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(54) Dish-holding insert for dishwasher rack

Geschirrrhalteeinsatz für Geschirrkorb einer Geschirrspülmaschine

Insert de support de vaisselle pour panier de lave-vaisselle

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Description

[0001] The present invention relates to dishwashers, and in particular to a dish-holding insert for dishwasher racks.

[0002] It is known that dishwasher racks are usually made from metal wires welded together and plastic coated to form a supporting structure for the dishes, which rest at the bottom on the horizontal wires of the rack bottom and at the back on substantially vertical support members. The latter may be separate rods welded to the horizontal wires in a slightly tilted position, typically for the plate-holding supports, or they may simply be shaped portions of the horizontal wires. The vertical support members may even be devised as inserts to be mounted on a grid-like base of horizontal wires having a small vertical sleeve welded at each cross-over point thereof, said sleeves being suitable to receive the uncoated bottom ends of the vertical members, so as to achieve a customizable rack as disclosed in JP-54138369U.

[0003] This prior art solution however has the drawback that in the bottom portion of the dishes that is in contact with the horizontal wires the contact surface between the circular cross-section of the wires and the dishes is sufficiently large as to allow an easy clinging of water drops. As a consequence, at the end of the wash and drying cycle there are still water drops on the dishes that negatively affect the drying performance, despite the use of active drying systems such as the recirculation of moist air through a heat exchanger or its discharge to the outside.

[0004] Moreover, in order to reduce the power consumptions, the latest developments in the field of dishwashers have led to a decrease in rinse temperatures and this makes even easier the occurrence of the above-mentioned drawback.

[0005] On the other hand, the use of wires with a circular cross-section greatly simplifies the production of the rack since using a wire with a cross-section shaped so as to reduce the area of the contact surface between the wire and the dishes would imply several difficulties both in the manufacturing and use of the rack.

[0006] In the first place, extruding a metal wire with a non-circular cross-section is more difficult and expensive, and subsequently welding the wires to form the rack would be much more complicated and time-consuming because it would be necessary to control the correct orientation of the cross-section of each wire upon welding.

[0007] Furthermore, such a rack would easily experience corrosion in use, since the protective plastic coating has a thickness of a few tenths of millimeter and concentrating the weight of the dishes on a contact surface having a small area would rapidly wear out the coating.

[0008] Some dishwasher rack inserts are already known which are specifically designed for holding delicate and/or difficult items, such as the insert disclosed in DE 19944883 for tall glasses or vases that are inverted for cleaning in a dishwasher on a vertically positioned

bar having flexible arms which deform to the shape of the item, a base part having grooves which fit the wires of the rack at a cross-over point for stability.

[0009] Somewhat similar inserts are disclosed in DE 102005061804A1 and US 2008/0308510, which show vertically adjustable utensil holders that fit on a rack spike and during operation project into an inside of hollow-bodied utensils or simply act as spike extenders for better supporting large plates. However, none of these prior art inserts prevents the contact of the bottom portion of the plates with the horizontal wires of the rack. Moreover, they generally include multiple parts to be combined and therefore result both expensive in manufacturing and inconvenient in using.

[0010] Therefore the object of the present invention is to provide a dish-holding insert for dishwasher racks which overcomes the above-mentioned drawbacks.

[0011] This object is achieved by means of an insert having a dish-supporting top portion with a pointed shape as well as coupling means for the fixing on the horizontal wires and/or the vertical supports that form the rack.

[0012] The main advantage of the present insert is that of preventing the clinging of the water drops in the contact region between the dishes and the rack while retaining the ease of production of the rack, so as to improve the drying performance with a negligible increase in costs.

[0013] Another advantage of this insert stems from the fact that it can be easily applied even to existing racks, so as to provide an inexpensive upgrade of the dishwashers already in use.

[0014] Still a further advantage of said insert is its function of protecting the rack against corrosion, since its presence prevents the risks of damages to the plastic coating during the introduction and removal of the dishes from the rack, for example if a wet plate slips from the user's hands and hits hard the horizontal wires of the rack bottom.

[0015] These and other advantages and characteristics of the insert for dishwasher racks according to the present invention will be clear to those skilled in the art from the following detailed description of an embodiment thereof, with reference to the annexed drawings wherein:

Fig.1 is a front perspective view, with an enlarged detail, of a prior art dishwasher rack with two plates arranged therein;

Fig.2 is lateral see-through view, with an enlarged detail, of the dishwasher rack of Fig.1;

Fig.3 is a front perspective view, with an enlarged detail, of the dishwasher rack of Fig.1 provided with a plurality of inserts according to the present invention;

Fig.4 is lateral see-through view, with an enlarged detail, of the dishwasher rack of Fig.3.

[0016] Referring to figures 1 and 2, there is seen that a prior art dishwasher rack R conventionally includes a plurality of horizontal wires H to which there are welded

a plurality of substantially vertical plate-holding supports V that act as back supports, being slightly tilted, for plates P that rest at the bottom on said horizontal wires H.

[0017] Some of the latter may be mounted on rack R so as to rotate around their longitudinal axis with the aid of hook-shaped horizontal supports S, such that the relevant plate-holding supports V are foldable.

[0018] As shown in the enlarged detail of Fig.2, when plate P rests on the horizontal wire H having a circular cross-section, the contact surface is quite large and the angles between plate P and the contour of wire H are quite small. As a consequence, the water drops D that gather in said region can easily remain clinging to plate P thus affecting the outcome of the drying.

[0019] Turning now to the similar views illustrated in figures 3 and 4, it is readily understood how an insert according to the present invention allows to overcome said drawback.

[0020] As shown in Fig.3, a conventional dishwasher rack R can be provided with a plurality of inserts 1 (eight in the illustrated example) arranged at the vertical supports V such that plates P rest at the bottom on said inserts 1 rather than on the horizontal wires H to which the vertical supports V are welded.

[0021] Each insert 1 consists of a series of substantially arc-shaped elements 2 connected in line, each element 2 comprising an arcuate horizontal opening 3 and a lateral projecting portion 4 in which there is formed a vertical hole 5.

[0022] Each hole 5 is sized and shaped for the introduction on a vertical support V and the pitch of holes 5 is calculated to fit insert 1 over a row of supports V, the overall length of insert 1 being obviously set according to the position that it must take in rack R, as shown in the figure. The coupling of insert 1 to rack R through holes 5 is very simple, fast and strong and further allows an easy removal of inserts 1 for their replacement/cleaning or in case they should interfere with the folding of supports V.

[0023] The enlarged detail of Fig.4 clearly shows how the top portion 6 of each element 2, and therefore of the whole insert 1, has a pointed shape, i.e. it has a vertex angle smaller than 70° and preferably comprised between 40° and 50°, such as to minimize the contact surface with plate P and to increase the angles between the latter and insert 1 whereby drops D can not cling and thus flow down by gravity.

[0024] It should be noted that the horizontal openings 3 are useful not only for making insert 1 lighter but also for the passage of the possible horizontal supports S, yet it would even be possible to make openings 3 only at said supports S.

[0025] Furthermore, the top portion 6 is preferably made with a slight slope in the same direction of tilt of the vertical supports V so as to facilitate the correct positioning of plates P and the downflow of the water drops.

[0026] It is clear that the above-described and illustrated embodiment of the insert for dishwasher racks ac-

cording to the invention is just an example susceptible of various modifications. In particular, the exact shape and arrangement of the means for the coupling to the rack could be changed according to specific manufacturing needs, e.g. by using clips for the clipping to the horizontal wires H and/or to the vertical supports V instead of the lateral portions 4 with holes 5, which could even be present on not all elements 2, although the above-described solution is simpler and stronger.

[0027] Similarly, the material used for insert 1 can be any material suitable in terms of resistance to water, temperature and shocks such as plastic materials, rubber, metal, wood and the like.

Claims

1. Dish-holding insert (1) for a dishwasher rack (R), comprising means for the coupling to said rack (R) at horizontal wires (H) and/or at substantially vertical supports (V) thereof, said insert (1) consisting of a series of substantially arc-shaped elements (2) connected in line, **characterized in that** each of said elements (2) comprises a dish-supporting top portion (6) suitable to support a plate (P) insertable into the rack (R) such that the plate (P) rests at the bottom on the insert (1) rather than on said horizontal wires (H), said top portion (6) having a pointed shape with a vertex angle smaller than 70° such as to minimize the contact surface with said plate (P).
2. Dish-holding insert (1) according to claim 1, **characterized in that** the pointed top portion (6) has a vertex angle comprised between 40° and 50°.
3. Dish-holding insert (1) according to any of the preceding claims, **characterized in that** the pointed top portion (6) has a slope in the same direction of tilt of the plate-holding supports (V) of the rack (R).
4. Dish-holding insert (1) according to any of the preceding claims, **characterized in that** the means for the coupling to the rack (R) consist of holes (5) having size, shape and pitch suitable to fit the insert (1) over a row of plate-holding supports (V) of the rack (R).
5. Dish-holding insert (1) according to any of the preceding claims, **characterized in that** it includes one or more horizontal openings (3).
6. Dish-holding insert (1) according to any of claims 3 to 5, **characterized in that** each of said elements (2) comprises an arcuate horizontal opening (3) and a lateral projecting portion (4) in which there is formed a vertical hole (5).

Patentansprüche

1. Geschirrrhalteeinsatz (1) für einen Geschirrkorb (R) einer Geschirrspülmaschine, umfassend Mittel zum Ankoppeln des besagten Geschirrkorbs (R) an horizontale Drähte (H) und/oder an davon substantiell vertikal emporragende Halter (V), wobei der besagte Einsatz (1) aus einer Reihe von substantiell bogenförmigen, in einer Linie miteinander verbundenen Elementen (2) besteht, **dadurch gekennzeichnet, dass** jedes der besagten Elemente (2) ein Geschirrstützendes Oberteil (6) aufweist, welches geeignet ist, einen in den Geschirrkorb (R) einsetzbaren Teller (P) derart zu halten, dass der Teller (P) auf dem Boden des Einsatzes (1) ruht anstatt auf den besagten horizontalen Drähten (H), wobei das besagte Oberteil (6) eine zugespitzte Gestalt hat mit einem Winkel an der Spitze von weniger als 70°, um die Kontaktfläche zu dem besagten Teller (P) zu minimieren.
2. Geschirrrhalteeinsatz (1) nach Anspruch 1, **dadurch gekennzeichnet, dass** das zugespitzte Oberteil (6) an der Spitze einen Winkel zwischen 40° und 50° hat.
3. Geschirrrhalteeinsatz (1) nach irgendeinem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** das zugespitzte Oberteil (6) eine Steigung in der selben Neigungsrichtung hat wie die Tellerhaltenden Stützen (V) des Geschirrkorbs (R).
4. Geschirrrhalteeinsatz (1) nach irgendeinem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** die Mittel zum Ankoppeln des Geschirrkorbs (R) aus Löchern (5) bestehen mit einer passenden Größe, Gestalt und Neigung, um den Einsatz (1) auf eine Reihe von Tellerhaltenden Stützen (V) des Geschirrkorbs (R) aufzusetzen.
5. Geschirrrhalteeinsatz (1) nach irgendeinem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** er eine oder mehrere horizontale Öffnungen (3) aufweist.
6. Geschirrrhalteeinsatz (1) nach irgendeinem der Ansprüche 3 bis 5, **dadurch gekennzeichnet, dass** jedes der besagten Elemente (2) eine gebogene, horizontale Öffnung (3) umfasst und einen seitlich vorspringenden Bereich (4), worin ein vertikales Loch (5) eingeformt ist.

ment verticaux (V), ledit insert (1) se composant d'une série d'éléments sensiblement en forme d'arc (2) raccordés en ligne, **caractérisé en ce que** chacun desdits éléments (2) comprend une partie supérieure de support de vaisselle (6) appropriée pour supporter une assiette (P) pouvant être insérée dans le panier (R) de sorte que l'assiette (P) repose au fond sur l'insert (1) plutôt que sur les fils horizontaux (H), ladite partie supérieure (6) ayant une forme pointue avec un angle de sommet inférieur à 70° afin de minimiser la surface de contact avec ladite assiette (P).

2. Insert de support de vaisselle (1) selon la revendication 1, **caractérisé en ce que** la partie supérieure pointue (6) a un angle de sommet compris entre 40° et 50°.
3. Insert de support de vaisselle (1) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** la partie supérieure pointue (6) a une inclinaison dans la même direction d'inclinaison des supports porte-assiette (V) du panier (R).
4. Insert de support de vaisselle (1) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** les moyens pour le couplage au panier (R) se composent de trous (5) ayant une taille, une forme et un écartement appropriés pour accueillir l'insert (1) sur une rangée des supports porte-assiette (V) du panier (R).
5. Insert de support de vaisselle (1) selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'il** comprend une ou plusieurs ouvertures horizontales (3).
6. Insert de support de vaisselle (1) selon l'une quelconque des revendications 3 à 5, **caractérisé en ce que** chacun desdits éléments (2) comprend une ouverture horizontale arquée (3) et une partie en saillie latérale (4) dans laquelle on forme un trou vertical (5).

Revendications

1. Insert de support de vaisselle (1) pour un panier de lave-vaisselle (R), comprenant des moyens pour le couplage audit panier (R) au niveau de fils horizontaux (H) et/ou au niveau de ses supports sensible-

PRIOR ART

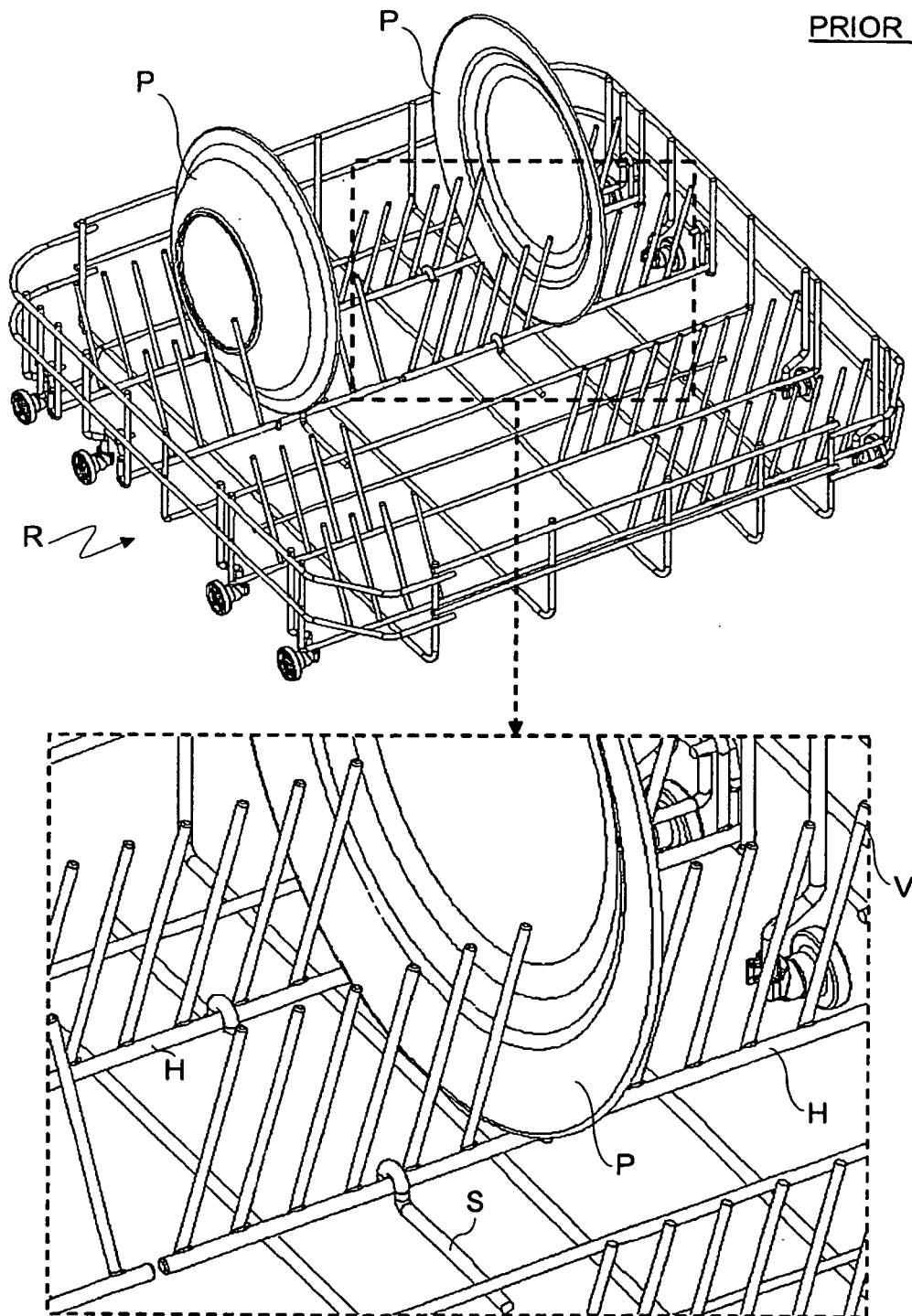


Fig.1

PRIOR ART

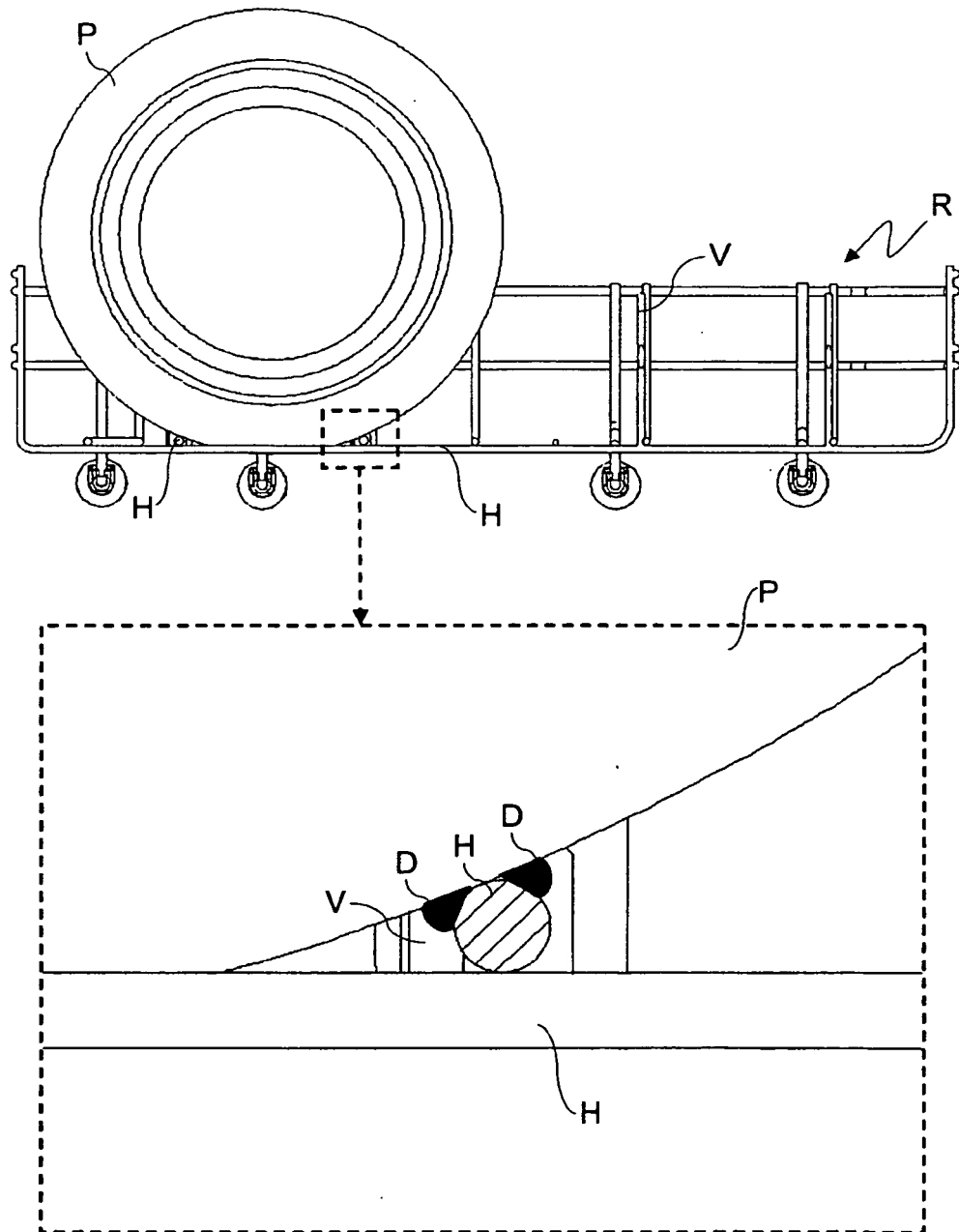


Fig.2

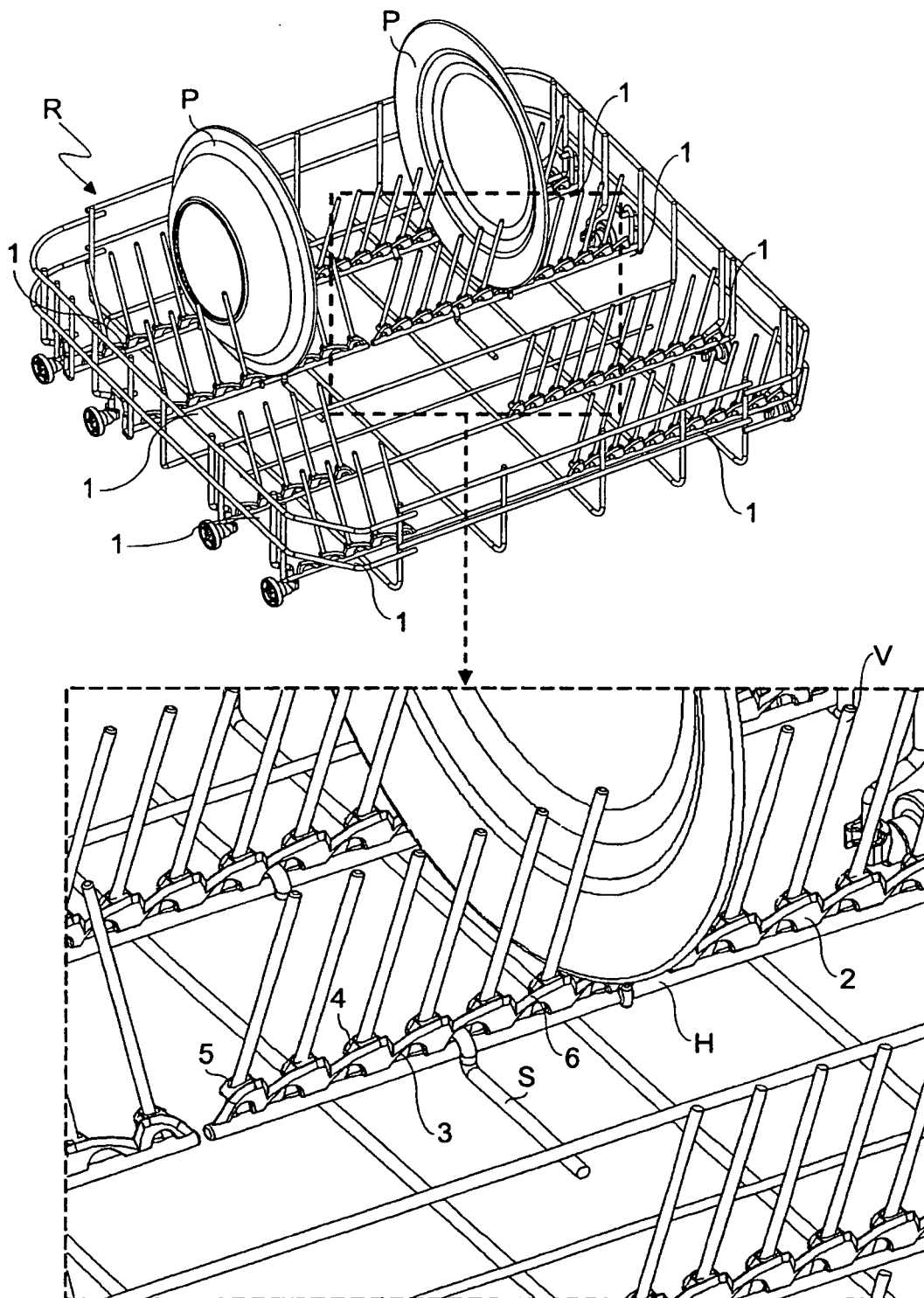


Fig.3

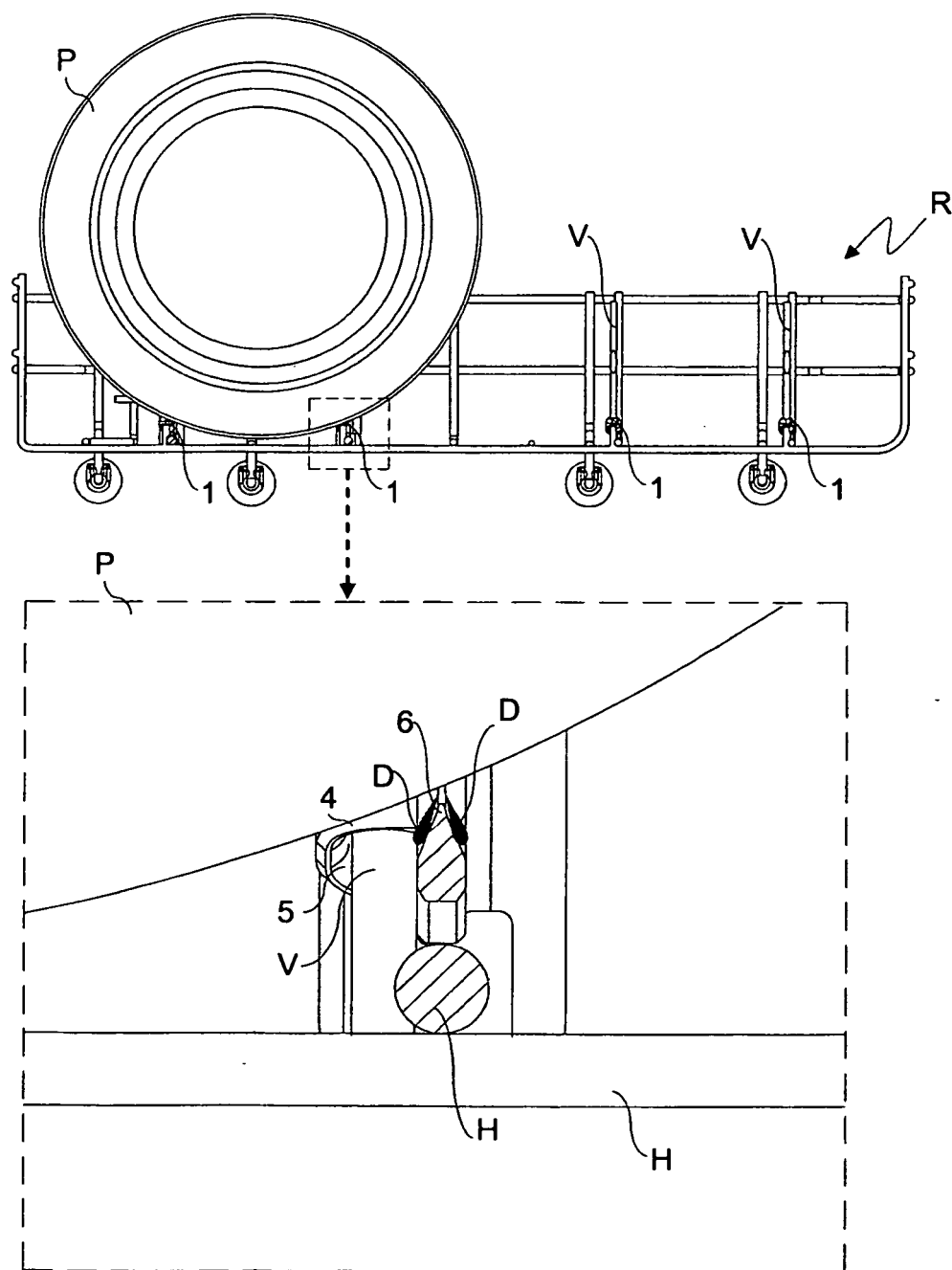


Fig.4

REFERENCES CITED IN THE DESCRIPTION

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