that is formed by welding metal bars in a mesh-like configuration, such as by welding vertical bars 12 to horizontally extending bars such as an horizontally extending bar 14 (see FIG. 2) which forms the upper rim of the dishwasher basket. In order to make better use of the height of the dishwasher basket by arranging items in two rows above each other, a shelf 16 is provided, usually along the lateral sides of the dishwasher basket, onto and below which shelf items of lower height, such as cups, can be arranged.

**[0024]** In the embodiment shown in FIGS. 1 and 2, the cup shelf 16 is a moulded plastic part, that is made, for example, of polypropylene (PP). Shelf 16 comprises at least two lever arms 18 that extend in the shelf plane beyond the storage area of the shelf towards bars 12. In order to attach the shelf via lever arms 18 to the dishwasher basket, there is provided for each lever arm 18

an attachment sleeve 20 that is arranged about one of the vertically oriented bars 12. To facilitate mounting of the attachment sleeves 20 to the dishwasher basket, the sleeves 20 are provided with a hinge 24, along which generally U-shaped projections 22 and 26 of the attachment sleeve 20, which take up lever 18 of the shelf, can be opened and closed. Shelf 16 is hinged at the lever arms 18 to the attachment sleeve 20 by means of a pivot pin 28 (see FIG. 2), which during assembling of the shelf assembly is inserted into openings provided in the sleeve projections 22 and 26 and in lever arm 18. While pivot pin 28 may be a pin that is locked into place in a snap-in motion, instead of a single pivot pin 28 also any other kind of attachment could be used, such as a two-part snap-in connection, a screw etc. Thus shelf 16 can be folded from the generally horizontal use position, as it is shown in FIGS. 1 and 2, into a substantially vertical non-use position, in which shelf 16 is folded upwards towards the basket 10.

**[0025]** While the attachment sleeve 20 as such is not fixedly connected to bar 12 and thus can slide along bar 12 in an upward or downward direction, the height of the shelf is secured in the use position with the aid of a friction member 30, which in the embodiment of FIGS. 1 and 2 is a tongue that is an integral part of attachment sleeve 20 and which at the side of the attachment sleeve facing lever arm 18 extends along bar 12. In the use position shown in FIGS. 1 and 2 the tongue 30 is pressed against bar 12 by an eccentric nose 32 provided at the free end of lever arm 18. While in the use position of shelf 16 already the dead weight of the shelf 16 provides for sufficient holding force via friction member 30, the holding force is increased correspondingly when items such as cups are placed onto shelf 16, which thus increase the momentum and hence the force of the eccentric nose 32 pressing against tongue 30. Tongue 30, thus, apart from its function as friction member for securing the height of the shelf, acts as a stop that limits the downward tilting motion of shelf 16 at the use position thereof.

**[0026]** In the embodiment shown in FIGS. 1 and 2 the height of shelf 16 can be easily adjusted by tilting shelf 16 into a non-use position, in which the eccentric projection 32 of lever arm 18 does not exert a pressing force onto tongue 30, so that shelf 16 can be shifted upwards or downwards along bars 12 of the dishwasher basket. When the shelf, at the selected height, is folded downwards into its horizontal use position, such height adjustment is secured by tongue 30 which acts as a friction member by being pressed against bar 12. It will be appreciated that the friction between tongue 30 and bar 12 can be easily selected by selecting a corresponding vertical length of attachment sleeve 20, by which the frictional contact area between tongue 30 and bar 12 is increased or decreased, respectively.

**[0027]** In FIGS. 3 and 4 there is depicted a further embodiment of the height-adjustable shelf assembly. In this embodiment the friction member is not pressed against bar 12 via the weight of the shelf and of any items placed

thereon, but via a foldable lever means 34 that applies a contact pressure onto a tongue that is part of sleeve 20 irrespective of the weight of shelf 16. In particular, attachment sleeve 20 again comprises a tongue 36, similar as in the embodiments shown in FIGS. 1 and 2. However, whereas in the embodiments shown in FIGS. 1 and 2 tongue 30 is integrally connected to attachment sleeve 20 via a bridging area 38 that is provided at the upper end of the attachment sleeve, in the embodiment shown in FIG. 3, tongue 36 is integrally connected to sleeve 20 via a bridging area 40 that is provided at the lower end of attachment sleeve 20. At its upper end, tongue 36 is hinged to a foldable lever means 34 which comprises a first lever member 42 and a second lever member 44. First and second lever members 42, 44 are foldably connected to each other via a hinge 46. Second lever member 44 is hinged to shelf 16, wherein in the embodiment shown in FIGS. 3 to 5 to this end a clamp 50 is provided that is integrally hinged to second lever member 44 at a hinge 48 (see FIG. 4), and which clamp 50 during assembling of the shelf assembly is fitted onto shelf 16 and is fixed there via a snap-in connection 52. In order to limit the downward folding movement of shelf 16, when tilting shelf 16 from its substantially vertical non-use position into its substantially horizontal use position, attachment sleeve 20 comprises a stop 54 against which a projection of lever arm 18 abuts in the use position of shelf 16.

**[0028]** The operation of the foldable lever means 34, which is designed as an over-center spring to apply pressure onto fixing member 36 and to maintain such pressure when the shelf is brought in to the use position, will now be explained by reference to FIGS. 7 to 10.

**[0029]** In particular, FIG. 7 shows shelf 16, which during periods of non-use is folded upwards so that it extends substantially vertically and which may be stowed away by being shifted downwards along bars 12 towards the floor (not shown) of the dishwasher basket 10. When shelf 16 is to be used, it is brought to a desired height by shifting attachment sleeves 20 upwards along bars 12 and by then folding down shelf 16 until a stop projection 56 provided at lever arm 18 rests again stop 54 of the attachment sleeve 20, as it is shown in FIG. 8.

**[0030]** In order to fix the shelf 16 at this height, the user presses down onto hinge 46, which connects the first lever member 42 to second lever member 44 as it is illustrated in FIG. 9. Due to the dimensioning of the length of the first and second lever members 42, 44 with respect to the distance of bar 12 to hinge 48, by which the second lever member 44 is hinged to shelf 16, tongue 36 which acts as friction member is pressed against bar 12 of the basket. When the centre position of the foldable lever means, in which the first and the second lever member extend along a straight line, is passed, the lever member snaps from the position shown in FIG. 9 into the position shown in FIG. 10, in which hinge 46 comes to a rest on the upper side of shelf 16. Due to this over-centre action of the foldable lever means 34 tongue 36 is reliably held in pressing abutment against bar 12 to securely fix shelf

16 at the desired height.

**[0031]** As it is shown in FIGS. 3 and 4, the foldable lever means 34 may comprise a broadened region in the section of hinge 46, which thus acts as a button to press down foldable lever means 34 into the over-centre position shown in FIG. 10 and which further acts as a grip at which foldable lever means 34 can be pulled-up again, so as to release the over-centre spring formed by lever means 34 from the position shown in FIG. 10 to a release position as it is shown in FIGS. 8 and 9. In order to facilitate releasing of the over-centre spring, second lever arm 44 also may comprise an extension 58, as it is shown in dotted lines in FIG. 10, which comprises a rigid extension of the second lever arm 44 beyond hinge 48 and which together with second lever arm 44 constitutes a rocker about hinge 48 by which hinge 46 which connects the first and second lever arms, can be lifted-up into the release position by pressing down extension 58.

**[0032]** While in the embodiments shown in FIG. 3 and 4 sleeve 20 comprises a hinge 24 to open sleeve 20 for mounting thereof onto a bar 12 of the dishwasher basket, and wherein the attachment sleeve 20 is held in the closed position about bar 12 by a pivot pin 28 as it is illustrated in FIG. 2, the attachment sleeve may be held closed about bar 12 also in any other suitable manner.

**[0033]** Thus, the attachment sleeve 20 also could be provided with a snap-in projection 60 that is provided on projection 22 at a location facing bridging section 40 and behind which tongue 36 snaps-in when closing the attachment sleeve 20 upon mounting thereof onto bar 12.

**[0034]** Furthermore, as it is illustrated in FIG. 5, the attachment sleeve 20 can be held closed about bar 12 solely by the action of the foldable lever arrangement 34, which exerts a force that is directed towards bar 12 onto tongue 36.

**[0035]** The present invention provides for a height-adjustable shelf assembly for a dishwasher basket, which, particularly when the foldable lever means 34 constitutes an integral part of the attachment sleeve, which may be manufactured, for example, by injection moulding of a plastics material such as polypropyethylene in a single manufacturing step, thus is composed of a minimum number of components, which can be installed in a simple manner in an already existing dishwasher basket and which is easy to use and provides for a secure attachment of the shelf at a desired height within the dishwasher basket.

#### List of reference signs

##### **[0036]**

- 10 dishwasher basket
- 12 vertically oriented bar
- 14 horizontally extending bar
- 16 shelf
- 18 lever arm
- 20 attachment sleeve

22 projection  
 24 hinge at 20  
 26 projection  
 28 pivot pin  
 30 tongue (friction member)  
 32 eccentric nose  
 34 foldable lever means  
 36 tongue  
 38 bridging area  
 40 bridging area  
 42 first lever member  
 44 second lever member  
 46 hinge  
 48 hinge  
 50 clamp  
 52 snap-in connection  
 54 stop  
 56 stop projection  
 58 extension

shelf (16), wherein, when the shelf is folded into its use position, said lever arm is located between the hinge (28) and the friction member (30) and presses against the friction member.

7. The shelf assembly of claim 6, wherein the lever arm (18) has an eccentric circumferential shape.

8. The shelf assembly of claim 6 or 7, wherein the friction member (30) constitutes a stop for the lever arm (18) that limits rotation of the shelf (16) in its use position.

9. The shelf assembly of any one of claims 1 to 5, wherein the engagement member is a foldable lever means (34) comprising a first lever member (42) and a second lever member (44) foldably connected to each other, wherein the first lever member is hinged to the shelf (16) and the second lever member is hinged to the friction member (36).

10. The shelf assembly of claim 9, wherein the foldable lever means (34) is designed as an over-center spring.

11. The shelf assembly of claim 9 or 10, wherein the shelf (16) is hinged to the attachment sleeves (20) to be foldable between a substantially horizontal use position and a substantially vertical non-use position, said attachment sleeve further comprising a stop (54) to limit rotation of the shelf in the use position.

12. The shelf assembly of any one of claims 9 to 11, wherein the second lever member (44) comprises an extension (58) extending beyond the hinge (48) to the shelf (16).

13. The shelf assembly of any one of claims 9 to 12, wherein the foldable lever means (34) in the region of the hinge (46) between the first lever member (42) and the second lever member (44) comprises a broadened operation section for selectively fixing or releasing the friction member (36).

14. The shelf assembly of any one of claims 9 to 13, wherein the second lever member (44) at its end facing away from the first lever member (42) is hinged to a clamp (50) which during assembling of the shelf assembly is fitted onto the shelf (16).

15. The shelf assembly of any one of claims 9 to 14, wherein the foldable lever means (34) is designed as film hinge.

16. The shelf assembly of any one of the preceding claims, wherein the shelf (16) and the attachment sleeves (20) are molded plastic parts.

## Claims

1. A height-adjustable shelf assembly for a dishwasher basket, comprising a shelf (16) and at least two attachment sleeves (20) each connected to the shelf and adapted to take up a vertically oriented bar (12) of the dishwasher basket (10), **characterized in that** each attachment sleeve (20) comprises a friction member (30; 36) which in a locking position engages the bar (12) to prevent movement of the sleeve along the bar and which in a release position allows movement of the sleeve along the bar, and that the assembly further comprises an engagement member (32; 34) for displacing the friction member between the release position and the locking position.
2. The shelf assembly of claim 1, wherein the friction member (30; 36) is an integral part of the attachment sleeve (20).
3. The shelf assembly of claim 2, wherein the friction member is a tongue (30; 36) extending in the axial direction of the attachment sleeve (20).
4. The shelf assembly of any one of the preceding claims, wherein the shelf (16) is hinged to the attachment sleeves (20) to be foldable between a substantially horizontal use position and a substantially vertical non-use position.
5. The shelf assembly of claim 4, wherein the attachment sleeve (20) comprises a projection (22, 26) to which the shelf (16) is hinged.
6. The shelf assembly of claim 5, wherein the engagement member is a lever arm (32) connected to the

**17.** The shelf assembly of claim 16, wherein the shelf (16) and the attachment sleeves (20) are formed of polypropylene.

**18.** The shelf assembly of any one of the preceding claims, wherein the attachment sleeve (20) comprises a hinge (24) to open the sleeve for mounting thereof on a bar (12) of the dishwasher basket (10).

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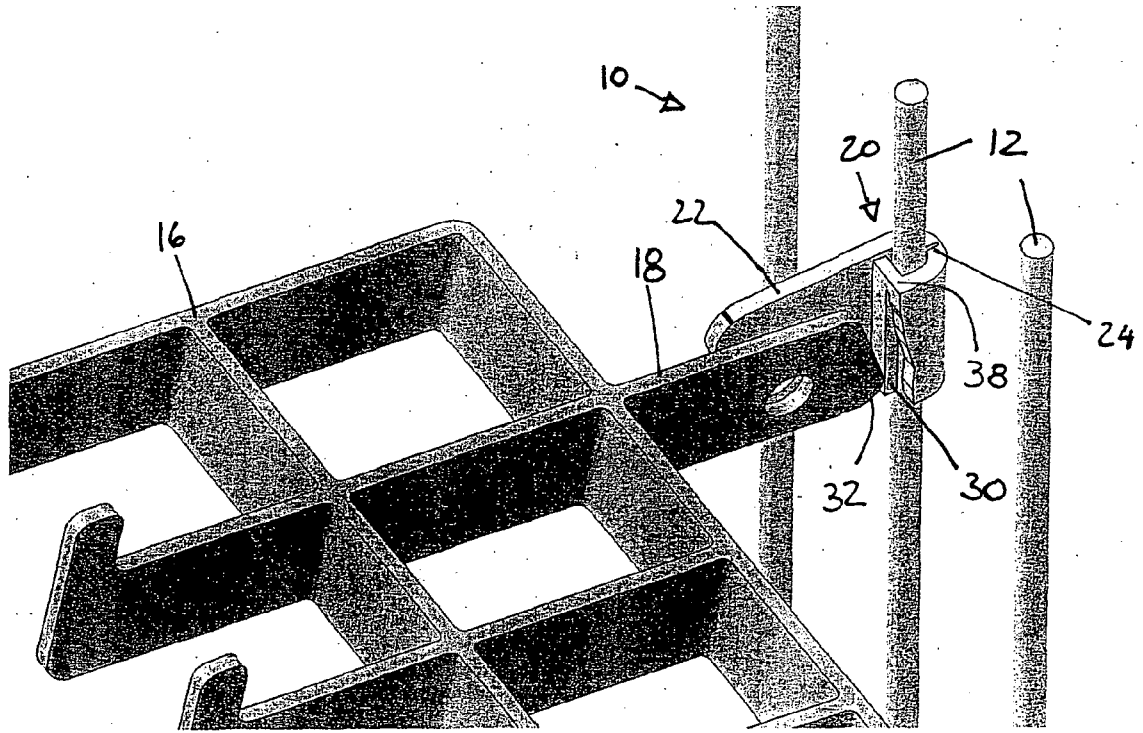


FIG. 1

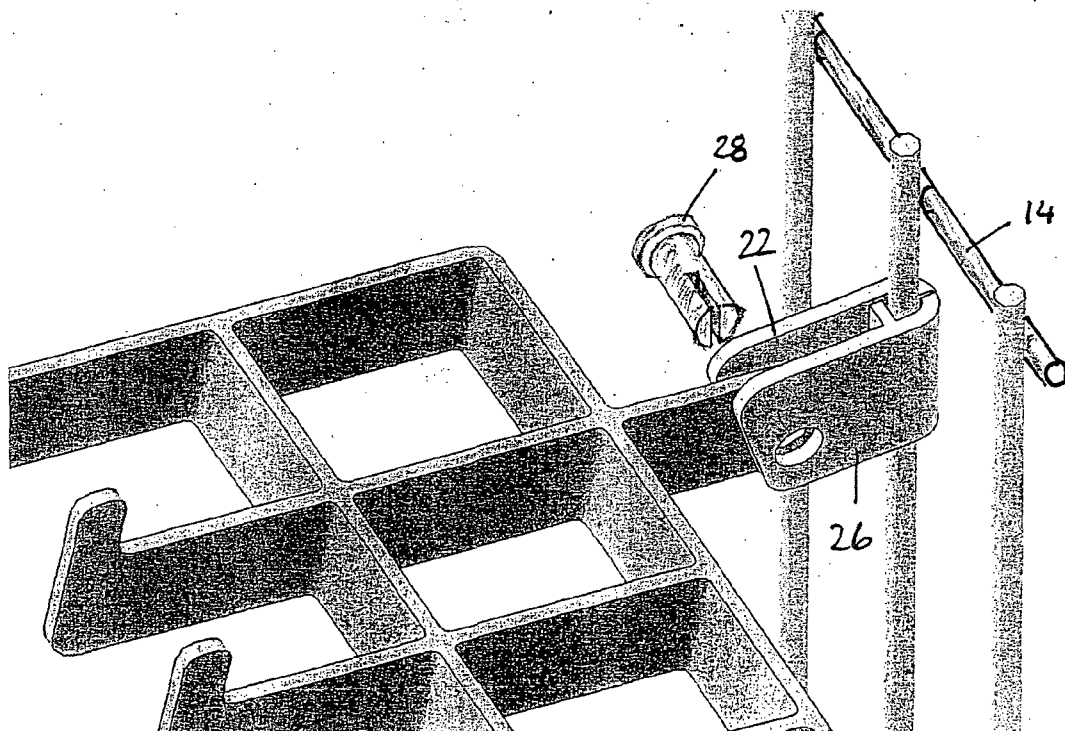
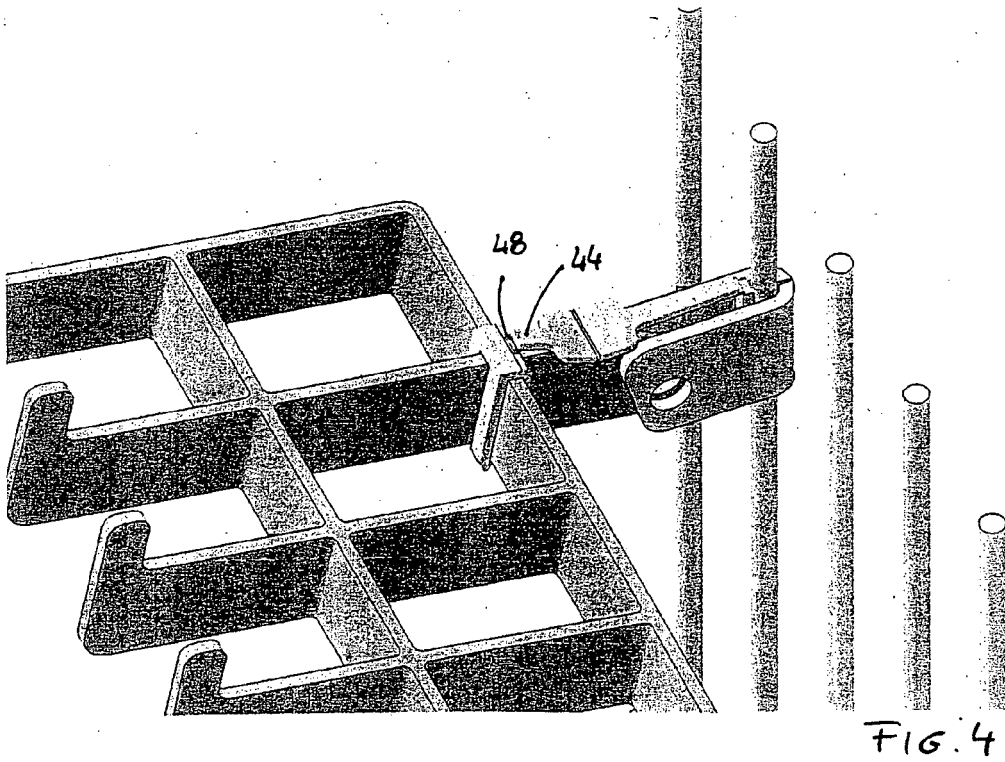
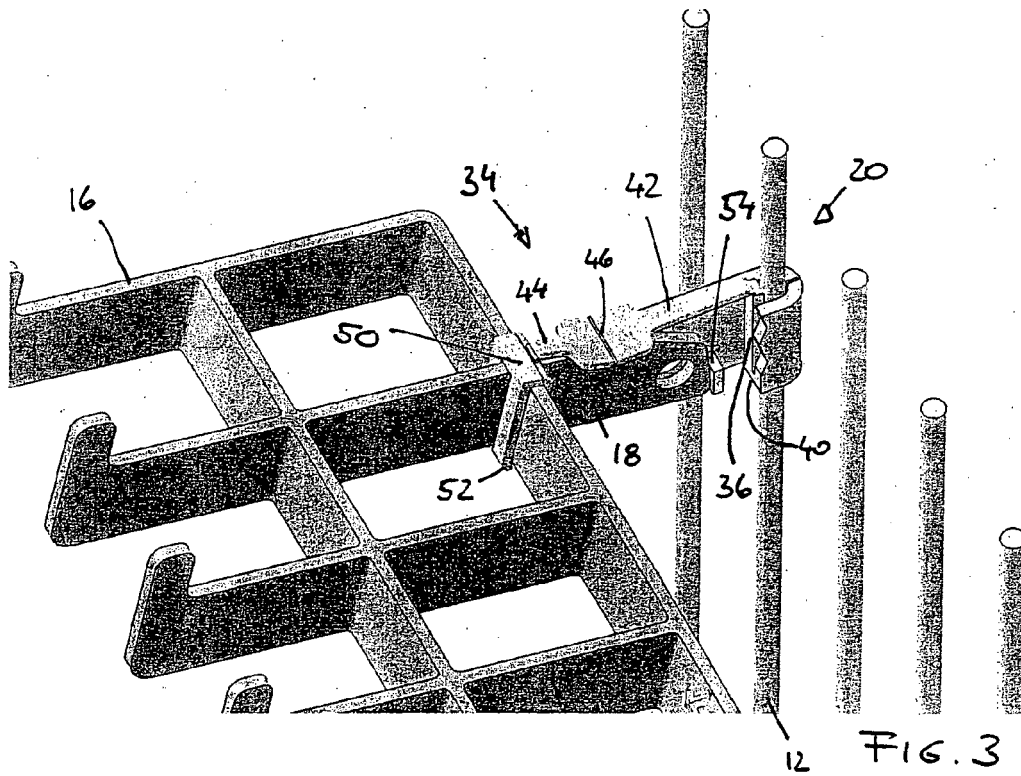


FIG. 2



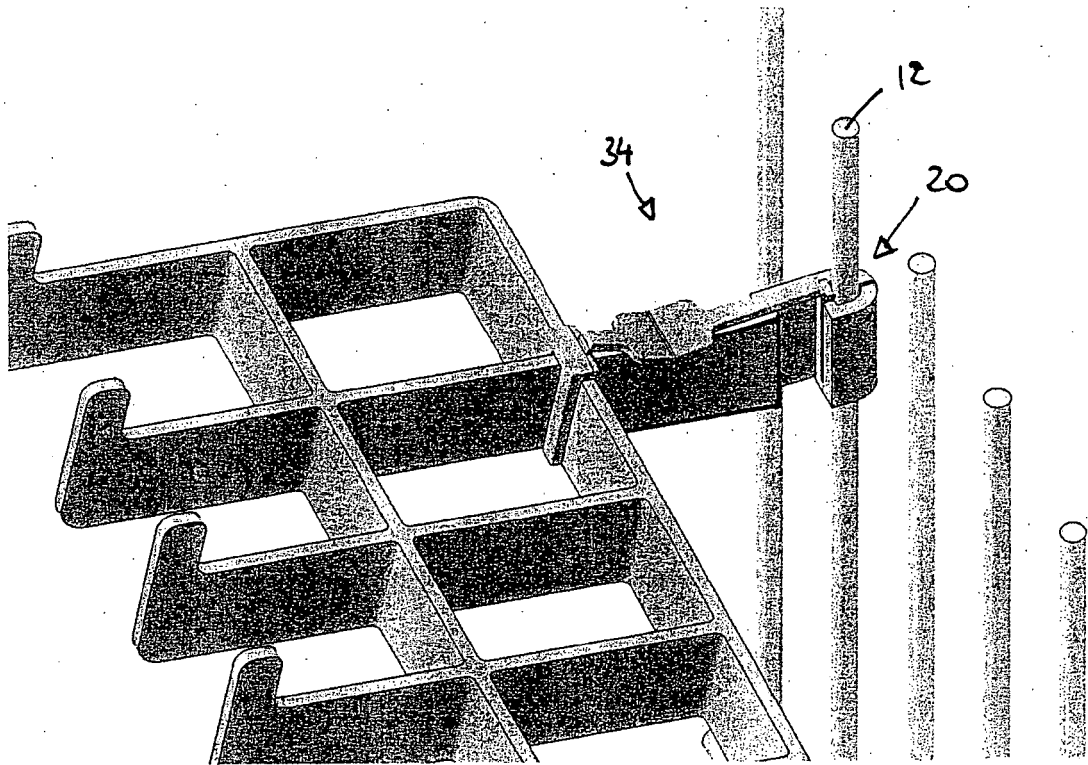


FIG. 5

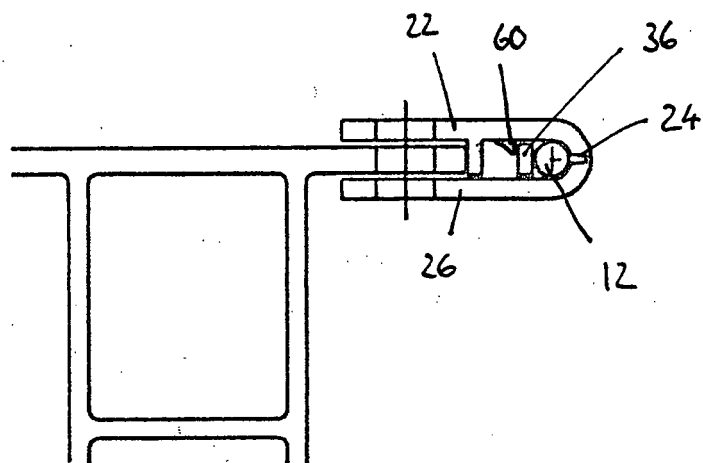
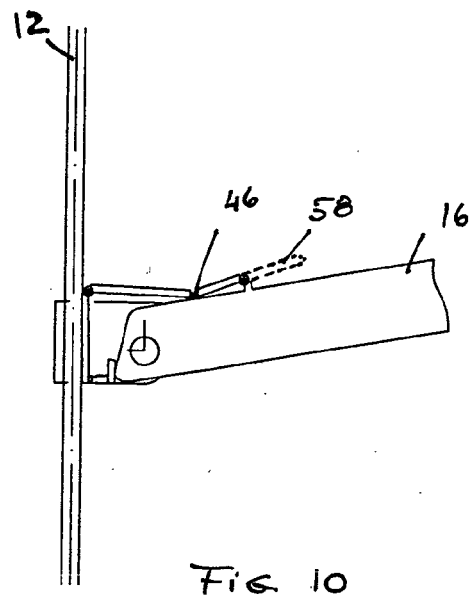
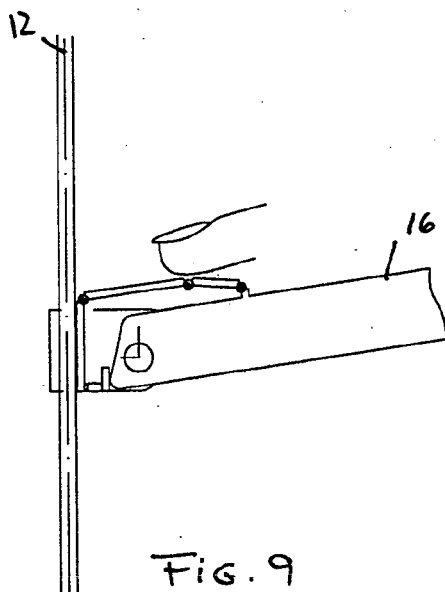
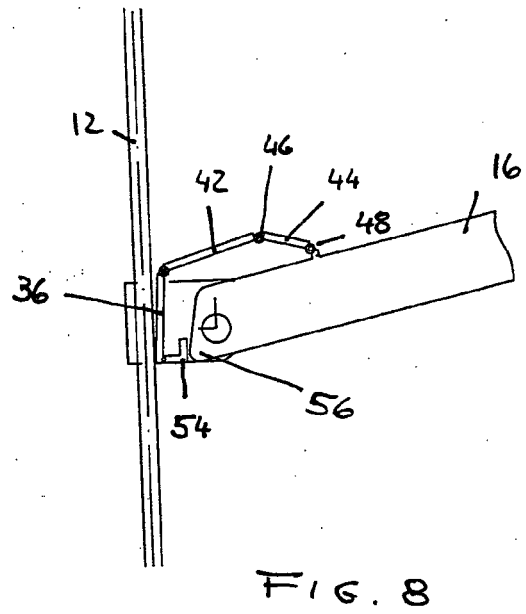
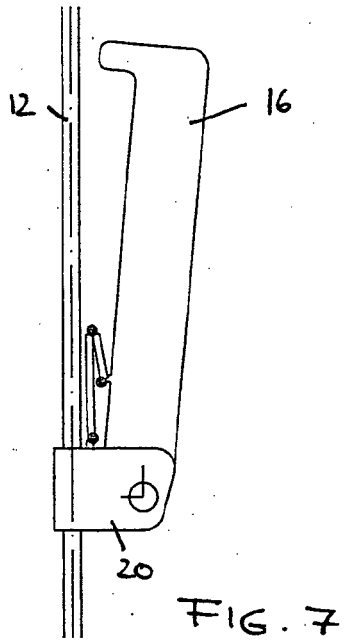


FIG. 6





European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 07 01 2655

| 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 296 051 C (SCHIEFER)<br>14 May 1913 (1913-05-14)<br>* the whole document *                                                                     | 1,2                              | INV.<br>A47L15/50                       |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | EP 0 389 864 A (SELFIX INC [US])<br>3 October 1990 (1990-10-03)<br>* the whole document *                                                         | 1-3                              |                                         |
| A,D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | DE 30 22 484 A1 (EURO HAUSGERAETE GMBH [DE])<br>7 January 1982 (1982-01-07)<br>* the whole document *                                             | 1                                |                                         |
| A,D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | WO 01/87133 A (ARCELIK AS [TR]; EKSERT SEMSETTIN [TR]; UESTUENER ASLI [TR]; ALTUN UEM)<br>22 November 2001 (2001-11-22)<br>* the whole document * | 1                                |                                         |
| A,D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | WO 2005/107570 A (ARCELIK ANONIM SIRKETI [TR]; BASTUJI CEM [TR])<br>17 November 2005 (2005-11-17)<br>* the whole document *                       | 1                                |                                         |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | DE 11 32 304 B (SULZER AG)<br>28 June 1962 (1962-06-28)<br>* the whole document *                                                                 | 1                                |                                         |
| The present search report has been drawn up for all claims                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                   |                                  | TECHNICAL FIELDS SEARCHED (IPC)         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                   |                                  | A47L<br>A47F<br>A47B                    |
| Place of search                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                   | Date of completion of the search | Examiner                                |
| The Hague                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                   | 20 November 2007                 | Norman, Pia                             |
| <p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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/>&amp; : member of the same patent family, corresponding document</p> |                                                                                                                                                   |                                  |                                         |

1  
EPO FORM 1503.03.82 (P04C01)

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

EP 07 01 2655

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
The members are as contained in the European Patent Office EDP file on  
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

20-11-2007

| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
|-------------------------------------------|---------------------|----------------------------|---------------------|
| DE 296051                                 | C                   | NONE                       |                     |
| EP 0389864                                | A                   | 03-10-1990                 |                     |
|                                           |                     | AU 5127790 A               | 13-09-1990          |
|                                           |                     | CA 2011580 A1              | 13-09-1990          |
|                                           |                     | JP 3016507 A               | 24-01-1991          |
| DE 3022484                                | A1                  | 07-01-1982                 | NONE                |
| WO 0187133                                | A                   | 22-11-2001                 |                     |
|                                           |                     | AU 7479301 A               | 26-11-2001          |
|                                           |                     | EP 1282376 A1              | 12-02-2003          |
|                                           |                     | TR 200200878 T1            | 22-07-2002          |
| WO 2005107570                             | A                   | 17-11-2005                 |                     |
|                                           |                     | EP 1742562 A1              | 17-01-2007          |
|                                           |                     | TR 200606190 T1            | 21-02-2007          |
|                                           |                     | US 2007226928 A1           | 04-10-2007          |
| DE 1132304                                | B                   | 28-06-1962                 | NONE                |

**REFERENCES CITED IN THE DESCRIPTION**

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**Patent documents cited in the description**

- WO 2005037050 A1 [0002] [0002]
- WO 0187133 A1 [0003]
- DE 3022484 A1 [0004] [0004] [0007]