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(71) Applicant: **RESCUE Intellitech AB**
213 75 Malmö (SE)

(72) Inventors:
- **Rämmal, Jonas**
  247 56 Dalby (SE)
- **Bohn, Torben**
  244 91 Kävlinge (SE)
- **Serruys, Robin**
  233 32 Svedala (SE)
- **Tegle, Johan**
  235 37 Vellinge (SE)

(74) Representative: **Hansson Thyresson AB**
PO Box 73
201 20 Malmö (SE)

(54) **CARRIER FOR A WASHING APPARATUS**

(57) An equipment carrier (1) for a washing apparatus is provided, the carrier (1) comprising at least one holding structure (3) for holding equipment, and at least one blocking member (4) configured to block a wash medium flow in the washing apparatus.

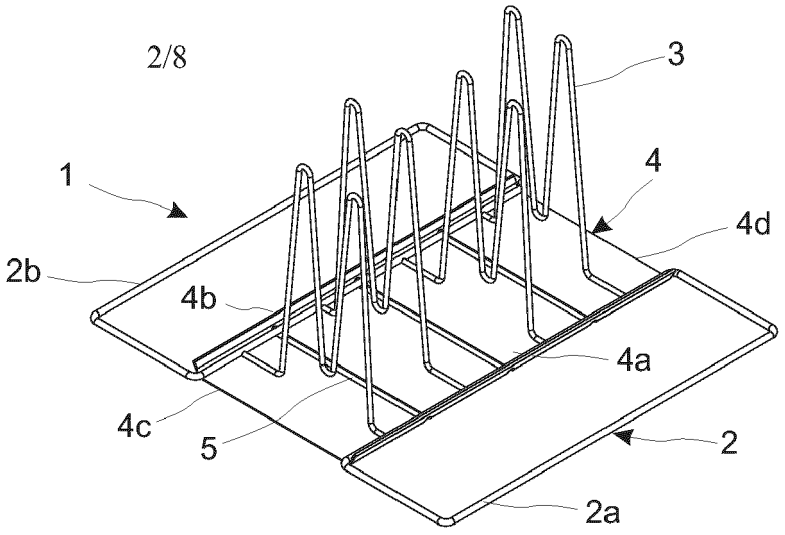

Fig. 3

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Description

TECHNICAL FIELD

[0001] The present invention relates to an equipment carrier for a washing apparatus, a washing apparatus for cleaning personal protective equipment, and a method for decontaminating personal protective equipment.

BACKGROUND

[0002] Firefighters use a number of different protective garments and equipment in their service. When used during firefighting, the protective equipment, including the self-contained breathing apparatus (SCBA), helmet, face mask, boots and gloves, will become contaminated with soot particles and combustion gases. Some of these particles are hazardous toxins and/or carcinogens, e.g., polycyclic aromatic hydrocarbons (PAH) particles, which pose a real threat to human health.

[0003] Studies show that firefighters face a significantly higher risk of being diagnosed with, and dying from, various forms of cancer than the general population. This is due to the hazardous chemicals and carcinogenic particles they are exposed to in the line of duty. To reduce this exposure and the resulting cancer risk, it is favorable to thoroughly, safely and efficiently clean and decontaminate all personal protective equipment after every use.

[0004] Decontamination of the personal protective equipment immediately upon return to the firefighting station is favorable. However, cleaning the equipment by hand may be both time consuming and hard work and also poses a health risk due to unprotected exposure to the toxins and/or carcinogens. Furthermore, cleaning the protective equipment may result in release of contaminated effluent water containing the hazardous chemical particles.

[0005] These, and similar, problems occur also in other industries, such as the mining industry or health care.

[0006] From the above it is understood that there is room for improvements and the invention aims to solve or at least mitigate the above and other problems.

SUMMARY

[0007] The invention is defined by the appended independent claims. Additional features and advantages of the concepts disclosed herein are set forth in the description which follows, and in part will be obvious from the description, or may be learned by practice of the described technologies. The features and advantages of the concepts may be realized and obtained by means of the instruments and combinations particularly pointed out in the appended claims.

[0008] In a first aspect, an equipment carrier for a washing apparatus is provided. The carrier comprises at least one holding structure for holding equipment, and at least one blocking member configured to block a wash medium flow in the washing apparatus. An advantage of the carrier is that it controls the flow of wash medium such that it does not enter into an inside of the equipment arranged on the carrier. Thus, the inside of the equipment is not exposed to the wash medium.

[0009] In a second aspect, a washing apparatus for decontaminating personal protective equipment is provided. The washing apparatus comprises a housing enclosing a washing chamber provided with at least one inlet for a wash medium. The washing chamber comprises or is configured to receive a carrier according to the above.

[0010] Advantages of the washing chamber comprising the carrier is easier handling of the carrier, the carrier not being lost, misplaced or incorrectly positioned in the washing apparatus.

[0011] Advantages of the washing chamber being configured to receive the carrier is that the arrangement of equipment on the carrier is facilitated, and the carrier not occupying space in the washing chamber when not in use.

[0012] In a third aspect, a system comprising a washing apparatus and a carrier arrangeable in the washing apparatus is provided.

[0013] In a fourth aspect, a method for decontaminating personal protective equipment is provided. The method comprises the steps of arranging a carrier comprising at least one holding structure for holding personal protective equipment and at least one blocking member in a washing apparatus; arranging personal protective equipment to be decontaminated on the at least one holding structure; and providing at least one flow of a wash medium into the washing apparatus, wherein the at least one blocking member blocks the at least one flow of wash medium from entering an inside portion of the personal protective equipment.

[0014] Advantages of this method is that wash medium is prevented/hindered/blocked from entering the inside of the equipment to be decontaminated. This results in shorter drying time, less wear on the equipment, and protects the inner portion from contamination of hazardous particles or other contaminants in the wash medium.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] In order to best describe the manner in which the above-described embodiments are implemented, as well as define other advantages and features of the disclosure, a more particular description is provided below and is illustrated in the appended drawings. Understanding that these drawings depict only exemplary embodiments of the invention and are not therefore to be considered to be limiting in scope, the examples will be described and explained with additional specificity and detail through the use of the accompanying drawings in which:

Fig. 1 is a front view of a washing apparatus,

Fig. 2 is a side section view of the washing apparatus in Fig. 1 along section B-B,
Fig. 3 is a perspective view of an equipment carrier,
Fig. 4 is a side view of the equipment carrier in Fig. 3,
Fig. 5 is a front view of the equipment carrier in Fig. 3,
Fig. 6 is a top view of the equipment carrier in Fig. 3,
Fig. 7 is a front view of the equipment carrier in Fig. 3 arranged in a gear holding basket,
Fig. 8 is a top view of the equipment carrier and basket in Fig. 7,
Fig. 9 is a side view of the equipment carrier and basket in Fig. 7,
Fig. 10 is a perspective view of the equipment carrier and basket in Fig. 7,
Fig. 11 is a front view of the equipment carrier and basket in Fig. 7 provided with gear/equipment,
Fig. 12 is a side view of the equipment carrier, basket and, equipment in Fig. 11,
Fig. 13 is a top view of the equipment carrier, basket, and equipment in Fig. 11,
Fig. 14 is a perspective view of the equipment carrier, basket, and equipment in Fig. 11,
Fig. 15 is a front view of the equipment carrier, basket, and equipment in Fig. 11 arranged in a washing apparatus,
Fig. 16 is a side section view of the equipment carrier, basket, and equipment arranged in the washing apparatus in Fig. 15 along section A-A,
Fig. 17 is a front view of a carrier according to one embodiment arranged in a gear holding basket and provided with gear,
Fig. 18 is a side view of the carrier in Fig. 17,
Fig. 19 is a top view of the carrier in Fig. 17,
Fig. 20 is a perspective view of the carrier in Fig. 17,
Fig. 21 is a front view of a carrier according to one embodiment arranged in a gear holding basket and provided with gear,
Fig. 22 is a side view of the carrier in Fig. 21,
Fig. 23 is a perspective view of the carrier in Fig. 21,
Fig. 24 is a top view of the carrier in Fig. 21,
Fig. 25 is a front view of a carrier according to one embodiment arranged in a gear holding basket and provided with gear,
Fig. 26 is a top view of the carrier in Fig. 25, and
Fig. 27 is a perspective view of the carrier in Fig. 25.

[0016] Further, in the figures like reference characters designate like or corresponding parts throughout the several figures.

DETAILED DESCRIPTION

[0017] Various embodiments of the disclosed methods and arrangements are discussed in detail below. While specific implementations are discussed, it should be understood that this is done for illustration purposes only. A person skilled in the relevant art will recognize that other components, configurations, and steps may be used without parting from the spirit and scope of the disclosure.

[0018] In the description and claims the word "comprise" and variations of the word, such as "comprising" and "comprises", does not exclude other elements or steps.

[0019] In this document, the wordings "wash" and "decontaminate" are used synonymously, and so are the wordings "gear" and "equipment".

[0020] Hereinafter, certain embodiments will be described more fully with reference to the accompanying drawings. It will be apparent to those skilled in the art that various modifications and variations can be made without departing from the inventive concept. Other embodiments will be apparent to those skilled in the art from consideration of the specification and practice disclosed herein. The embodiments herein are provided by way of example so that this disclosure will be thorough and complete, and will fully convey the scope of the inventive concept, and that the claims be construed as encompassing all equivalents of the present inventive concept which are apparent to those skilled in the art to which the inventive concept pertains. If nothing else is stated, different embodiments may be combined with each other.

[0021] As described in the background section, decontamination of the personal protective equipment, or other equipment which the firefighters may come in contact with, immediately upon return to the firefighting station is favorable. The gear or equipment is e.g., boots, gloves, masks, helmets, or similar items in need of washing/decontamination after a firefighting mission. Today, it is common to rinse or flush boots under a water hose, and to wash gloves by putting them on and wash the hands with soap in a sink.

[0022] In order to obtain a thorough wash of the equipment, it is beneficial to use a washing apparatus designed to decontaminate firefighting equipment. Preferably, the washing apparatus provides wash medium from all directions, including from below and from above, optionally also in at least one sideways direction. This is obtained by fix nozzles, and/or rotatable arms provided with nozzles configured to eject the wash medium onto the equipment to be decontaminated. Alternatively, fixed nozzles are combined with a movable, e.g. rotatable, carrier on which the gear is arranged.

[0023] In order to reduce the risk of contaminating the inside portion of the equipment with wash water or other wash medium containing pollutants and decontamination chemicals, and to reduce drying time after a water based decontamination, and/or in order to reduce wear of the gear due to exposure of particles and/or chemicals, it is favorable if the wash medium is prevented from entering the inside of the equipment. In this application, the inside of the personal protective equipment refers to the side of the item/garment which comes into contact with the wearer/user.

[0024] It is preferred not to alter or reduce the flow of the wash medium, as this requires impacting the washing

apparatus, and also reduces the effect of the wash. The inventors of the present invention have, by thoughtful and inventive thinking, come up with a solution to this problem, which will be further elaborated on below.

[0025] Figs 1-2 show a washing apparatus 10 comprising a housing 11 comprising a hatch or door 14, which enclose a washing chamber 12. The washing chamber 12 has at least one inlet for a wash medium, and at least one outlet for used wash medium and contaminants. The washing chamber 12 is configured to receive a gear holding basket 13 in which a carrier 1 is arrangeable. In Figs 1-2, the carrier 1 is arranged in the gear holding basket 13, and the gear holding basket 13 is arranged in the washing chamber 12. The washing apparatus 10 in this case has rotatable arms over and under the gear to be cleaned.

[0026] Preferably, the washing apparatus 10 has pairs of rails, guides or similar configured to receive or support the gear holding basket 13. In the shown embodiment, the washing apparatus 10 is configured to accommodate one gear holding basket 13, but in other embodiments, the washing apparatus 10 may be configured to accommodate two or more gear holding baskets, e.g., by two or more pairs of rails arranged a vertical distance from each other.

[0027] The washing apparatus 10 further comprises two sets of rotatable arms. One set of rotatable arms is arranged below the rails for supporting the gear holding basket 13 and one set of rotatable arms is arranged above the rails for supporting the gear holding basket 13. Each arm of each set of rotatable arms is provided with openings or nozzles forming the at least one inlet for a wash medium into the washing chamber 12. In one embodiment, the nozzles are designed to eject the wash medium in different directions, providing a flow of wash medium in all directions inside the washing chamber 12.

[0028] The washing apparatus 10 further comprises a pump unit configured to pump the washing medium to, and out through the at least one inlet into the washing chamber 12.

[0029] The wash medium used to decontaminate/wash/clean the personal protective equipment is one or more of water, laundry detergent, washing chemical(s), granules, dry cleaning agents, RO-water, disinfectant, soap, washing-up liquid, dish soap, dishwasher detergent, degreaser, ultrapure water.

[0030] It is beneficial to have two sets of arms provided with nozzles in the washing apparatus 10, one providing a flow of wash medium from above, and one from below. This allows for a more thorough decontamination of the equipment. As an alternative to rotatable arms, the nozzles/openings may be provided on a rotatable structure of another shape, or the structure may not be rotatable, but instead turnable back and forth. Alternatively, and/or additionally, the washing apparatus 10 is provided with one or more fix structures, such as bars, comprising nozzles or openings.

[0031] The gear holding basket 13 is a wire basket. It comprises a floor and four side walls/side portions which are made of wire. It is configured to let as much wash medium as possible penetrate it, at the same time as it is form stable. Thus, the equipment/gear arranged in the basket 13 is exposed to as much wash medium as possible, resulting in a more thorough cleans.

[0032] As mentioned above, it is sometimes beneficial to block the wash medium from entering e.g., the inside of a boot or glove. For this purpose, a carrier 1 is arranged in the gear holding basket 13.

[0033] Referring to Figs 3-6, an embodiment of the carrier/holder/support 1 for carrying/holding/supporting equipment 6 during a decontamination in the washing apparatus 10 is shown. The carrier/holder/support 1 may also be referred to as a washing apparatus carrier/holder/support, a gear carrier/holder/support or an equipment carrier/holder/support. The carrier/holder/support 1, from now on only referred to as carrier, is designed to be arrangeable in the gear holding basket 13 of the washing apparatus 10. Optionally, it may be configured to fit directly into the washing apparatus 10, without the gear holding basket 13.

[0034] Further optionally, the carrier 1 is designed as an integral part of the washing apparatus 10. E.g., the carrier 1 may be attached to the washing apparatus 10 inside the washing chamber 12, for example by welding, riveting or molding.

[0035] The carrier 1 comprises at support structure 2, at least one holding structure 3 and at least one blocking member 4. In the shown embodiment, the support structure 2 comprises a first 2a and a second 2b support structure portion. Each support structure portion 2a, 2b comprises a metal structure in the shape of a rectangle contour. Alternatively, the support structure 2 is a coherent structure, e.g., in the form of a rectangle or square provided with struts extending between two opposing sides of the square/rectangle. In one embodiment, the support structure 2 is made from stainless steel, PP or POM.

[0036] The holding structure 3 comprises rods, preferably bent rods. The rods are bent into a shape suitable for holding different kinds of personal protective equipment. In the depicted case, the rods resemble the letter "M".

[0037] The carrier preferably comprises several holding structures. The shown carrier 1 comprises four holding structures 3. Each holding structure 3 is attached to the support structure 2. Alternatively, the holding structures 3 may be attached to the blocking member 4 or to both the blocking member 4 and the support structure 2. The holding structure 3 and the blocking structure 4 is in this embodiment formed as two separate structures.

[0038] For each holding structure 3, a first leg of the M-shape is attached to the first support structure portion 2a, and a second leg of the M-shape is attached to the second support structure portion 2b. Thus, each holding structure 3 extends in a respective plane each perpendicular to a plane in which the support structure 2 extends.

[0039] In one embodiment, the holding structure 3 is made from stainless steel, PP or POM. In other embodiments, the holding structure may comprise other materials such as composite or other suitable materials. In other embodiments, the holding structure 3 may have another shape, e.g., resembling the shape of the letter "V", the letter "I" or an upside-down letter "L". The holding structure 3 may have an extension in more than the one plane as described above. The rod shaped holding structure is advantageous in that it is material efficient, i.e., it requires a small amount of material, making it lightweight and cost efficient.

[0040] In the shown embodiment, the blocking member 4 comprises a sheet. The sheet is rectangular with opposing long sides 4a, 4b, and opposing short sides 4c, 4d. The sheet comprises openings, in the figure in the shape of elongated slits 5. The slits 5 extend between the opposing long sides 4a, 4b of the sheet.

[0041] The blocking member 4 is attached to the support structure 2 along its long sides such that it is located below the holding structure 3.

[0042] In order to provide an enhanced drainage, the sheet of the blocking member 4 may have a slightly curved shape, with a curve minimum along a line parallel with the long sides 4a, 4b of the sheet. The sheet 4 is provided with a slit or opening 5 along the curve minimum such that water landing on the blocking member 4 is directed towards the opening 5.

[0043] In other embodiments, the blocking member 4 may have other shapes, such as square or circular. The openings may extend between the short sides 4c, 4d of the sheet, or diagonally, obliquely or at an angle vis-à-vis the long sides 4a, 4b of the sheet. The openings may be designed as shorter slots or circular or oval perforations.

[0044] In other embodiments, the blocking member 4 may comprise several smaller bodies. The blocking member 4 may e.g. comprise individual or separate units, such as discs, adapted to be positioned such that each unit cover the opening of an equipment to be decontaminated.

[0045] In Figs 7-10, the carrier 1 is arranged in the gear holding basket 13. The support structure 2 is configured to fit snugly into the gear holding basket 13 such that the carrier 1 is securely arranged in the basket 13. In one embodiment, the support frame 2 is rectangular, so as to fit the gear holding basket 13 in two positions only, differentiated by a horizontal rotation of 180 degrees. In another embodiment, the support frame 2 is square, and fits the gear holding basket 13 in four positions, each differentiated by a 90 degree horizontal rotation of the basket 13.

[0046] In Figs 11-14, the carrier 1 arranged in the gear holding basket 13 is shown carrying firefighting equipment in the form of boots 6, and in Figs 15-16, the basket with the carrier 1 and the boots 6 is arranged in the washing apparatus 10.

[0047] Referring mainly to Figs 11-16, the function of the carrier 1 will now be described in more detail. The carrier 1 is arranged in the gear holding basket 13. Then, the equipment 6 to be decontaminated, in the pictured embodiment being boots 6, are arranged on the holding structure 3 of the carrier 1 such that the holding structure 3 extends into the opening of the boots 6. The carrier 1 in the figures comprises four holding structures 3 and three of these are holding boots 6, and one is empty. The boots 6 are arranged on the holding structures 3 such that the opening of the boots 6 are facing the blocking member 4.

[0048] When the boots 6 have been arranged on the holding structures 3, the gear holding basket 13 is arranged in the washing chamber 12 of the washing apparatus 10 on the rails or guides thereof.

[0049] Thereafter, the decontamination of the equipment is started by providing at least one flow of the wash medium into the washing chamber 12. In order to provide an optimal decontamination, the wash medium is provided both from above and from below of the gear holding basket 13, such that the flow hits the equipment 6 from all directions. Since the gear holding basket 13 is a wire basket, the flow of wash medium passes between the wires of the basket 13, and hits the boots 6.

[0050] However, at least a portion of the flow of wash medium originating from the nozzles located below the gear holding basket 13 hits the blocking member 4. Thereby, the flow of wash medium is prevented from entering the inside of the equipment, in this case the boots 6, arranged in the gear holding basket 13.

[0051] The size of the blocking member 4 is adapted such that it does not completely block the wash medium flow from below, but only to such extent that the openings of different personal protective equipment are blocked when arranged on the carrier 1.

[0052] As seen in Fig. 13, a toe portion of the boots 6 extend outside the blocking member 4, and is thus directly exposed to the wash medium flow. Had the blocking member 4 been larger, the boot 6 would not be exposed to as much wash medium, and would not be equally decontaminated.

[0053] The size and extension of the blocking member 4 has been determined as a trade-off between coverage and exposure of the equipment to be decontaminated. It is possible to have carriers 1 provided with differently sized blocking members 4, or the blocking members 4 being of different size and being exchangeable.

[0054] Some of the wash medium supplied into the washing apparatus 10 will reach a top surface of the blocking member 4, i.e., the surface facing the equipment 6. There, it is led towards the openings 5 where it flows through and falls down towards the bottom of the washing chamber 12. The wash medium may be guided towards the openings 5 by a slope or inclination of the blocking member 4 towards each opening 5, or by the blocking member 4 being overflown of wash medium. The effect is that the equipment 6 is not exposed to stagnant wash medium.

[0055] In Figs 17-24, an embodiment of the carrier 1 is shown. This version of the carrier 1 comprises a support structure 2, at least one holding structure 3 and at least one blocking member 4. Each holding structure 3 is attached to the blocking member 4. The support structure 2 is attached to the first long side 4a of the blocking member 4. The support structure 2 extends in the same general direction as the holding structures 3, vis-à-vis the blocking member 4.

[0056] The holding structure 3 is inserted into equipment to be decontaminated, which may also be expressed as the equipment to be decontaminated is put onto the holding structures 3 of the carrier 1, such that the opening of the equipment faces the blocking member 4.

[0057] Thereafter, the carrier 1 provided with the equipment 6 to be decontaminated is arranged in the gear holding basket 13.

[0058] Figs 17-20 show the carrier 1 in use. The carrier 1 is arranged such that the first long side 4a of the blocking member and one of the upper bent portions of the M-shaped holding structure 3 (i.e., upper when seen in the direction of an "M") faces the floor of the gear holding basket 13. In use, the support structure 2 rests against the floor of the gear holding basket 13, the blocking member 4 extending at an angle of approximately 90°, for example 80-100° vis-à-vis the support structure 2/the floor of the gear holding basket 13.

[0059] Figs 21-24 show another embodiment of the carrier 1. It comprises a at least one holding structure 3 and at least one blocking member 4. Each holding structure 3 is attached to the blocking member 4. The carrier 1 of this embodiment differs from the ones described above in that it does not comprise a support structure. In use, the equipment, in the figures in the form of boots 6, are arranged in the gear holding basket 13, with soles against the floor of the basket, and the openings of the boots directed upwards. The holding structures 3 of the carrier 1 is then inserted into the openings of the boots 6, such that the blocking structure 4 rests against the respective boot shaft or boot top, and covers the opening of the respective boots 6. The gear holding basket 13 is arranged in the washing apparatus 10, in the same manner as described above. The washing/decontamination process is also the same as described above, but the blocking structure 4 block a flow of wash medium from above.

[0060] Figs. 25-27 show another embodiment of the carrier 1. In this embodiment, the holding structure 3 is in the form of a truncated cone, or elliptical truncated cone. The holding structure 3 also functions as the blocking member 4, as it is configured to extend into the equipment and fill up the opening of the equipment 6.

[0061] The truncated cone is adapted only to block the flow of wash medium into the opening of the gear. The jets of wash medium are allowed to spread throughout the remaining washing chamber 12. This provides for an effective cleaning of the equipment 6.

[0062] In other embodiments (not shown), the holding structure 3 may be in the shape of a cone, a stick, a stick with a sphere, partial sphere or disc in a distal end thereof, which sphere, partial sphere or disc may be stationary or movable along the stick.

[0063] The carrier 1 is designed to receive different kinds of personal protective equipment. The carrier 1 is designed to prevent the flow of wash medium from entering the inside of the equipment independent of the geometrical shape of the opening of the equipment.

[0064] The various embodiments described above are provided by way of illustration only and should not be construed to limit the invention. For example, the principles herein may be applied to any washing apparatus or washing unit. The carrier 1 may be adapted to support any personal protective equipment (PPE), such as boots, gloves, goggles, visors, breathing masks, respirators, breathing tubes. The PPE may be adapted for any industry where personal protective equipment is used, such as, but not limited to, firefighting, mining, healthcare, etc. Those skilled in the art will readily recognize various modifications and changes that may be made to the present invention without following the example embodiments and applications illustrated and described herein, and without departing from the scope of the present disclosure.

Claims

1. An equipment carrier (1) for a washing apparatus, the carrier (1) comprising

   - at least one holding structure (3) for holding equipment, and
   - at least one blocking member (4) configured to block a wash medium flow in the washing apparatus (10).

2. The carrier (1) according to claim 1, wherein the holding structure (3) is configured to support personal protective equipment (6).

3. The carrier (1) according to claims 1 or 2, wherein the blocking member (4) is arranged on an opposite side of the holding structure (3) compared to a side configured to receive the equipment (6).

4. The carrier (1) according to claims 1-3, wherein the blocking member (4) is configured to block the wash medium flow from entering a portion of the equipment (6) arranged on the holding structure (3) when subject to the wash medium flow.

5. The carrier (1) according to claim 4, wherein the portion of the equipment (6) is an inside portion of the equipment (6).

6. The carrier (1) according to any one of the preceding claims, further comprising a support structure (2), arranged to support the holding structure (3) and the blocking member (4).

7. The carrier (1) according to any one of the preceding claims, wherein the at least one blocking member (4) extends in a first plane, and each of the at least one holding structure (3) extends in a direction mainly orthogonal to the first plane.

8. The carrier (1) according to claims 6 and 7, wherein the support structure (2) extends mainly in the first plane.

9. The carrier (1) according to any one of the preceding claims or according to any one of claims 6-8, wherein the blocking member (4) comprises a sheet provided with openings (5), or wherein the blocking member (4) comprises two or more sheets connected to the support structure (2) at a distance from one another.

10. The carrier (1) according to claim 9, wherein the openings are elongated slots (5).

11. The carrier (1) according to any one of the preceding claims, configured to be arranged in a gear holding basket (13) of the washing apparatus (10).

12. A washing apparatus (10) for decontaminating personal protective equipment (6), the apparatus comprising a housing (11) enclosing a washing chamber (12) provided with at least one inlet for a wash medium, the washing chamber (12) comprising or being configured to receive a carrier (1) according to any of the preceding claims.

13. The washing apparatus (10) according to claim 12, wherein the wash medium is one or more of water, laundry detergent, washing chemicals, granules, dry cleaning agents.

14. A system comprising a washing apparatus (10) and a carrier (1) according to any one of claims 1-11 arrangeable in the washing apparatus (10).

15. The system according to claim 14, further comprising a gear holding basket (13) arrangeable in the washing apparatus (10) and configured to receive the carrier (1).

16. A method for decontaminating personal protective equipment comprising the steps of

- arranging a carrier (1) comprising at least one holding structure (3) for holding personal protective equipment and at least one blocking member (4) in a washing apparatus (10),
- arranging personal protective equipment (6) to be decontaminated on the at least one holding structure (3),
- providing at least one flow of a wash medium into the washing apparatus (10), wherein the at least one blocking member (4) blocks the at least one flow of wash medium from entering an inside portion of the personal protective equipment (6).

17. The method according to claim 16, wherein the step of arranging the carrier (1) in the washing apparatus (10) comprises arranging the carrier (1) in a gear holding basket (13), and arranging the gear holding basket (13) in the washing apparatus (10).

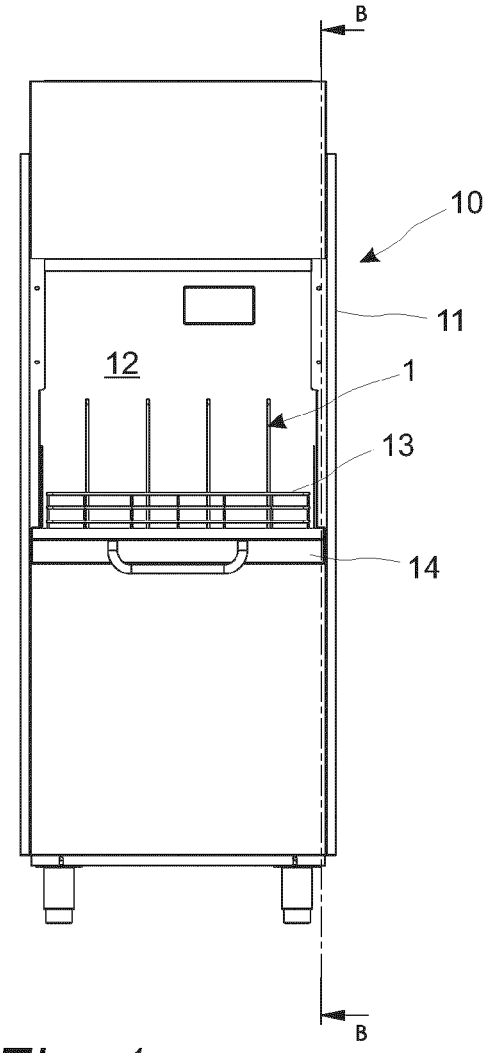
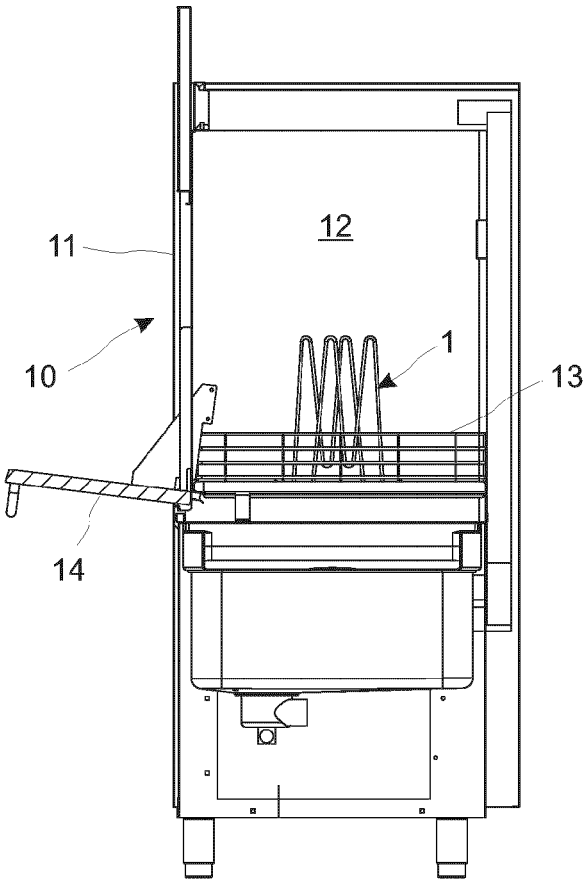


Fig. 1



SECTION B-B

Fig. 2

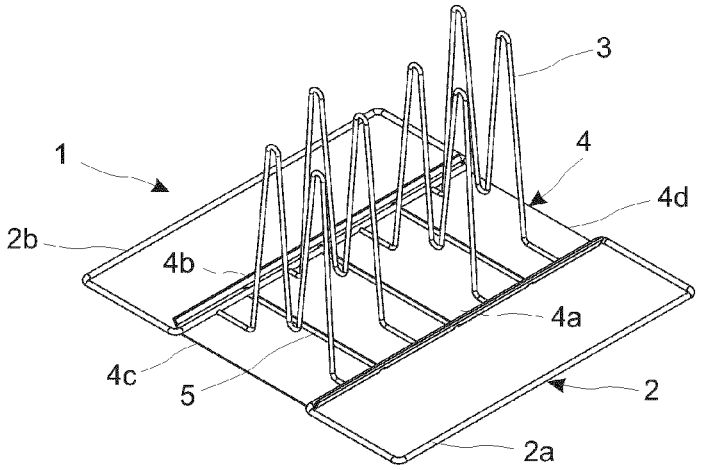


Fig. 3

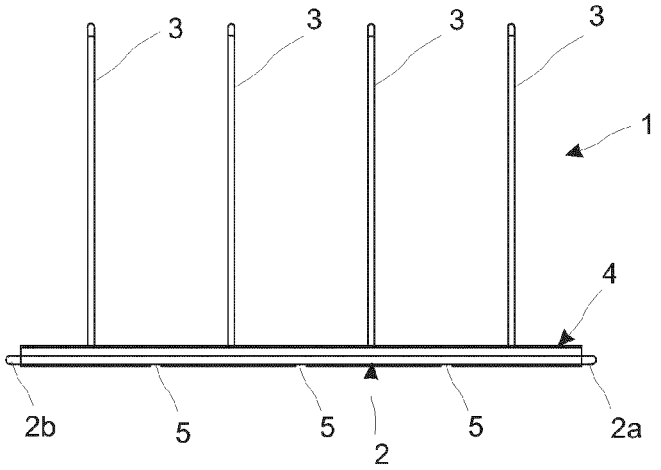


Fig. 4

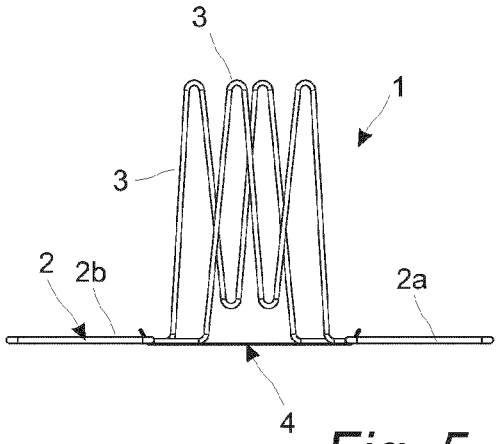


Fig. 5

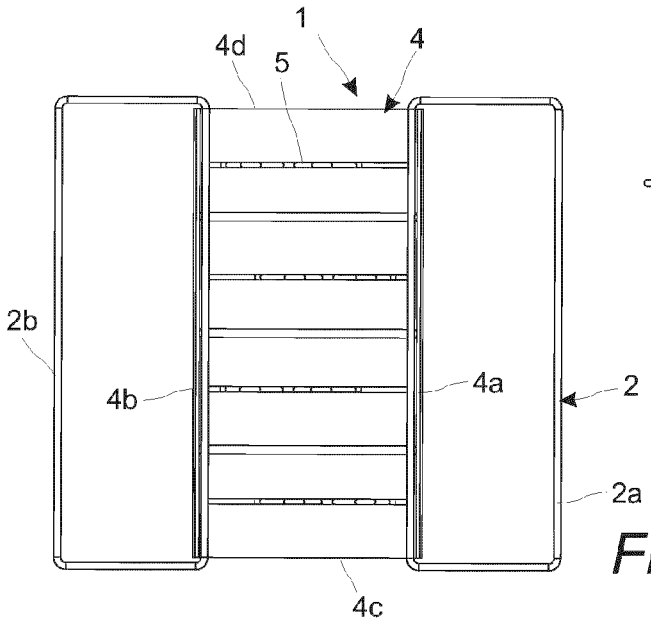
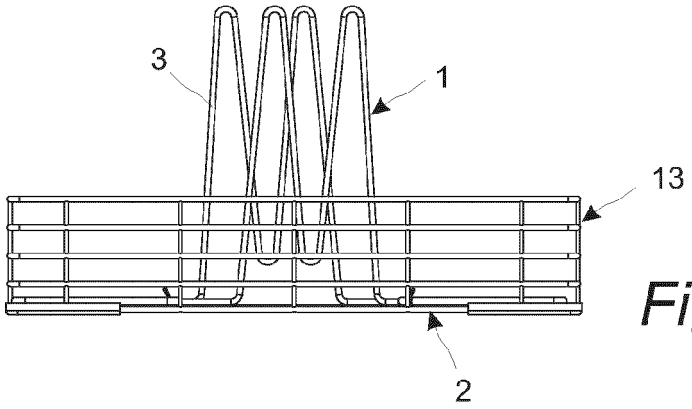


Fig. 6



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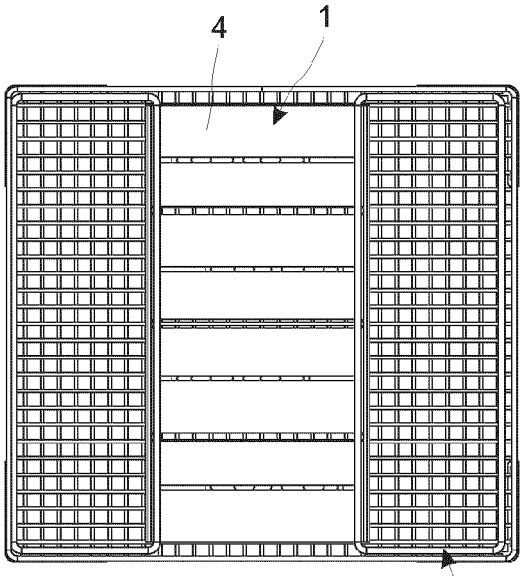

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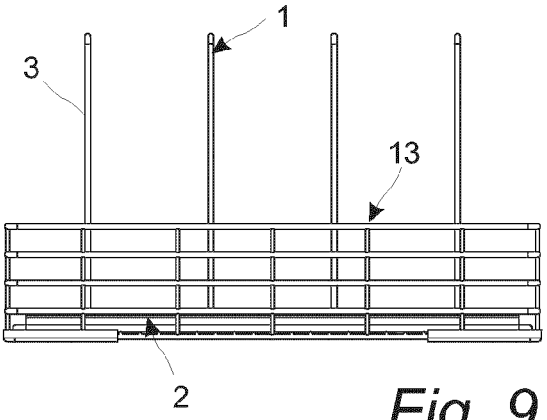

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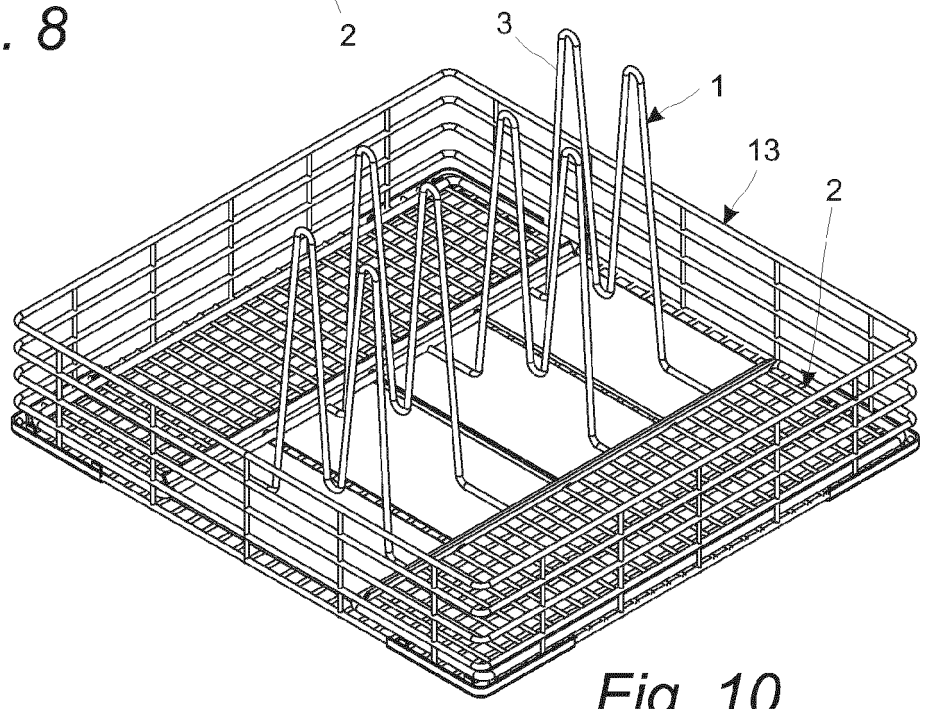

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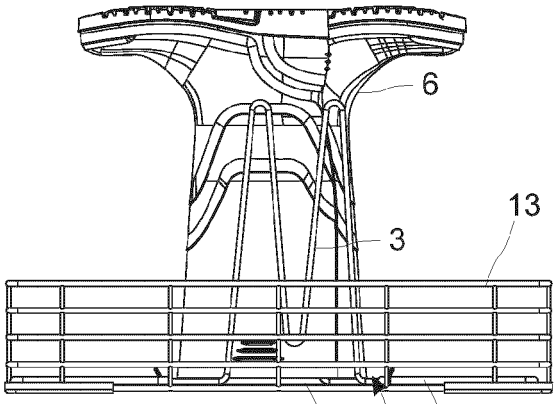

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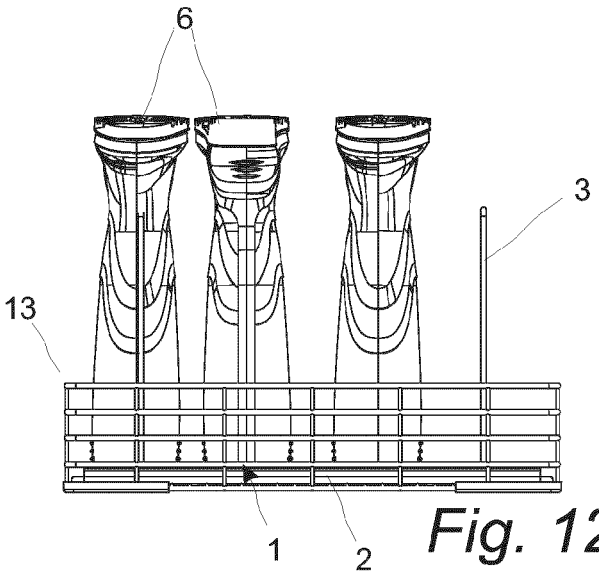

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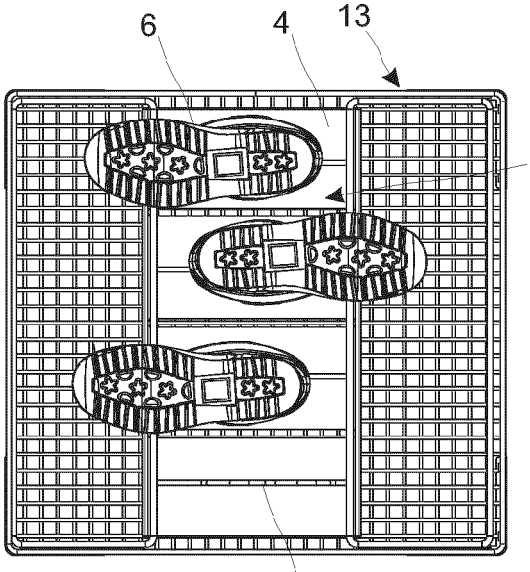

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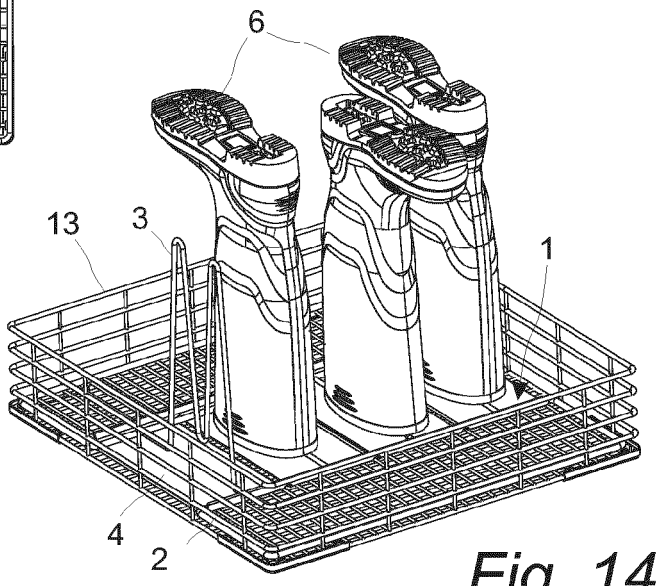

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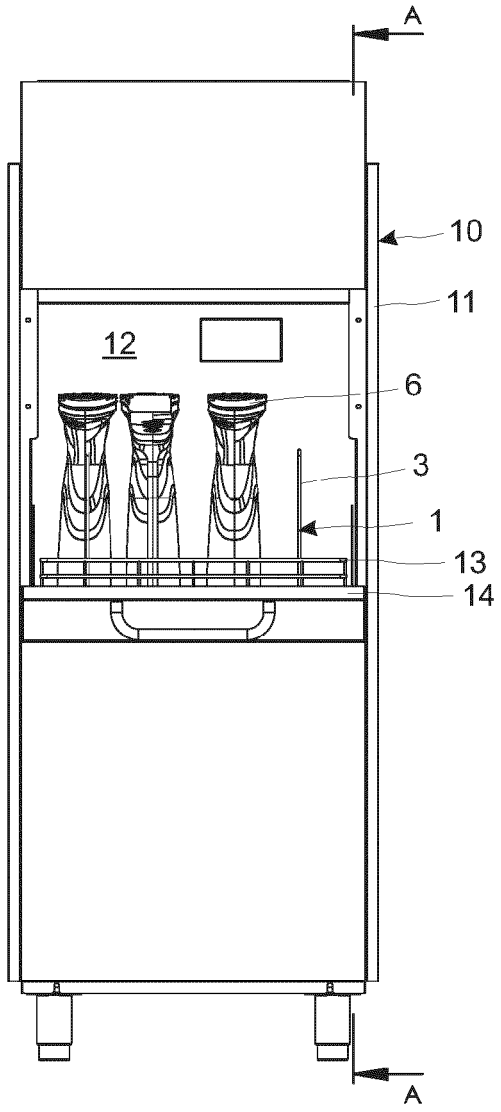

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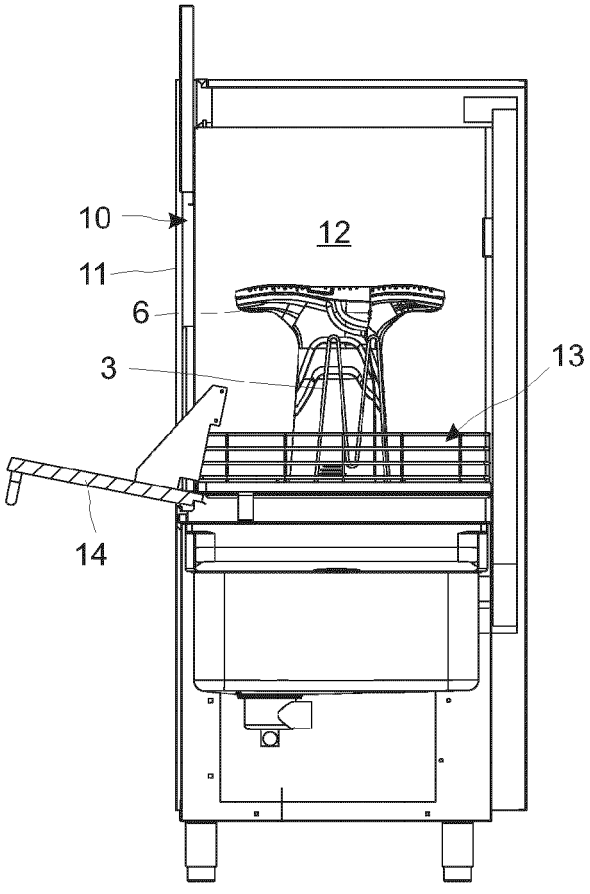

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Fig. 16

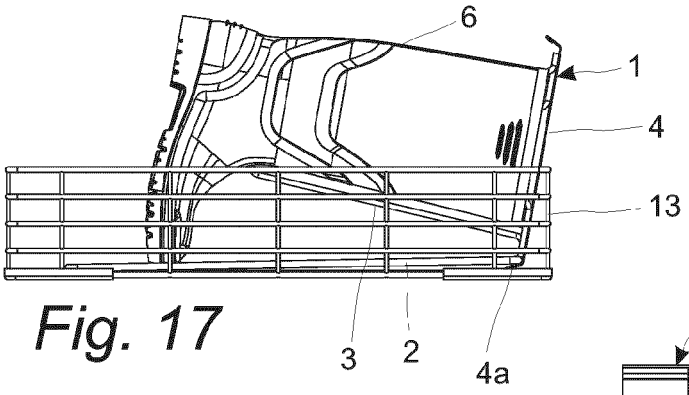
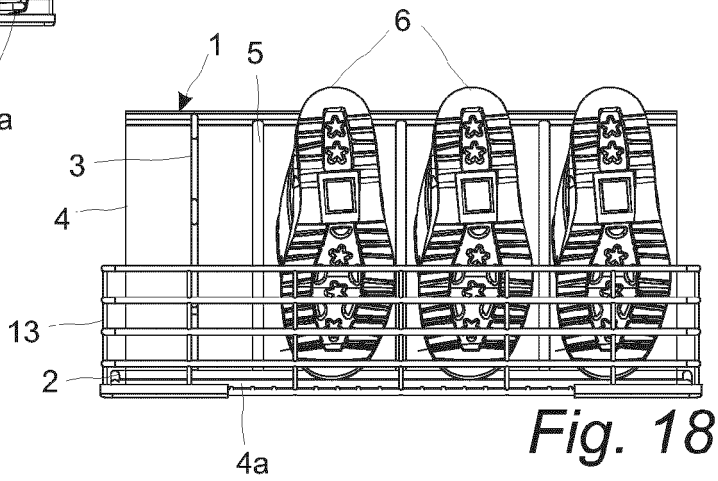


Fig. 17



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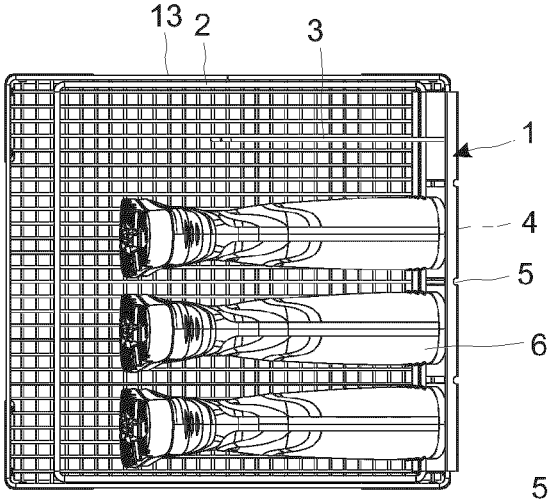

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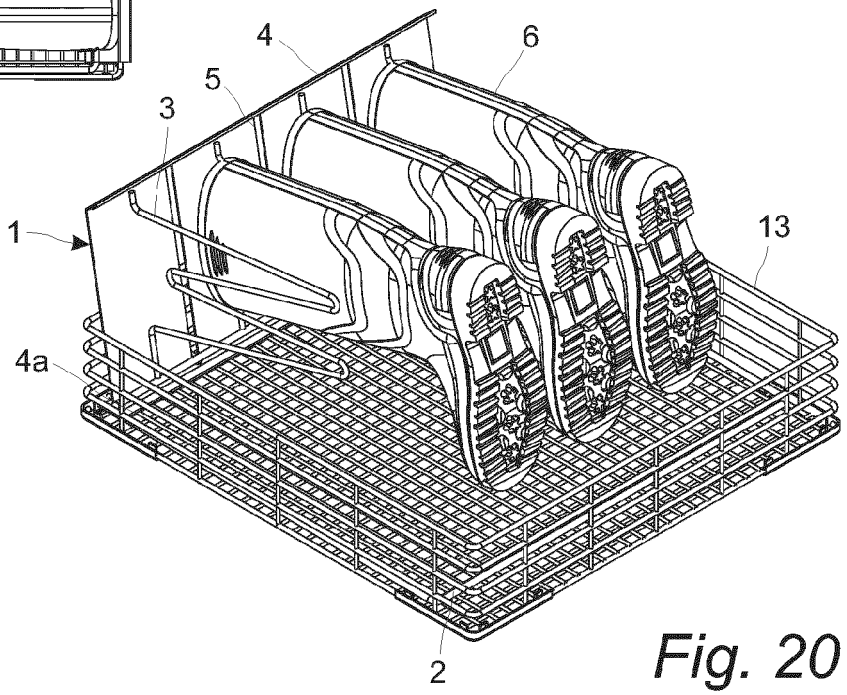

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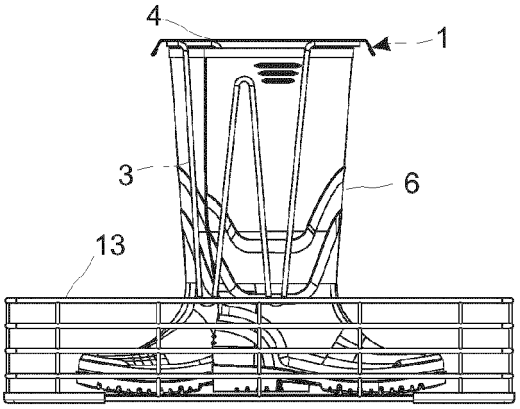

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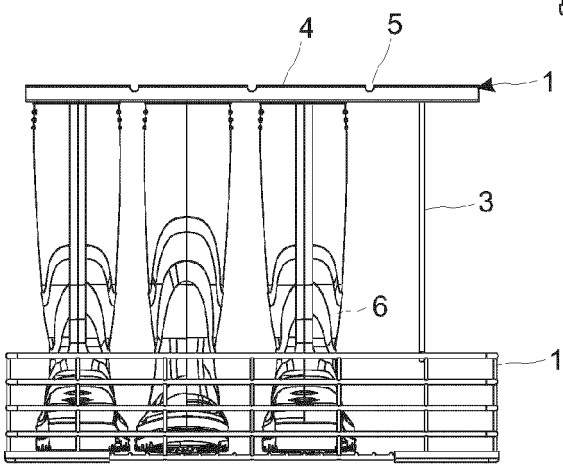

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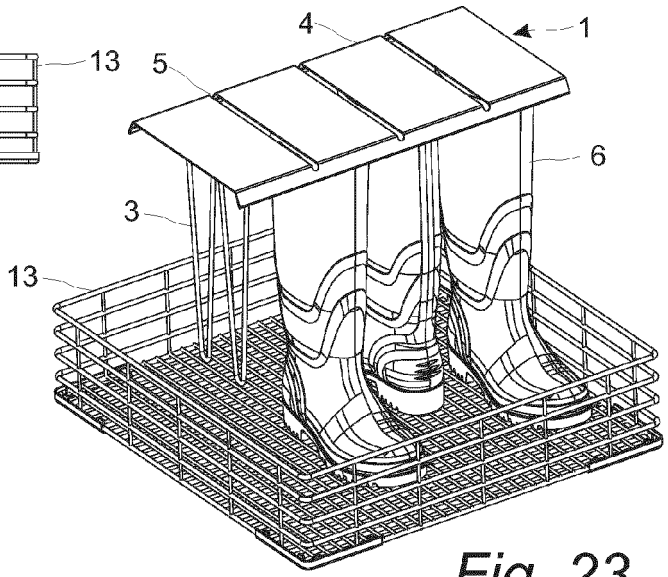

Fig. 23

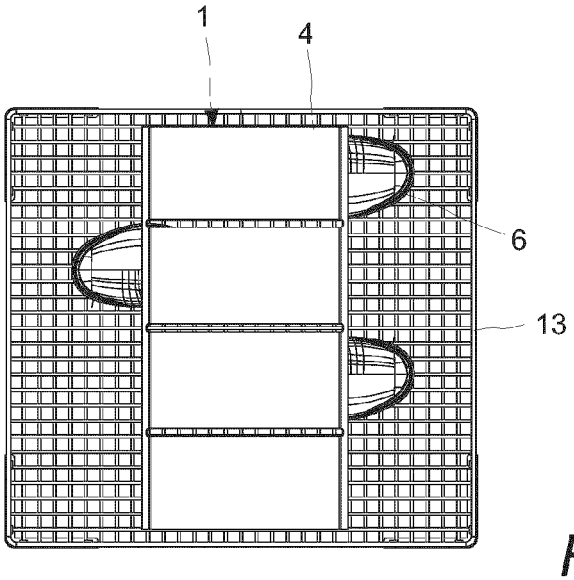

Fig. 24

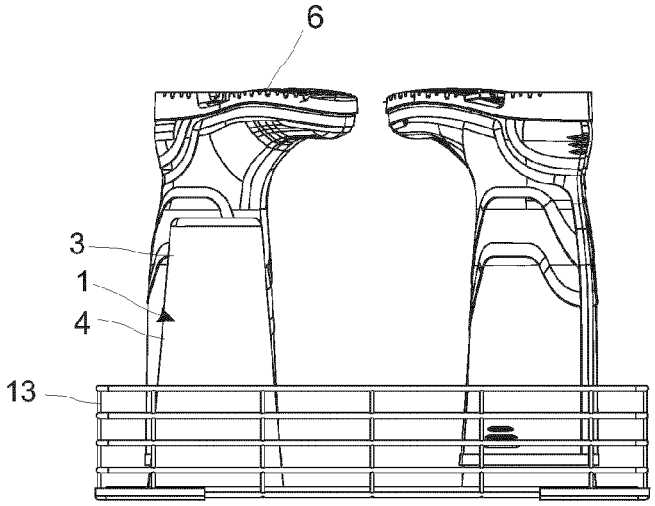

Fig. 25

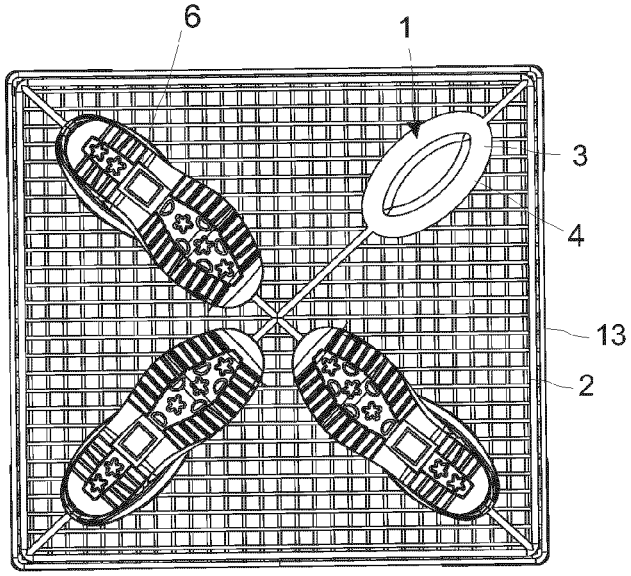

Fig. 26

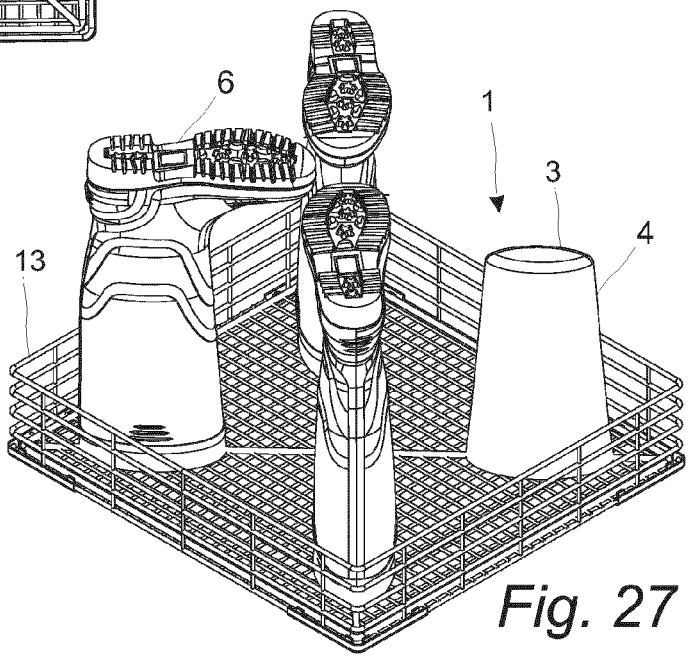

Fig. 27

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EUROPEAN SEARCH REPORT

Application Number
EP 22 21 5596

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2021/016332 A1 (MEIKO MASCHINENBAU GMBH & CO [DE]) 21 January 2021 (2021-01-21) * paragraph [0001] * * paragraph [0021] * * paragraph [0033] - paragraph [0037] * * paragraph [0090] - paragraph [0129] * * figures 2, 3 *	1-17	INV. B08B13/00 B08B11/02 A47L23/02 ADD. A47L15/00 A47L15/50
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	30 May 2023	Wiedenhöft, Lisa

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