

(19) **DANMARK**

(10) **DK/EP 3747340 T3**



(12)

Oversættelse af europæisk patentskrift

Patent- og
Varemærkestyrelsen

-
- (51) Int.Cl.: **A 47 L 15/50 (2006.01)**
- (45) Oversættelsen bekendtgjort den: **2021-10-11**
- (80) Dato for Den Europæiske Patentmyndigheds bekendtgørelse om meddelelse af patentet: **2021-07-14**
- (86) Europæisk ansøgning nr.: **20173390.4**
- (86) Europæisk indleveringsdag: **2020-05-07**
- (87) Den europæiske ansøgnings publiceringsdag: **2020-12-09**
- (30) Prioritet: **2019-06-03 AT 2122019**
- (84) Designerede stater: **AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR**
- (73) Patenthaver: **FRIES Planungs- und Marketinggesellschaft m.b.H, Schützenstr. 19, 6832 Sulz, Østrig**
- (72) Opfinder: **Watzenegger, Tobias, Ratzbachweg 26/4, 6837 Weiler, Østrig**
Grabher, Markus, Holzmühlestrasse 4, 6890 Lustenau, Østrig
Marte, Gerhard, Sattelberg 71b, 6833 Klaus, Østrig
- (74) Fuldmægtig i Danmark: **Zacco Denmark A/S, Arne Jacobsens Allé 15, 2300 København S, Danmark**
- (54) Benævnelse: **Opvaskekurv til opvaskemaskiner**
- (56) Fremdragne publikationer:
EP-B1- 1 287 780
JP-A- H1 142 196
US-A- 1 285 490
US-A- 2 035 625
US-A- 3 009 579
US-B1- 6 186 328

The present invention relates to a washer basket according to the preamble of claim 1.

Moreover the invention also relates to an arrangement having a dishwasher and a washer basket as well as to a method of washing objects, arranged in the basket interior space of a washer basket, in a dishwasher.

In the prior art, washer baskets of the type in question are used to wash tableware, glasses, cutlery and the like in dishwashers. In the industrial sector in particular, such washer baskets can also be used for the washing of other objects in dishwashers.

A washer basket having a lattice-like basket base and lateral walls is e.g. shown in EP 1 287 780 B1. US 1, 285, 490 A, JP 11-42196 A and US 3, 009, 579 A show washer baskets with base elongated members running in a curved manner. In EP 1 287 780 B1, a few of the base elongated members form a lattice-like structure. US 2, 035, 625 A shows a washer basket of the type in question.

It is the object of the invention to improve washer baskets of the type in question to the effect that they contribute to a washing result which is as good as possible and are suitable for automated transportation through a dishwasher.

For this, the invention proposes a washer basket according to claim 1.

Through the base elongated members running at least partially in a curved manner, the washing fluid, in the dishwasher sprayed from below into the washer basket, is diverted in a targeted manner, so that the objects which are to be washed and which are placed in the basket interior space are acted upon by washing fluid from as many different sides as possible. It is thereby at least substantially prevented that there are regions of the objects to be washed which are not acted upon by washing fluid. All in all, the washing result is consequently improved by the base elongated members running at least partially in a curved manner. Washer baskets according to the invention can be used to wash tableware, glasses, cutlery, but also other objects in correspondingly suitable dishwashers. The washer baskets according to the invention can accordingly be used both in the catering sector and in industrial manufacture.

For the automated transportation through a dishwasher, washer basket embodiments according to the invention provide that the basket base additionally has a cross-shaped structure, running through the centre of the basket base and formed of base elongated members running in each case parallel to one of the lateral walls of the washer basket, when viewed in a plan view of the basket base. The base elongated members forming the cross-shaped structure advantageously extend here further

downwards, therefore in the basket-base direction remote from the basket interior space, than the other base elongated members of the basket base, so that gripping devices, known per se, of a dishwasher can engage the cross-shaped structure in order to transport the washer basket through the dishwasher.

With the invention it is possible that the cross-shaped structure divides the basket base into, preferably four, segments arranged separated from one another by means of the cross-shaped structure and the base elongated members running in a curved manner are arranged solely in the segments. In addition however it can also be provided as an alternative that the cross-shaped structure is arranged on the side, opposite the basket interior space, of the base elongated members running in a curved manner. Here it is preferably provided, as stated above, that the base elongated members of the cross-shaped structure project beyond the other base elongated members, in the direction away from the basket interior space.

The basket interior space surrounded by the basket base and the lateral walls can be open upwardly, therefore at the side remote from the basket base. However washer baskets according to the invention can also be provided with, optionally lattice-like, covers or the like.

In principle, the washer baskets can be manufactured from different materials. It is preferably a case of washer baskets of plastics material. The base elongated members and the lateral walls, preferably the entire washer basket, can be in one piece. The washer baskets according to the invention can e.g. be manufactured using injection moulding.

The terms 'upwards of' and 'below' relate in case of doubt to an operating position of the washer basket, in which the basket base forms the lower border of the washer basket and as a rule sits on a horizontal surface underneath it. Viewed in this operating position, the vertical extension of the base elongated members is advantageously greater, preferably at least twice as great or at least three times as great, than the width or in other words the horizontal extension of the base elongated members.

The term 'lattice-like basket base' describes that the basket base has free spaces or through-passage openings between the base elongated members, through which e.g. the washing fluid can enter the basket interior space through the basket base.

When viewed in the plan view of the washer basket, the washer basket can, as known per se, have a rectangular, in particular quadratic, basic form, however also a basic form shaped in another manner.

The term 'rectangular or square basic form' also covers such embodiments in which the corners of this basic form are rounded.

In a particularly preferred manner it is provided that the portion of the base elongated members is sectionally or completely curved around the centre of the basket base when viewed in the plan view of the basket base.

With the invention, the base elongated members can in principle be constructed to run in a greatly differing curved manner. The degree of curvature can also vary along the base elongated members.

Particularly preferred embodiments of the invention provide however that the portion of the base elongated members run in a circular curve or at least in a curve in the form of a segment of a circle when viewed in the plan view of the basket base, preferably are in the form of a succession of base elongated members running in a circular curve or at least in a curve in the form of a segment of a circle. Here at least a few of the base elongated members, running in a circular curve or at least in a curve in the form of a segment of a circle when viewed in the plan view of the basket base, have a common circle centre. In particularly preferred embodiments of the invention this applies to all base elongated members running in a circular curve or at least in a curve in the form of a segment of a circle, in that these all have a common circle centre. Preferred variants provide here that the common circle centre or the common circle centres is/are arranged on a diagonal of the basket base when viewed in the plan view of the basket base. In particular when all base elongated members, running in a circular curve or at least in a curve in the form of a segment of a circle when viewed in the plan view of the basket base, have the same common circle centre, this circle centre advantageously lies at the centre of the basket base. In preferred embodiments of the invention, the radii of curvature of the base elongated members, preferably running in a circular curve or at least in a curve in the form of a segment of a circle, advantageously increase with the distance from the centre of the basket base and/or from their common circle centre when viewed in the above-mentioned plan view of a basket base.

In addition to the washer basket itself, the invention also relates to an arrangement having a dishwasher and having a washer basket according to the invention, wherein the washer basket is arranged in the dishwasher and washing fluid nozzles of the dishwasher are arranged below the basket base, and a respective washing fluid delivery direction of the respective washing fluid nozzles is directed towards the basket base. Here it is preferably provided that the washing fluid nozzles are arranged on or on a rotatably mounted washing arm of the dishwasher, wherein the washing arm is then likewise located

below the basket base. With this arrangement, the washing fluid is sprayed from the washing fluid nozzles through the basket base from below and onto the objects in the basket interior space which are to be washed. Here, a relatively large proportion of the washing fluid delivered from the washing fluid nozzles as a whole passes through the free spaces or through-passage openings in the basket base without being diverted in the process. If however the washing fluid encounters the base elongated members running in a curve then it is diverted there, so that a plurality of different directions are formed in the basket interior space amongst which the washing fluid encounters the objects to be washed which are placed in the basket interior space. This achieves a particularly good washing result, as explained in the introduction.

In addition, the invention also relates to a method of washing objects, arranged in the basket interior space of a washer basket according to the invention, in a dishwasher, wherein the washer basket is arranged for washing the objects in the dishwasher upwards of washing fluid nozzles of the dishwasher, and washing fluid is sprayed from the washing fluid nozzles through the basket base into the basket interior space, wherein some of the washing fluid is diverted into the basket interior space by the base elongated members running in a curved manner.

The objects to be washed which are arranged in the basket interior space can, as already stated above, be tableware, glasses, cutlery, however also other objects.

Further features and details of preferred embodiments of the invention are explained in the following description of the figures.

Figs. 1 to 3 show representations of a first embodiment, according to the invention, of a washer basket;

Figs. 4 to 6 show representations of a second embodiment, according to the invention, of a washer basket and

Fig. 7 shows a schematic representation of the arrangement of a washer basket, according to the invention, according to the first embodiment in a dishwasher, sectioned along section line A-A of Fig. 3.

Fig. 1 shows a perspective view, diagonally from above, of a washer basket 1, in which a portion of the base elongated members 3 run in a curved manner according to the invention. The washer basket 1 has a lattice-like basket base 6, formed from base elongated members 3, 4, 5, and lateral walls 7. The lateral

walls 7 and the basket base 6 together surround the basket interior space 8 of the washer basket 1. As shown in this embodiment, regions of the lateral walls 7 can be interrupted by openings. The basket interior space 8 is open towards the top in this embodiment. In the normal operating position of the washer basket 1, shown e.g. in fig. 7, the washer basket 1 generally sits on a horizontal plane.

The washer baskets 1 shown here each have a square basic form with rounded corners. As already explained in the introduction, washer baskets 1 according to the invention can of course however also have rectangular or other basic forms, optionally with rounded corners or non-rounded corners. Advantageously, washer baskets 1 according to the invention are manufactured from plastics material. Here it can be provided that all constituents of the washer basket are connected to one another in one piece. However multi-part variants are also possible. Washer baskets 1 according to the invention can e.g. be manufactured using an injection moulding process.

Figs. 2 and 3 show the first embodiment of the washer basket 1 according to the invention, in a plan view of the basket base 6. Fig. 3 additionally depicts the rotatably mounted washing arm 15 of a dishwasher 2, which arm 15 has the washing fluid nozzles 14 with which from below it sprays washing fluid 18 through the basket base 6 into the basket interior space 8. The rotational axis about which the washing arm 15 rotates during operation of the dishwashers 2 advantageously lies more or less directly below the centre 9 of the washer basket 1 during the washing procedure.

If one looks at the plan views according to Figs. 2 and 3 of this first embodiment, it can be seen clearly that a portion of the base elongated members, here in the form of the base elongated members 3, run according to the invention in a curved manner in the plan view of the basket base 6. In each case it is a case of a succession of base elongated members 3 running in a curved manner. The base elongated members 3 are sectionally curved around the centre 9 of the basket base 6 when viewed in the shown plan view. In this first embodiment, the base elongated members 3 run in a curve in the form of a segment of a circle.

In addition, the basket base 6 also has however base elongated members 4 which run in each case parallel to one of the lateral walls 7. In this embodiment, a few of these base elongated members 4 form the cross-shaped structure 12 which is in particular clearly visible in figs. 2 and 3. This cross-shaped structure 12 or the base elongated members 4 forming this structure provide an engagement surface for a corresponding gripping device of a transporter of a dishwasher 2, so that the gripping device can grip the washer basket 1 at one of the base elongated members of the cross-shaped structure 12 and can

draw it through the dishwasher 2 during the washing procedure. For this purpose, the base elongated members 4 advantageously project, at the underside remote from the basket interior space 8, beyond the other base elongated members 3 and 5 of the basket base.

In this first embodiment, the cross-shaped structure 12 in the basket base 6 divides the basket base 6 into four segments 13 arranged separated from one another, wherein base elongated members 3 each running in a curved manner are arranged in each of these segments 13. The base elongated members 3 in each case run in a curve in the form of a segment of a circle. The base elongated members 3 arranged in a respective segment 13 each have a common circle centre 10. The greater the distance, within the respective segment 13, of the respective base elongated member 3 running in the form of a segment of a circle from the respective circle centre 10, the greater the radius of this base elongated member 3. The circle centres 10 of the four segments 13 lie in each case on a diagonal 11 of the basket base 6.

To stiffen the basket base 6 in the region of the base elongated members 3 running in a curved manner, in preferred embodiments, such as those shown here, additionally there are provided base elongated members 5 connecting to one another all or a few of the base elongated members 3 running in a curved manner, which base elongated members 5 are, as shown here, advantageously arranged to run radially with respect to the respective common circle centre 10.

Whereas in this first embodiment according to figs. 1 to 3, the base elongated members 3 running in a curved manner are in each case in a curve in the form of a segment of a circle in the segments 13 of the basket base 6 which are separated from one another by the cross-shaped structure 12, in the second embodiment of the invention according to figs 4 to 6 it is provided that at least a few of the base elongated members 3 running in a curved manner are completely circular, when again viewed in the plan view according to figs 5 and 6. All base elongated members 3 curved in the above-mentioned plan view in this second embodiment have a common circle centre 10 in this embodiment, which coincides with the centre 9 of the basket base 6 in this embodiment. Here too the radii of curvature of the base elongated members 3 running in a circular curve increase with the distance from the centre 9 of the basket base 6 and thereby also in this embodiment from their common circle centre 10, when viewed in the plan view of the basket base 6. In the plan views according to figs 5 and 6 it can be seen clearly that also in this second embodiment of washer baskets 1 according to the invention there is present a cross-shaped structure 12 formed from base elongated members 4 running parallel to a respective lateral wall 7, which structure 12, as already described with the first embodiment, serves to be able to transport the washer basket 1 through a dishwasher 2 in a mechanically actuated manner. In contrast to the first

embodiment, this cross-shaped structure 12 does not however in this second embodiment separate the basket base 6 into four segments 13 in which in each case there are provided base elongated members 3 arranged in the form of a segment of a circle. Rather in this second embodiment it is provided that the base elongated members 4 forming the cross-shaped structure 12 are arranged solely on that side of the base elongated members 3, running in a curve, opposite the basket interior space 8.

Also in this second embodiment there are provided base elongated members 5, arranged radially with respect to the common circle centre 10, which connect to one another the base elongated members 3 running in a curved manner and thus further stabilize the basket base 6. The wall thicknesses of the base elongated members 3, 4, 5 can generally speaking lie e.g. in the range from 1mm to 10mm, preferably from 2.5mm to 4mm.

Fig. 7 shows by way of example an arrangement having a dishwasher 2 and a washer basket 1 according to the invention arranged therein, wherein the dishwasher 2 is only shown in a very simplified manner. The dishwasher 2 can be designed as known per se in the prior art. Fig. 7 shows a vertical section through this arrangement along the section line AA drawn in fig. 3. In the shown operating position, the washer basket 1 is mounted on appropriate rails 19 of the dishwasher 2. Consequently, fig. 7 shows the operating position of the washer basket 1, in which the washing procedure is carried out in the dishwasher 2. In this operating position, the washer basket 1 is mounted horizontally in the dishwasher 2. In fig. 7, there are depicted glasses, sectioned and very schematically, in the basket interior space 8 as objects 17 to be washed. Below the basket base 6 there are located the washing fluid nozzles 14 which in the embodiment shown here are formed in the rotatably mounted washing arm 15 of the dishwasher 2. The washing fluid delivery directions 16 of the respective washing fluid nozzle 14 are directed towards the basket base 6, so that the washing fluid 18 reaches the basket interior space 8 from below through the lattice-like basket base 6 during the washing procedure, in order to wash there the objects 17 to be washed. Consequently there is shown a method according to the invention for washing objects 17, arranged in the basket interior space 8 of a washer basket 1 according to the invention, in the dishwasher 2, wherein the washer basket 1 is arranged for washing the objects 17 in the dishwasher 2 upwards of washing fluid nozzles 14 of the dishwasher 2 and the washing fluid 18 is sprayed from the washing fluid nozzles 14 through the washer basket 6 into the basket interior space 8, wherein some of the washing fluid 18 is diverted into the basket interior space 8 by the base elongated members 3 running in a curved manner. Other washing fluid 18, which does not encounter the base elongated members 3 upon penetration of the basket base 6, reaches the basket interior space 8 without being

diverted. All in all, it is thereby achieved that the objects 17 to be washed which are arranged in the basket interior space 8 are struck by washing fluid 18 from different directions, which all in all leads to a very good washing result.

Legends for the reference numerals

- | | |
|----|----------------------------------|
| 1 | washer basket |
| 2 | dishwasher |
| 3 | base elongated member |
| 4 | base elongated member |
| 5 | base elongated member |
| 6 | basket base |
| 7 | lateral wall |
| 8 | basket interior space |
| 9 | centre |
| 10 | circle centre |
| 11 | diagonal |
| 12 | cross-shaped structure |
| 13 | segment |
| 14 | washing fluid nozzle |
| 15 | washing arm |
| 16 | washing fluid delivery direction |
| 17 | object |
| 18 | washing fluid |
| 19 | rail |

P a t e n t k r a v

- 5 **1.** Opvaskekurv (1) til opvaskemaskiner (2), hvor opvaskekurven (1) har en gitterformet kurvebund (6), der er dannet af bundstykker (3, 4, 5), og sidevægge (7), og sidevæggene (7) sammen med kurvebunden (6) omgiver et indvendigt kurverum (8) af opvaskekurven (1), hvor mindst en del af bundstykkerne (3), set fra oven af kurvebunden (6), er udformet krumt forløbende, fortrinsvis som en rækkefølge af krumt forløbende bundstykker (3), og kurvebunden (6), set fra oven af kurvebunden (6), yderligere har en krydsformet struktur
- 10 (12), der forløber gennem kurvebundens (6) midterpunkt (9), af bundstykker (4), der hver især forløber parallelt med en af opvaskekurvens (1) sidevægge (7), **kendetegnet ved, at** den krydsformede struktur (12) opdeler kurvebunden (6) i fortrinsvis fire segmenter (13), der er anbragt adskilt fra hinanden ved hjælp af den krydsformede struktur (12), og de krumt forløbende bundstykker
- 15 (3) udelukkende er anbragt i segmenterne (13), og/eller den krydsformede struktur (12) er anbragt på den side af de krumt forløbende bundstykker (3), der ligger modsat det indvendige kurverum (8).
- 20 **2.** Opvaskekurv (1) ifølge krav 1, **kendetegnet ved, at** delen af bundstykkerne (3), set fra oven af kurvebunden (6), er udformet afsnitsvis eller fuldstændig krummet omkring kurvebundens (6) midterpunkt (9).
- 25 **3.** Opvaskekurv (1) ifølge krav 1 eller 2, **kendetegnet ved, at** delen af bundstykkerne (3), set fra oven af kurvebunden (6), er udformet cirkulært eller i det mindste cirkelsegmentformet krumt forløbende, fortrinsvis som en rækkefølge af cirkulært eller i det mindste cirkelsegmentformet krumt forløbende bundstykker (3).
- 30 **4.** Opvaskekurv (1) ifølge krav 3, **kendetegnet ved, at** mindst nogen af, fortrinsvis alle, bundstykkerne (3), der set fra oven af kurvebunden (6) er udformet cirkulært eller i det mindste cirkelsegmentformet krumt forløbende, har et fælles cirkelmidterpunkt (10).

5. Opvaskekurv (1) ifølge krav 4, **kendetegnet ved, at** det fælles cirkelmidterpunkt (10) eller de fælles cirkelmidterpunkter (10), set fra oven af kurvebunden (6), er anbragt på en diagonal linje (11) af kurvebunden (6), fortrinsvis på kurvebundens (6) midterpunkt (9).

5

6. Opvaskekurv (1) ifølge et af kravene 1 til 5, **kendetegnet ved, at** krumningsradiusserne af bundstykkerne (3), der fortrinsvis forløber cirkulært eller i det mindste cirkelsegmentformet, krumt, set fra oven af kurvebunden (6), tiltager med afstanden fra midterpunktet (9) af kurvebunden (6) og/eller fra det fælles cirkelmidterpunkt (10).

10

7. Anordning med en opvaskemaskine (2) og en opvaskekurv (1) ifølge et af kravene 1 til 6, hvor opvaskekurven (1) er anbragt i opvaskemaskinen (2), og skyllevæskedyser (14) af opvaskemaskinen (2), fortrinsvis i en roterbart monteret skyllearm (15) af opvaskemaskinen (2), er anbragt under kurvebunden (6), og en pågældende skyllevæskeafgivelsesretning (16) af den pågældende skyllevæskedyse (14) er rettet mod kurvebunden (6).

15

8. Fremgangsmåde til at vaske genstande (17), der er anbragt i det indvendige kurverum (8) af en opvaskekurv (1) ifølge et af kravene 1 til 6 i en opvaskemaskine (2), hvor opvaskekurven (1) til vask af genstandene (17) i opvaskemaskinen (2) anbringes over skyllevæskedyser (14) af opvaskemaskinen (2), fortrinsvis af en roterbart monteret skyllearm (15) af opvaskemaskinen (2), og skyllevæske (18) sprøjtes ud af skyllevæskedyserne (14) gennem kurvebunden (6) til det indvendige kurverum (8), hvor dele af skyllevæsken (18) omdirigeres fra de krumt forløbende bundstykker (3) til det indvendige kurverum (8).

20

25

Fig. 1

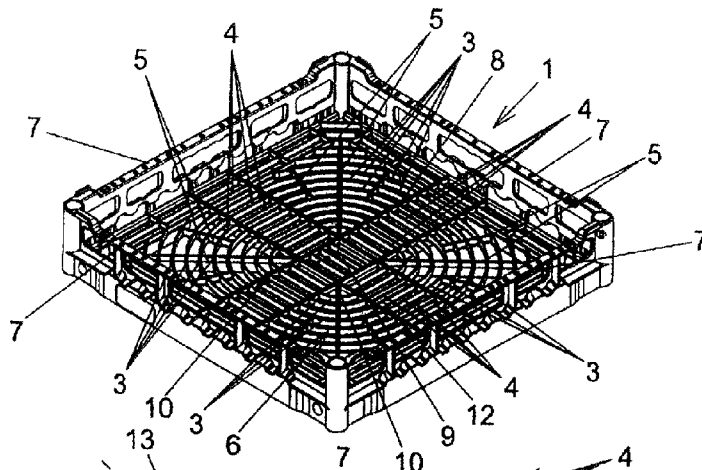


Fig. 2

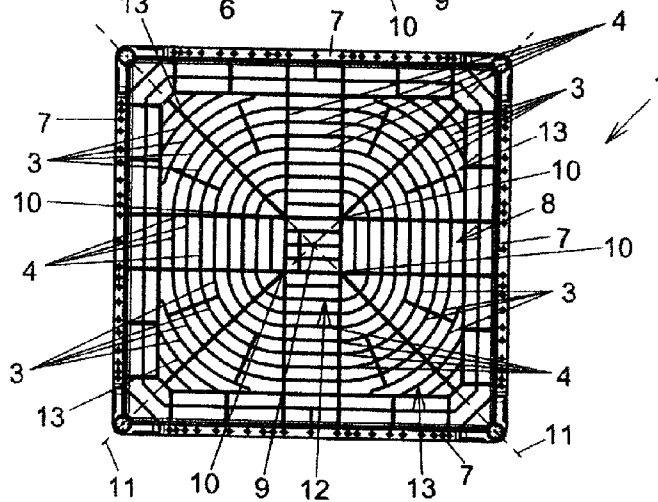


Fig. 3

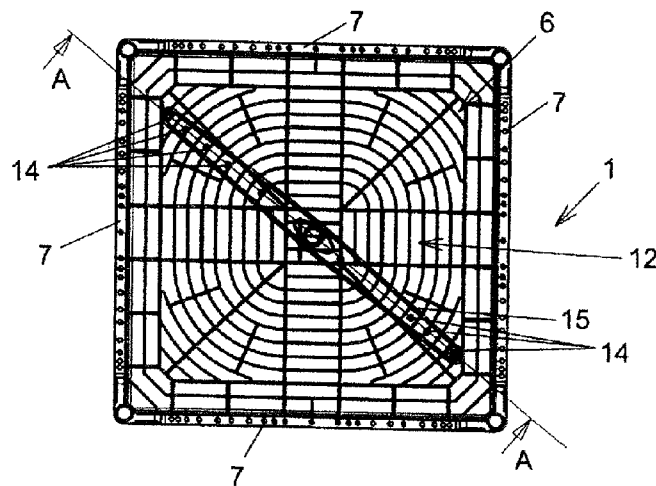


Fig. 4

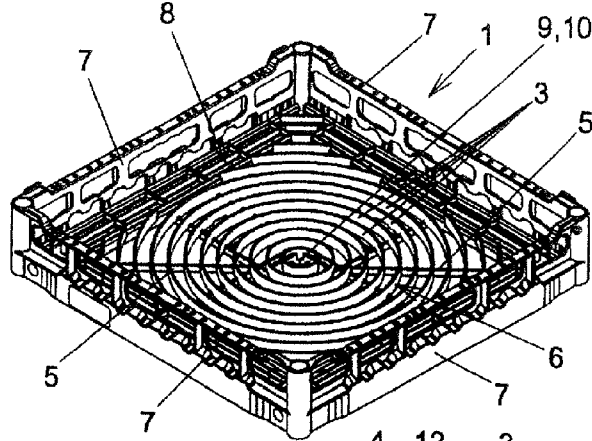


Fig. 5

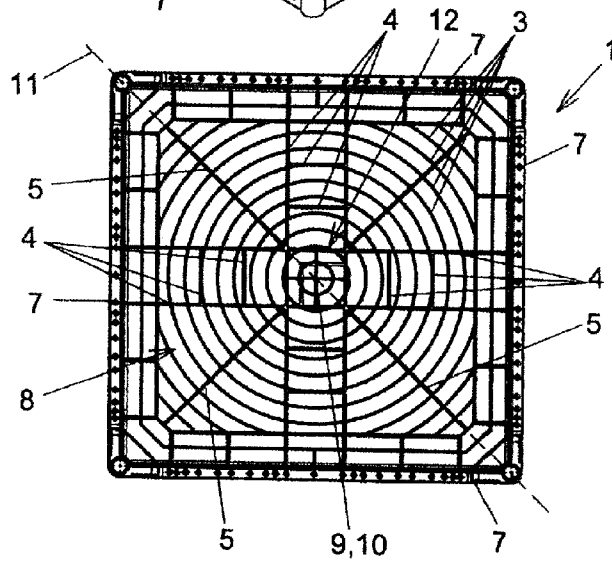


Fig. 6

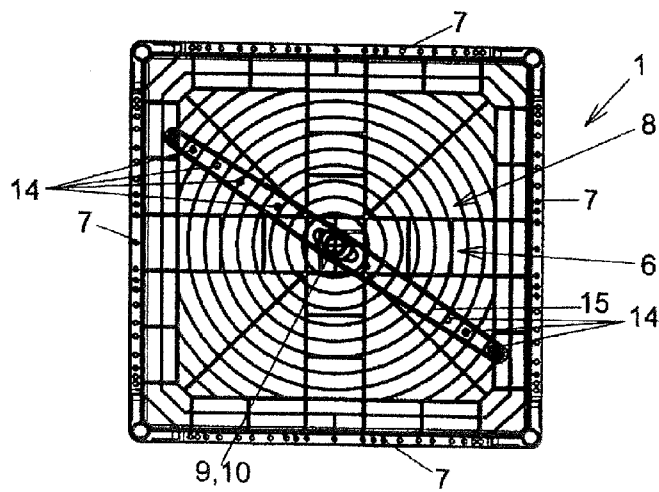


Fig. 7

