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(54) **Dishwasher rack**

(57) The dishwasher rack (3) comprises at least one fitting housing (4) which extends outwards from the rear surface (9) thereof; at least one bearing surface (7) in the form of a channel which is located on the lower side of the fitting housings (4) and on the rear surface (9) of the rack (3); at least one rear gripper (5) which is used in order to prevent the change of the position that it keeps due to any contacts while there are the dirty dishes on the rack (3) when the rack (3) is in the opened position and located on said rear surface (9); also flexible materials (15) with high friction coefficient which are positioned in the areas contacting the basket wires on the rear surface (9) of the rack (3).

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Description

Technical Field

[0001] This invention is related to height adjustable rack which is used to increase the capacity of the basket located in dishwashers to receive the dirty dishes.

Prior Art

[0002] The heights of the cup racks which are used to increase the capacity of the upper baskets of dishwashers to receive the dirty dishes, are located on the right and the left edges of the basket and can be positioned so as to make a specific angle both with the horizontal and the vertical can be adjusted in order to allow the dirty dishes such as glasses or plates of different sizes to be washed. In the present systems, various mechanisms are used in order to adjust the height of the rack.

[0003] In the prior art, the patent document WO2005/037050 contains superposed catch structures which are constructed to allow the basket to be positioned at different levels on the side wires in order to allow the height adjustment of the racks which are positioned on the side wires of the dishwasher basket. In order to allow rack to stand balanced, there are two catch structures at a specific distance apart and at the same level to which every rack can be installed. The bar shaped structures which are located on the rear side of the racks are installed and secured to the catches at the desired height, thus allowing the height of the rack to be adjusted. In this system, however, there may be experienced some problems while the racks are being installed to the catches; in addition, the racks can disengage from the catches while the racks are being brought to upright position and the rack should be separated from the basket each time in order to allow the height of the rack to be adjusted.

[0004] In the system disclosed in patent document TR 2002 00878, a pin which contains a catch structure in its middle having a form that can move throughout the vertical axis of the basket wire is inserted and secured into the grooves which are located on the rear side of the cup rack in order to allow the height of the cup rack positioned on the side walls of the upper basket of dishwashers to be adjusted, thus it is allowed cup rack to be positioned at different heights when the groove structure installed to said cup rack moves throughout the vertical axis of the basket wires. The downward sliding of the rack is prevented with a support member placed perpendicular to the vertical wires which are located on the side of the basket. The pin which is secured on the rear side of the rack constitutes the rotation axis of the rack while it shifts from the horizontal position to the vertical position. In this system, however, the cup rack can only be positioned at two specific heights and cannot be brought to the upper levels of the support member. In addition, the pin which is secured on the rear side of the rack comes out from a second mold. As a consequence thereof, the mounting of this pin to the rack requires extra work.

[0005] On the rear side of the subject matter of invention of dishwasher rack, there are fitting housings of which inside is in the form of a thin and long channel. These housings are installed to the vertical wires of the basket and it is allowed the height of the rack to be adjusted by moving it up and down and the rack to be opened and closed. Besides, it is allowed rack to be secured to the basket with the grippers located on the rear side of the rack. In addition, the rack is allowed to stand at the vertical position without falling through the grippers which are located on the top surface of the rack. The bearing surfaces in the form of a channel which are located on the lower side of the fitting housings help rack to rest on the vertical wires of the basket when it is in the inclined position and to be secured at different heights also with the effect of the friction force. Apart from these, since the dishwasher rack comes out from a single mold, it does not require any extra mounting works.

Aim of the invention

[0006] An aim of this invention is to allow the height of the rack located on the dishwasher basket to be adjusted at the desired level according to the size of the dirty dishes to be placed below or above thereof.

[0007] Another aim of the invention is to allow the height adjustment of the rack without separating it from the basket.

[0008] The other aim of the invention is to ensure the rack to keep its position without slipping down due to the weights put on it when it is in the inclined position.

[0009] Another aim of the invention is to ensure the rack to make a specific angle with the horizontal when it is in the inclined position in order to prevent the water accumulation on the dirty dishes located on the rack during washing.

[0010] The other aim of the invention is to decrease the swinging and allow rack to remain balanced on the position where it is installed by ensuring that the bearing surfaces which rest on the vertical wires of the basket are constructed in the form of a channel, the rear grippers stick to the vertical wires with force-fit and the width of the channel in the fitting housings is close to the width of the wire.

Description of the Drawings

[0011] The subject matter of invention of rack is shown in the attached drawings, wherein:

Fig. 1 is a top perspective view of the dishwasher racks where they are installed to the basket.
Fig. 2 is a top perspective view of the rack.
Fig. 3 is a top view of the rack fitting housing.
Fig. 4 is a perspective view of the rack fitting housing and the bearing surface.
Fig. 5 is a rear perspective view of the rack in the

opened position.

Fig. 6 is a side view of the rack in the opened position.

Fig. 7 is a rear perspective view of the rack in the closed position.

Fig. 8 is a side view of the rack in the closed position.

Fig. 9 is a side view of the racks which are installed to the basket at different heights.

Fig. 10 is a perspective view of a rack where a flexible material is positioned on its rear side.

[0012] The parts in the figures are numbered one by one and the corresponding terms of these numbers are given below.

Basket (1)
Vertical wires (2)
Rack (3)
Fitting housing (4)
Rear gripper (5)
Upper gripper (6)
Bearing surface (7)
Horizontal wires (8)
Rear surface (9)
Top surface (10)
Horizontal position angle (α)
Fitting housing angle (β)
Channel (13)
Opening (14)
Flexible material (15)

Disclosure of Invention

[0013] Fig. 1 provides a top perspective view of the subject matter of invention of rack (3) where it is secured to a dishwasher basket (1). In the figure, the opened and the closed positions of the rack (3) are shown in order to increase the capacity of the basket (1) to receive the dirty dishes. The opened position is the position of the rack (3) where it is inclined and brought to a state in which the dirty dishes can be placed thereon. The closed position is the position where the rack (3) is brought to the vertical position.

[0014] The dishwasher rack (3) of which top perspective view is provided in fig. 2 comprises at least one fitting housing (4) which is positioned on the rear surface (9) so as to allow rack (3) to stand slanted in the opened position (not shown in fig. 9), extends outwards from the rear surface (9) and is used for up and down movement of the rack (3) on the vertical wires (2) in the basket (1); at least one bearing surface (7) in the form of a channel where the vertical wires (2) rest on the inner surface thereof when the rack (3) is in the opened position and which is located on the lower side of the fitting housings (4) and on the rear surface (9) of the rack; at least one rear gripper (5) which is used in order to prevent the change of the position that it keeps due to any contacts while there are dirty dishes on the rack (3) by sticking to the vertical wires (2) when the rack (3) is in the opened position, and located on said rear surface (9); at least one upper gripper (6) which is used in order to prevent the change of the position of the rack (3) by sticking to the vertical wires (2) when the rack (3) is in the closed position and located on the top surface (10) of the rack (3). The distances between said fitting housings (4), bearing surfaces (7), rear grippers (5) and upper grippers (6) are formed such that each corresponds to the vertical wires (2).

[0015] Fig. 3 provides a top view of the fitting housing (4) whereas fig. 4 provides a perspective view of the fitting housing (4) and the bearing surface (7). In order to allow the height adjustment of the rack (3) without completely separating it from the basket (1) and facilitate the movement of the rack (3) between the opened and closed positions thereof, the fitting housing (4) has a structure in the form of "C", its inner side is formed by a thin and long channel (13) and the vertical wire (2) can be passed through the opening (14) which extends towards the outside from the side of the channel (13). When the vertical wire (2) fits into said channel (13), because of the long structure of the channel (13), the rack (3) can make a rotational movement relative to the vertical wire (2). On the other hand, by keeping the width of said channel (13) close to the width of the wire therein, the left and right movement of the rack relative to basket (1) is prevented.

[0016] Fig. 5 provides a rear perspective view of the rack (3) in the opened position where it is mounted to the vertical wires (2) and fig. 6 provides a side view thereof in the same position. The rack (3) is brought to the desired height by moving the fitting housings (4) up and down on the vertical wires (2), then it is brought to the opened position at the height desired to be secured and the rear grippers (5) are installed to the vertical wires (2) so as to obtain a force-fit. At this position, the bearing surfaces (7) also rest on the vertical wires (2). The weights of the dirty dishes placed on the rack (3) increase the friction on the surfaces (7) which rest on the vertical wires (2). In addition to this, when the rear gripper (5) sticks to the vertical wires (2), it is ensured the position that the rack (3) keeps to remain unchanged due to any contacts while there are dirty dishes thereon in this position and allowed rack to remain at the desired height.

[0017] In addition, at the time of washing, in order to prevent the water accumulation on the dirty dishes which are placed on the rack (3), the fitting housing (4), as shown in fig. 9, is positioned on the rear surface (9) so as to allow rack (3) to stand slanted in the opened position.

[0018] Fig. 7 provides a perspective view of the rack (3) in the closed position where it is mounted to the basket (1) and fig. 8 provides a side view thereof in this position. By reducing the rack (3) to the level of the horizontal wire (8) which is located in the basket (1) when the rear grippers (5) located on the rear surface (9) of the rack (3) are separated from the vertical wires (2) and the fitting housing (4) is slipped on the vertical wires (2), the fitting housing (4) is allowed to rest on the horizontal wire (8) and

by bringing the rack (3) to the closed position, the upper grippers (6) are secured to the vertical wires (2) and thus the rack (3) is allowed to remain in the closed position without overturning.

[0019] With the invention, the height of the rack (3) which is located on the dishwasher basket (1) can be adjusted at the desired level according to the size of the dirty dishes to be placed thereunder and there is no need to separate the rack (3) from the basket (1) for this adjustment process. In addition, by ensuring that the bearing surfaces (7) which rest on the vertical wires (2) of the basket (1) are constructed in the form of a channel, the rear grippers (5) stick to the vertical wires (2) with force-fit and the width of the channel (13) in the fitting housings (4) is close to the width of the wire, it is prevented rack to move right and left at the position where it is installed and this reduces the swinging of the rack and allow it to remain balanced.

[0020] In another embodiment of the invention, as shown in fig. 10, the flexible materials (15) have been positioned on the rear surface (9) of the rack (3). These materials (15) are provided on the areas contacting the basket wires on the rear surface (9) in order to allow rack (3) to remain at different heights in the opened position without slipping. The materials with high friction coefficient are especially preferred as flexible material (15). Since the flexible materials (15) make a friction-increasing effect during their contact with the basket wires they help rack (3) to stand at the desired position.

[0021] As mentioned above, the rack (3) can be installed to the vertical wire (2) from the opening (14) in the fitting housing (4) in a single move and the vertical wire (2) seats into said channel (13). Therefore, convenience is provided for the mounting of the rack (3) to the basket (1). In addition, the production of the rack (3) as single-piece eliminates the need for mounting work in the production of the rack (3).

Claims

1. A dishwasher rack (3) which is installed to the baskets in dishwashers and of which height is adjustable, **characterized in that** the rack (3) produced as single-piece comprises
   at least one fitting housing (4) which extends outwards from a rear surface (9) thereof and used for up and down movement of the rack (3) on vertical wires (2) in the basket (1) and for opening and closing the rack;
   at least one bearing surface (7) in the form of a channel where the vertical wires (2) rest on the inner surface thereof when the rack (3) is in the opened position and which is located on the lower side of the fitting housings (4) and on the rear surface (9) of the rack;
   at least one rear gripper (5) which sticks to the vertical wires (2) so as to provide a force-fit when the rack (3) is in the opened position, is used to prevent the change of the position that the rack (3) keeps due to any contacts and is located on said rear surface (9).

2. A dishwasher rack (3) according to the claim 1, wherein not only for the movement of the rack (3) between the opened and the closed positions thereof but also in order to allow the height adjustment of the rack without completely separating it from the basket (1), the fitting housing (4) has a structure in the form of "C", where its inner side is formed by a thin and long channel (13) through which the vertical wire (2) can be passed and a opening (14) which extends towards the outside from the side of the channel (13).

3. A dishwasher rack (3) according to the claim 1, wherein it further comprises at least one upper gripper (6) which is used in order to prevent the change of the position thereof by sticking to the vertical wires (2) when it is in the closed position and located on an upper surface (10) of the rack (3).

4. A dishwasher rack (3) according to the claim 1, wherein it further comprises flexible materials (15) with high friction coefficient which are positioned in the areas contacting the basket wires on the rear surface (9) thereof.

5. A dishwasher rack (3) according to the claim 1, wherein it stands slanted so as to make a specific angle with the horizontal in order to prevent the water accumulation on the dirty dishes when it is in the opened position.

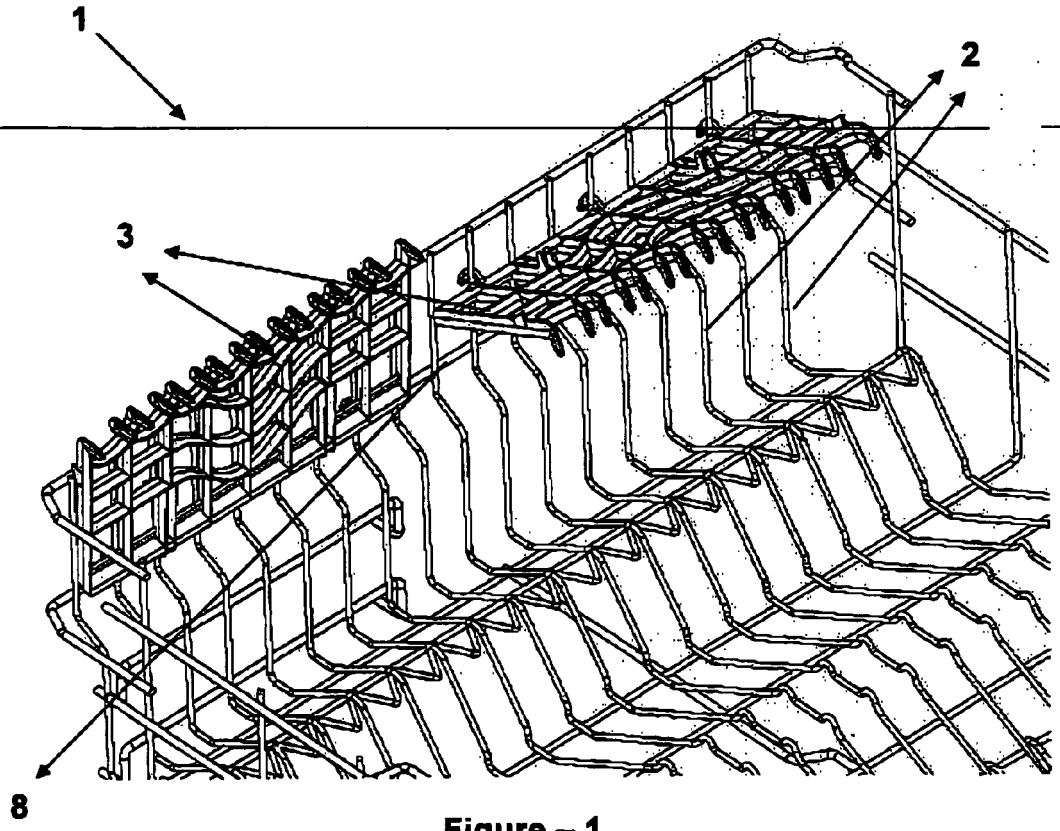
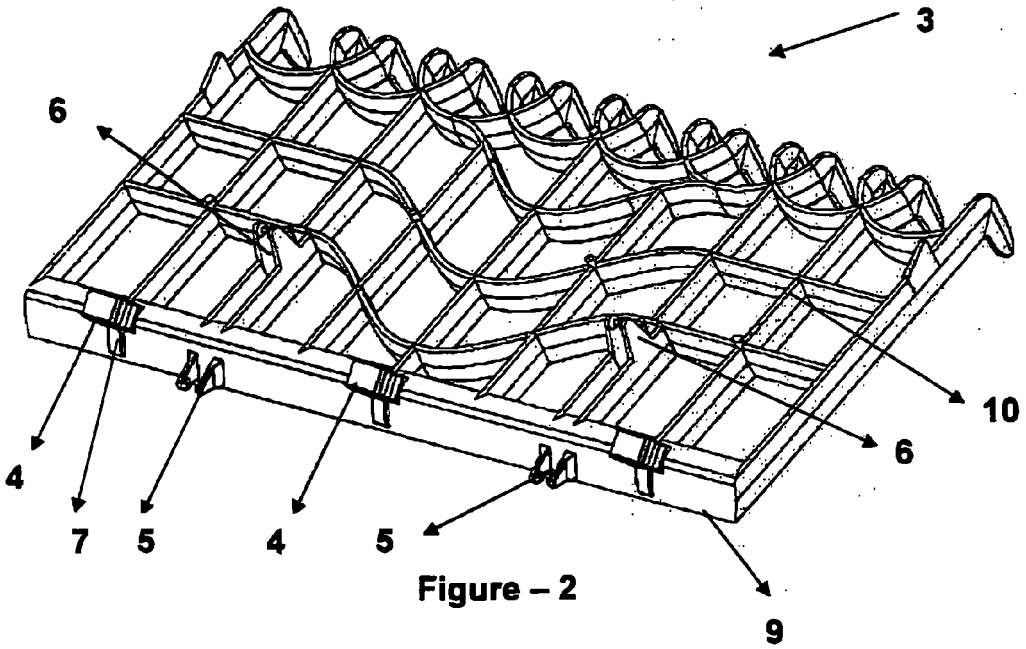


Figure – 1



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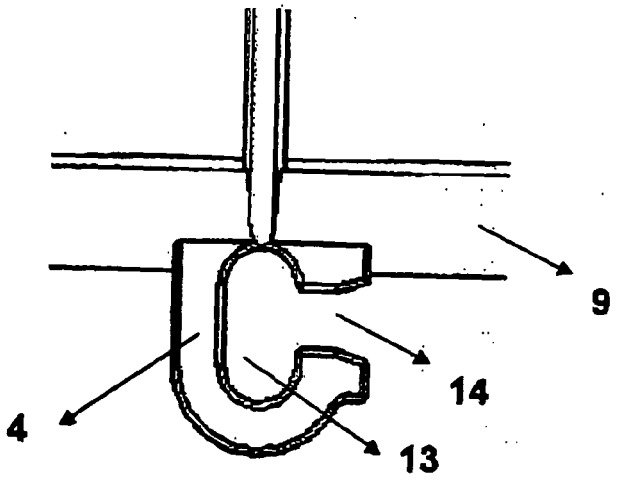

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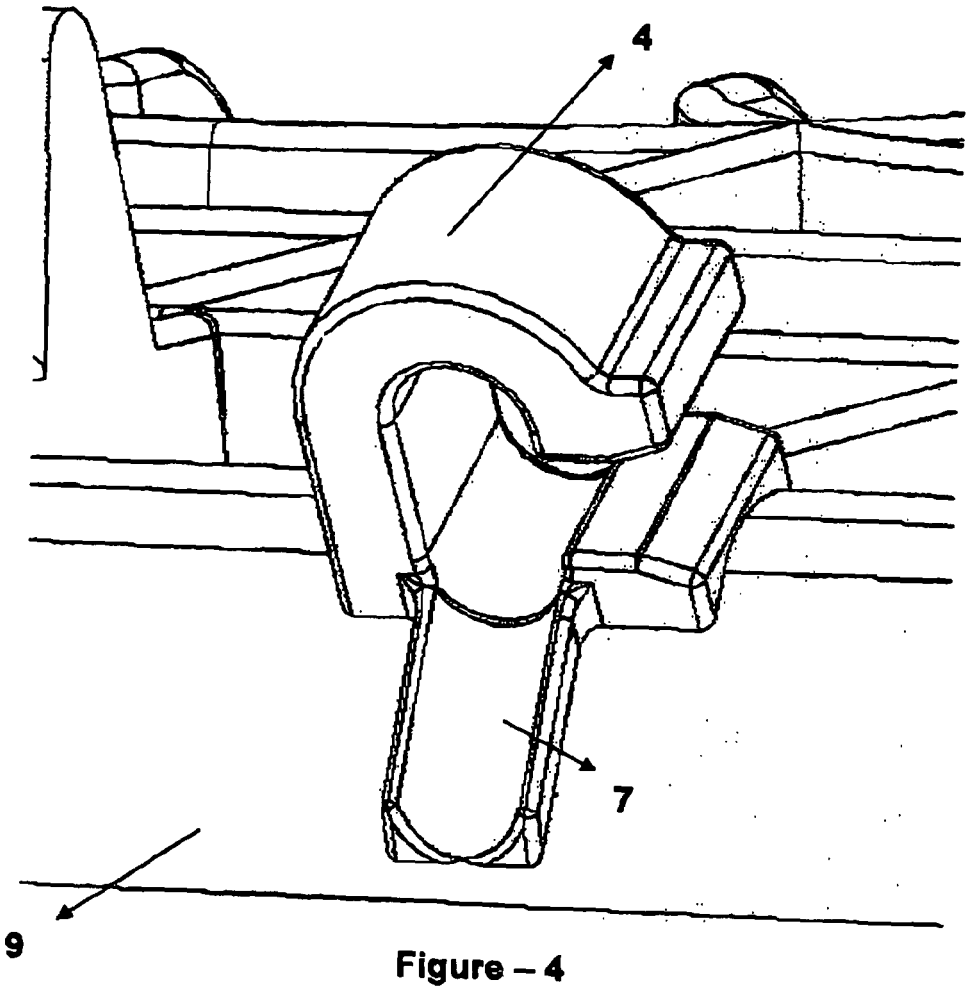

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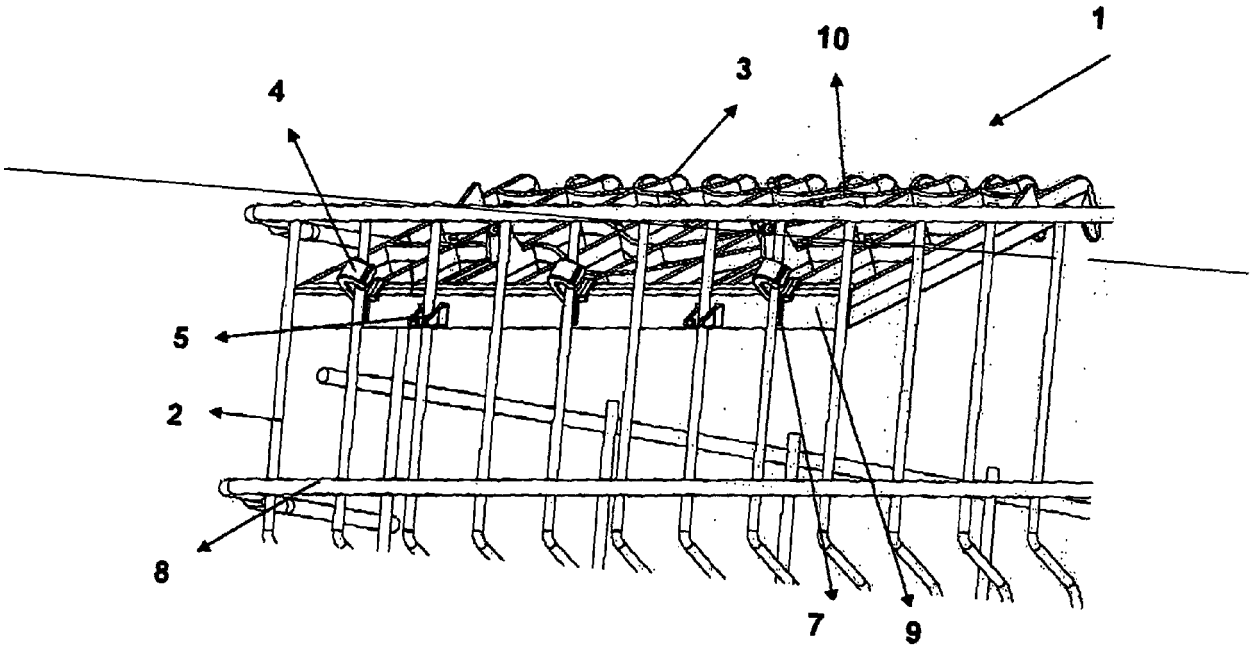

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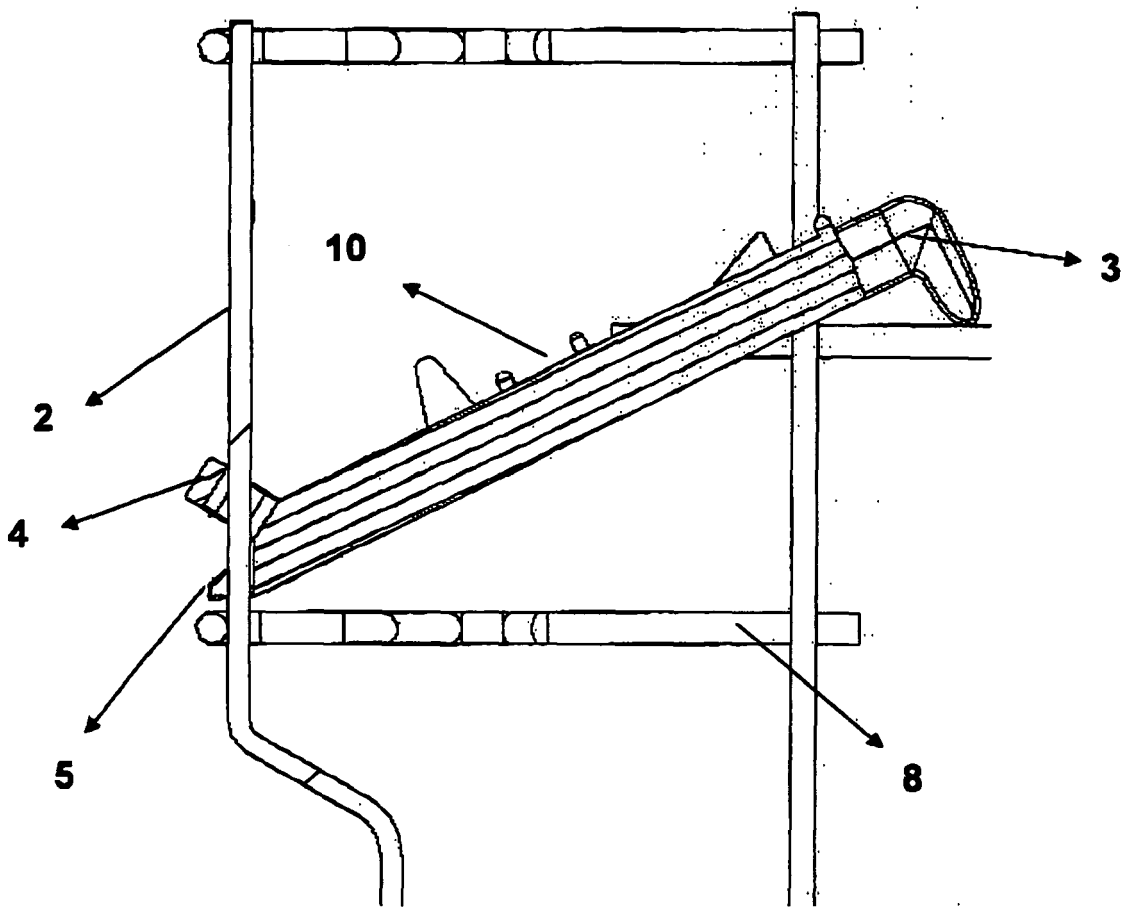
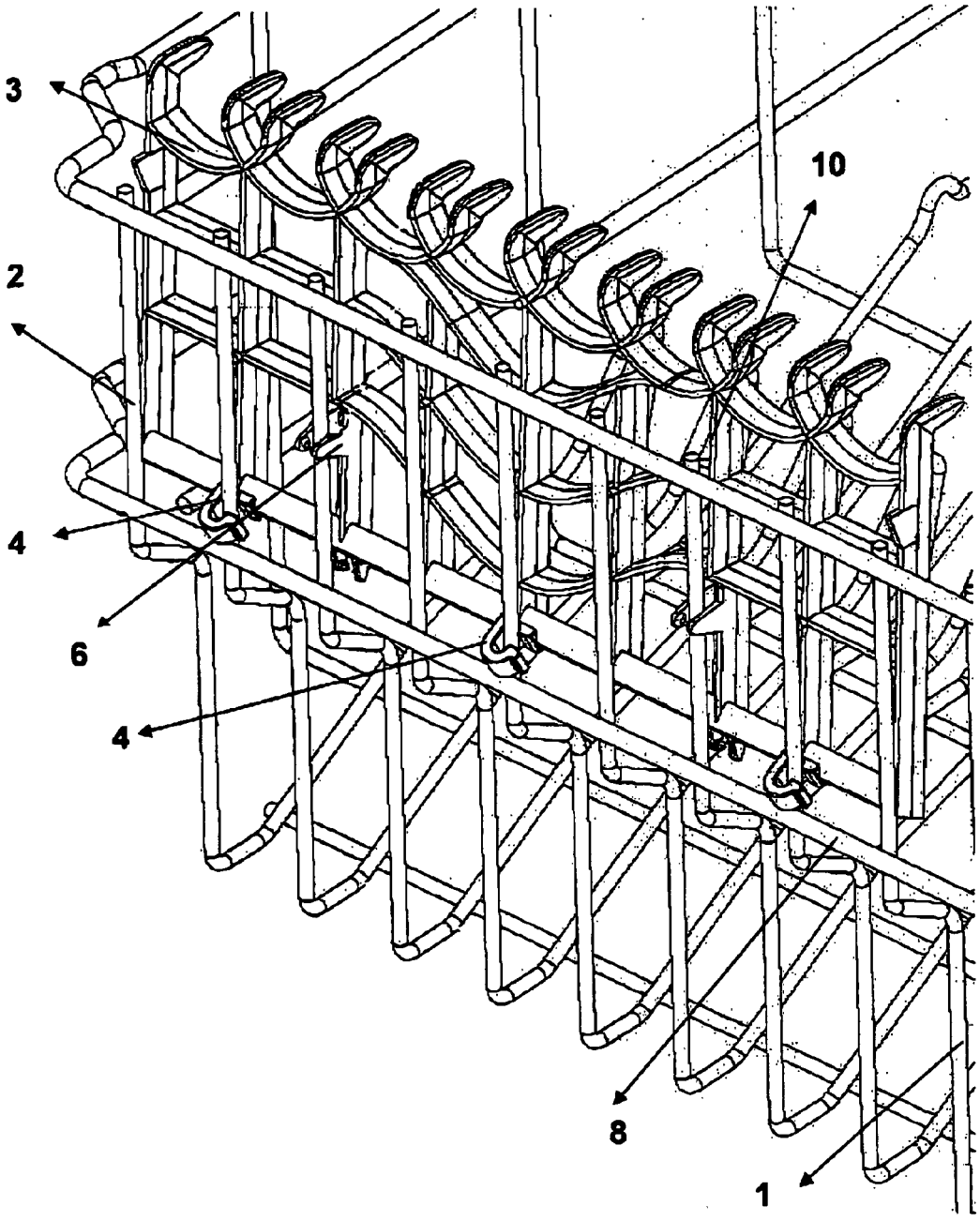


Figure – 6



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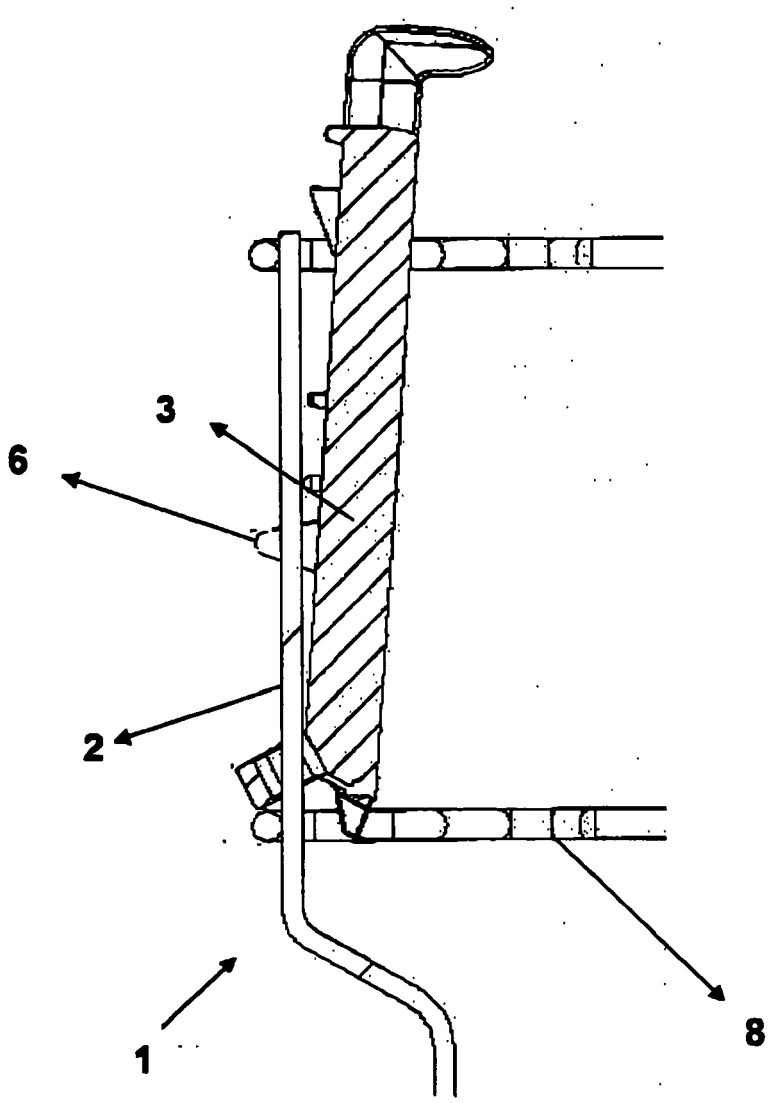

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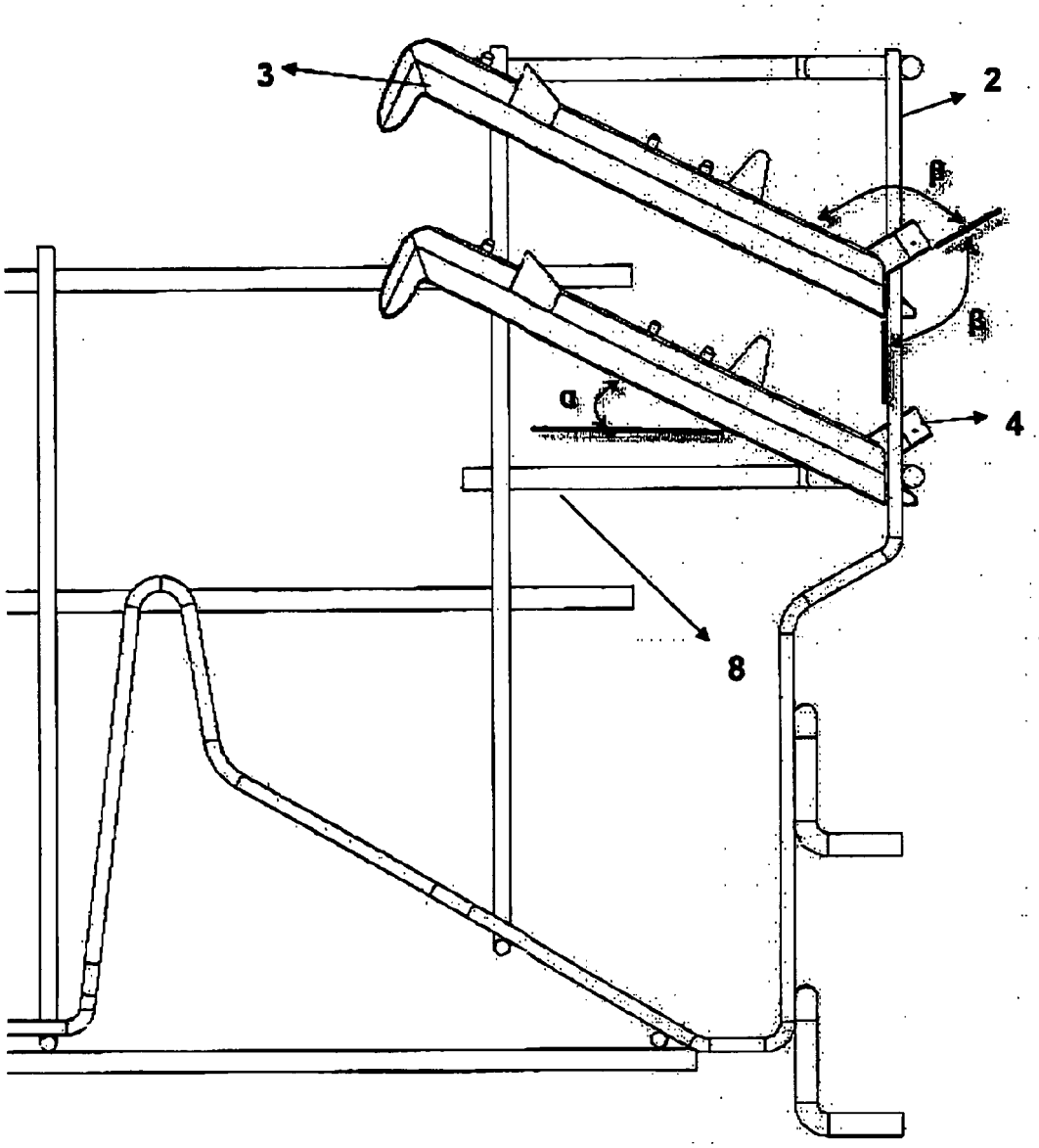

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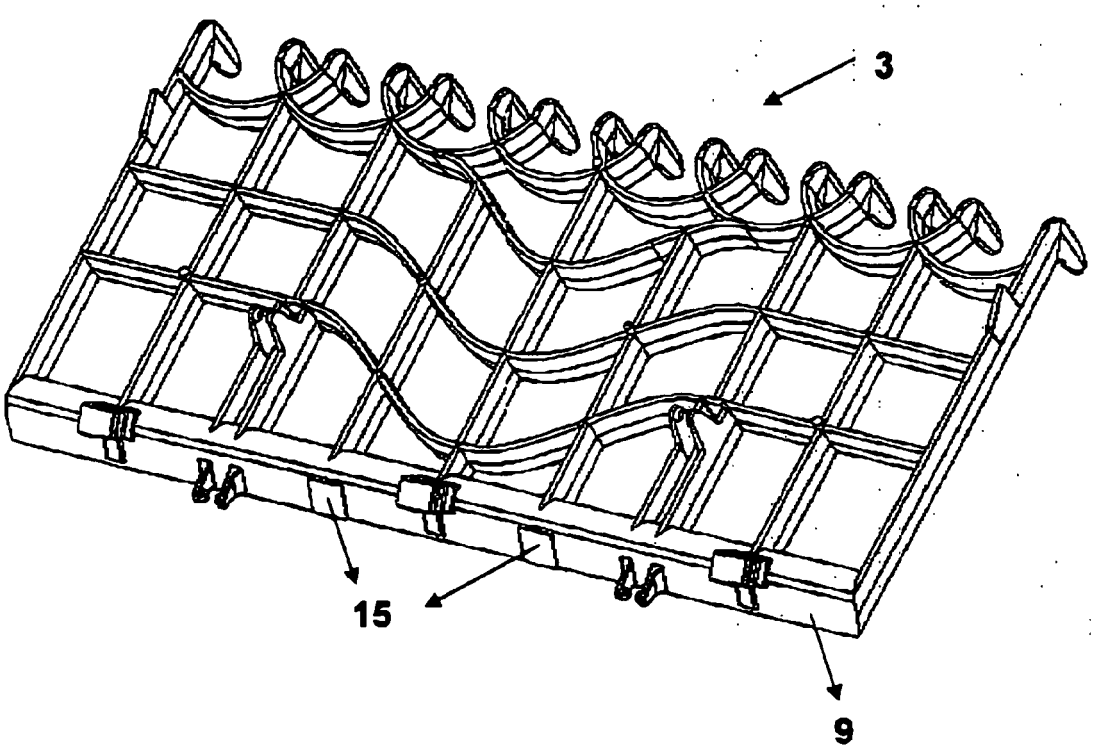

Figure – 10

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- WO 2005037050 A **[0003]**
- TR 200200878 **[0004]**