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(54) **A DRAIN SYSTEM FOR A WASH BASIN**

(57) A drain system (10, 110) for a wash basin (1) is provided. The drain system comprises a sleeve (20, 120) configured to fit on the exterior of an outlet portion (7) of the wash basin (1), and a piping (30, 130) configured to

receive water being drained through the outlet portion (7) of the wash basin (1), wherein the piping (30, 130) is provided with a drain connector (40, 140) configured to connect to the sleeve (20, 120).

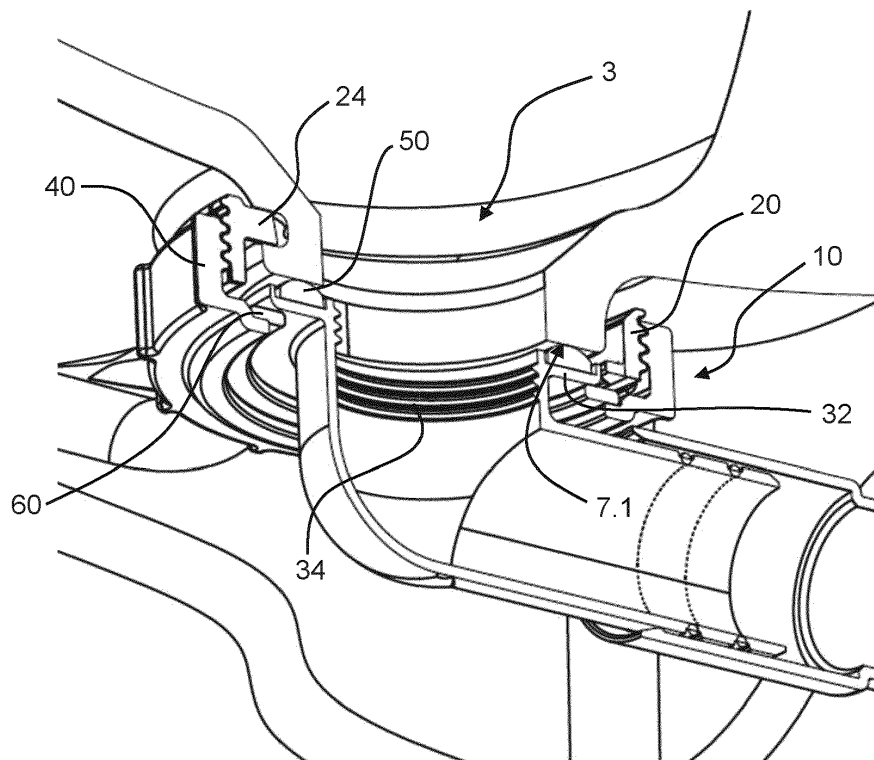


Fig. 5

EP 3 868 965 A1

Description

Technical Field

[0001] The present invention relates to a drain system for a wash basin. In particular, the present invention relates to different embodiments of fixation of a drain to a wash basin.

Background

[0002] Wash basins are commonly used in bathrooms and other areas. Typically, the wash basin is made of ceramic and is provided with a drain arranged somewhere at the bottom surface of the basin.

[0003] In order to guide waste water, the drain is provided with a drain system. While there are numerous drain systems available on the market, they all rely on the interaction between a tailpiece, arranged underneath the basin, and a flange arranged at the upper side of the wash basin and connecting to the tailpiece, preferably by means of a thread engagement between the flange and the tailpiece. By tightening the flange, there will be a firm connection of the drain system to the wash basin drain.

[0004] The tailpiece of the mounted drain system is in turn connected to a piping, normally provided with a water trap and extending to the waste water piping of the building.

[0005] The drain system configuration described above is particularly advantageous when used with ceramic wash basins. Due to difficulties in ensuring small tolerances during ceramic manufacturing, the flange will form an efficient and robust connection of the drain system, even if the dimensions of the wash basin drain should vary.

[0006] However, the use of traditional wash basin drain systems is also associated with some drawbacks. Especially, the periphery of the flange will not be perfectly flush with the surface of the ceramics. It will thus be possible for dirt to accumulate immediately outside the flange which can be very difficult to remove. Also, for metal flanges the surface may corrode.

[0007] In view of the above, there is a need for an improved drain system for wash basins.

Summary

[0008] It is an object of the invention to at least partly overcome one or more of the above-identified limitations of the prior art. In particular, it is an object to provide a drain system for a wash basin which reduces the risk for accumulated dirt inside the basin, and which facilitates cleaning of the wash basin.

[0009] To solve these objects a drain system for a wash basin is provided. The drain system comprises a sleeve configured to fit on the exterior of an outlet portion of the wash basin, and a piping configured to receive water be-

ing drained through the outlet portion of the wash basin. The piping is provided with a drain connector configured to connect to the sleeve.

[0010] The drain connector may be free to rotate relative the piping. Hence it is possible for angular alignment of the piping, while still allowing the drain connector to connect to the sleeve easily.

[0011] The sleeve may be configured to be secured to the outlet portion of the wash basin in a circumferential as well as an axial direction. A secure positioning of the sleeve is thereby accomplished, which ensures a rigid connection of the entire drain system to the wash basin.

[0012] The sleeve may have a cylindrical shape and the inner sidewall of the sleeve may be provided with at least one radial protrusion configured to fit with a mating recess of the outlet portion of the wash basin. This allows for a very simple construction of the outlet portion, as the sleeve can connect in a snap-in manner.

[0013] The drain system may further comprise a sealing arranged at an axial end of the piping. The sealing ensures no water leakage once the drain system is installed, and using an axial sealing also reduces complexity of the manufacturing process of the wash basin as no radial sealing is required.

[0014] In an embodiment, the diameter of the sleeve is adjustable. Hence, the diameter can be increased when mounting the sleeve to the outlet portion, and reduced once the sleeve is mounted to the outlet portion in order to provide for a tight fit.

[0015] The sleeve may have a cylindrical body being provided with an axial cut. The sleeve will thereby exhibit resilient properties; it can be opened by pulling the cut ends apart, and thereafter the sleeve can return to its cylindrical shape once the pulling force is removed.

[0016] The sleeve may be provided with external threads, and the drain connector may be provided with internal threads. Simple mounting of the piping to the sleeve is thereby accomplished.

[0017] The drain system may further comprise a washer arranged between the drain connector and an axial end portion of the piping. The washer and the axial end portion of the piping may be arranged inside the drain connector. Hence, the washer allows easy mounting of the drain connector to the piping, especially if the washer is cut so that its diameter can be adjusted.

[0018] In an embodiment the at least one radial protrusion of the sleeve is resilient in a radial direction, such that the sleeve can snap into position on the outlet portion.

[0019] The sleeve may be provided with at least one attachment means for fastening the drain connector to said sleeve; said fastening means may comprise one or more apertures, and wherein the drain system further comprises one or more screws to engage with said apertures.

[0020] According to a second aspect, a wash basin is provided. The wash basin comprises an outlet portion configured to drain water out from the wash basin, and

a drain system according to the first aspect, wherein the sleeve of the drain system is fitted on the exterior of the outlet portion of the wash basin.

[0021] According to a third aspect, a method for installing a drain system to a wash basin is provided. The method comprises i) arranging a sleeve on the exterior of an outlet portion of the wash basin, ii) providing a piping configured to receive water being drained through the outlet portion of the wash basin, wherein the piping is provided with a drain connector, and iii) connecting the drain connector to the sleeve.

[0022] Further advantages and advantageous features of the invention are disclosed in the following description and in the dependent claims.

Brief Description of the Drawings

[0023] With reference to the appended drawings, below follows a more detailed description of embodiments of the invention cited as examples. In the drawings:

Fig. 1 is an isometric view of a wash basin according to an embodiment;

Fig. 2 is an isometric view of the wash basin shown in Fig. 1, seen from below;

Fig. 3 is an exploded view of a drain system according to an embodiment, together with a wash basin;

Fig. 4 is a more detailed exploded view of the drain system shown in Fig. 3;

Fig. 5 is a cross-sectional view of the drain system shown in Fig. 4;

Fig. 6 is an exploded view of a drain system according to another embodiment; and

Fig. 7 is a schematic view of a method according to an embodiment.

Detailed Description

[0024] Starting in Fig. 1, a wash basin 1 is shown. The wash basin 1 is preferably made of ceramic, and comprises a drain 3 arranged at the bottom part of the bowl 5. Although not shown, the wash basin 1 may in some embodiments also be provided with mounting holes for mounting a tap or faucet to the wash basin 1.

[0025] The drain 3 allows water to exit the wash basin 1. The drain 3 extends through the ceramic material and forms an outlet portion on the bottom side of the wash basin 1.

[0026] In Fig. 2, the bottom side of the wash basin 1 is shown. As can be seen, a drain system 10 is mounted to the wash basin 1 by attaching it to the outlet portion of the wash basin drain 3. Hence, water exiting the wash basin 1 through the drain 3 will flow into the drain system 10 and further into an existing waste water piping of the associated building.

[0027] In Fig. 3 further details of the wash basin 1, as well as of the drain system 10, are shown. As explained earlier the drain 3 of the wash basin 1 extends into an

outlet portion 7. The outlet portion 7, forming a cylindrical body protruding out from the bottom side of the wash basin 1, is configured to connect to the drain system 10. For this, the outlet portion 7 is provided with at least one (in this embodiment three) holes or recesses 9. These recesses 9 do not need to be particularly deep. The recesses 9 may be equally spaced apart; in case of three recesses, the angular distance between two adjacent recesses 9 is 120°. However, a different number and configuration of recesses may be envisaged. For example, in the shown embodiment the recesses 9 are circular, however they may be square or they may exhibit another suitable shape.

[0028] Instead of several recesses it may be possible to provide the outlet portion 7 with a circumferential groove.

[0029] The drain system 10 comprises a sleeve 20, a piping 30, and a drain connector 40. As is also shown in Fig. 3, an axial sealing 50 is forming part of this embodiment of the drain system 10. Details of some of these parts are further described with reference to Fig. 4.

[0030] Starting with the sleeve 20, it is formed as a cylindrical body. The diameter is selected such that it will fit onto the exterior wall of the outlet portion 7 of the drain 3 of the wash basin 1. The outer wall of the sleeve 20 is provided with threads 22, that will form a connection means for the drain connector 40.

[0031] The interior wall of the sleeve 20 is provided with one or more protrusions 24, extending in the radial direction inwards the open space of the sleeve 20. The protrusions 24 are dimensioned to fit inside the recesses 9 of the outlet portion 7 of the wash basin 1. Hence, for this embodiment there are three protrusions 24, spaced apart by 120°. In case where the outlet portion 7 is provided with a circumferential groove, the interior wall of the sleeve 20 may be provided with a circumferential ridge configured to fit with the mating groove of the outlet portion 7.

[0032] A stop member 26 is also provided at the bottom part of the sleeve 20. This stop member 26 extends radially inwards, and functions to prevent an upside-down mounting of the sleeve 20.

[0033] Yet further, the sleeve 20 has a diameter which is adjustable so that the sleeve 20 can be mounted properly onto the outlet portion 7. Especially, the protrusions 24 need to be inserted into the recesses 9. For this, the sleeve 20 is cut axially. This cut 28 allows the sleeve to expand as the edges of the cut 28 will be allowed to move away from each other. Preferably, the sleeve 20 is manufactured by a resilient material such that the sleeve 20 will strive to return to its original shape. Hence, once the protrusions 24 are snapped into the recesses 9 the sleeve 20 will automatically return to its cylindrical shape, thereby clamping the outlet portion 7.

[0034] The cut 28 does not necessarily be straight, but it can be a "jig saw" cut to facilitate the sleeve to reconnect and stay together when attaching the drain connector 40. The sleeve 20 can also be without a cut and instead have

resilient lever means that snaps into the holes 9 of the outlet portion 7.

[0035] The connection of the sleeve 20 by means of the engagement of the protrusions 24 in the mating recesses 9 will lock the sleeve 20 in both axial and circumferential direction.

[0036] The sleeve 20 thus provides the outlet portion 7 with external threads 22. These threads 22 are used for firmly attaching the piping 30 to the wash basin 1 without the need for a clamping member on the upper side of the wash basin 1.

[0037] The piping 30 is used to guide discharged water away from the wash basin. Hence, the piping 30 could be configured with various dimensions, bends, etc. For proper functioning with the drain system 10 of the present embodiment, the piping end is provided with a piping flange 32. The piping flange 32 has a flat angular shape, with a specific outer diameter D1.

[0038] As will be further shown in Fig. 5, the upper end of the piping flange 32 is used to support the axial sealing 50.

[0039] The drain connector 40 is in this embodiment formed as a nut. The nut is provided with internal threads 42 to match with the external threads 22 of the sleeve 20. Yet further, the nut 40 has a reduced inner diameter D2 at its bottom end 44, being formed by a radial narrowing 46. Optionally, the outer wall of the nut 40 is provided with ridges 48 or other grip improving details.

[0040] The inner diameter D2 of the nut 40 is larger than the outer diameter D1 of the piping flange 32, such that the nut 40 can be inserted onto the piping 30. In order to ensure that the nut 40 is prevented from being axially separated from the piping 30, a washer 60 is provided. The washer 60 has an inner diameter D3, and an outer diameter D4. While the inner diameter D3 is less than the outer diameter D1 of the piping flange 32, the outer diameter D4 of the washer 60 is larger than the inner diameter D2 of the nut 40. The washer 60 is preferably provided with a radial cut 62, such that the inner diameter D3 can be expanded. The washer 60 is preferably manufactured by a resilient material, and the washer 60 should preferably be designed to return to its original circular shape once the expanding force is removed.

[0041] Mounting the nut 40 to the piping 30 is performed by inserting the nut 40 onto the piping 30, such that the piping flange 32 is arranged inside the nut 40. While kept in this position, the washer 60 is arranged below the piping flange 32, but above the radial narrowing 46. Due to the washer 60, the nut 40 will be stuck below the washer 60, which in turn is stuck below the piping flange 32.

[0042] The mounted drain system 10 is shown in Fig. 5. It can be seen that the sealing 50 provides an axial sealing between the piping flange 32 and an axial end 7.1 of the outlet portion 7 of the drain 3, and the engagement between the sleeve 20 and the drain connector 40 ensures rigid connection of the drain system 10 to the wash basin 1.

[0043] Another embodiment of a drain system 110 is shown in Fig. 6. For this embodiment the wash basin 1 may be identical to what has been previously described, i.e. the drain 3 is forming a tubular outlet portion 7 on the bottom side, said outlet portion 7 having one or more recesses 9.

[0044] The drain system 110 comprises a sleeve 120, a piping 130, a drain connector 140, and an axial sealing 150. As can be understood from Fig. 6 the sleeve 120 is somewhat different from the previously described sleeve 20. First of all, the sleeve 120 is provided with attachment means 122 for fastening the drain connector 140 to said sleeve 120. The fastening means 122 comprises one or more apertures to receive an associated screw 160. The apertures 122 are provided with nuts 124 to engage with the screws 160. The sleeve 120 comprises radial protrusions 126 acting in the same manner as the protrusions 24 described earlier. However, in this embodiment the protrusions 126 are resilient in the radial direction. This is allowed as the protrusions 126 are arranged on levers 128 which are allowed to flex radially outwards. Once the protrusions 126 are snapped into their mating recesses, the sleeve 120 is axially, as well as circumferentially fixed to the outlet portion 7 of the wash basin 1.

[0045] The drain connector 140 is in this embodiment forming a flange of the piping 130. The drain connector 140 can be snap locked onto the axial end of the piping 130, or mounted in the same manner as previously described (i.e. by means of an associated washer). As the drain connector 140 forms a flange, the axial sealing 150 is arranged onto the axial end of the drain connector 140.

[0046] The drain connector 140 is further provided with apertures 142 configured to receive the screws 160. The apertures 142 are designed to be aligned with the apertures 122 of the sleeve 122; for this purpose the drain connector 140 is preferably free to rotate relative the piping 130 in order to allow for easy alignment of the apertures 122, 142 and subsequent insertion and tightening of the screws 160.

[0047] The drain system 110 of Fig. 6 provides the same advantage as the previous described embodiment, namely that the drain system 110 can be mounted to the wash basin 1 without any flange or connecting member inside the bowl 5.

[0048] Now turning to Fig. 7 a method 200 for installing a drain system 10, 110 to a wash basin 1 is schematically shown. The method comprises a first step 210 of arranging a sleeve 20, 120 on the exterior of an outlet portion 7 of the wash basin 1, a step 220 of providing a piping 30, 130 configured to receive water being drained through the outlet portion 7 of the wash basin 1, wherein the piping 30, 130 is provided with a drain connector 40, 140, and a final step 230 of connecting the drain connector 40, 140 to the sleeve 20, 120.

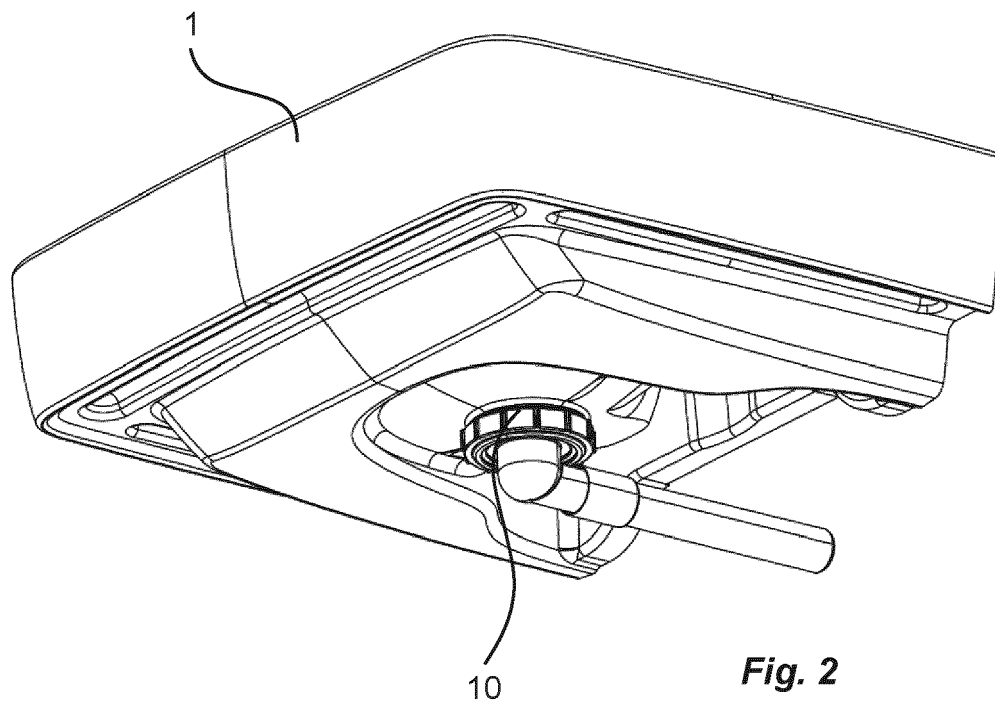
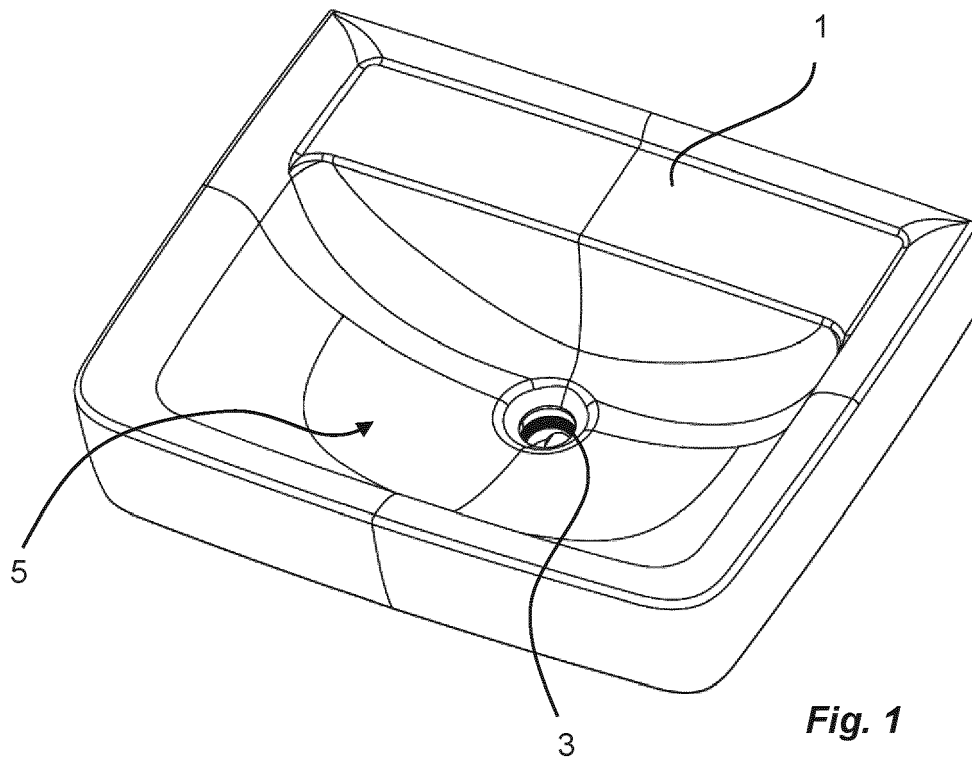
[0049] It is to be understood that the present invention is not limited to the embodiments described above and illustrated in the drawings; rather, the skilled person will recognize that many changes and modifications may be

made within the scope of the appended claims.

Claims

1. A drain system (10, 110) for a wash basin (1), comprising a sleeve (20, 120) configured to fit on the exterior of an outlet portion (7) of the wash basin (1), and a piping (30, 130) configured to receive water being drained through the outlet portion (7) of the wash basin (1), wherein the piping (30, 130) is provided with a drain connector (40, 140) configured to connect to the sleeve (20, 120).
2. The drain system (10, 110) according to claim 1, wherein the drain connector (40, 140) is at least to some extent free to rotate relative the piping (30, 130).
3. The drain system (10, 110) according to claim 1 or 2, wherein the sleeve (20, 120) is configured to be secured to the outlet portion (7) of the wash basin (1) in a circumferential as well as an axial direction.
4. The drain system (10, 110) according to any of the preceding claims, wherein the sleeve (20, 120) has a cylindrical shape and wherein the inner sidewall of the sleeve (20, 120) is provided with at least one radial protrusion (24, 126) configured to fit with a mating recess (9) of the outlet portion (7) of the wash basin (1).
5. The drain system according to any of the preceding claims, further comprising a sealing (50, 150) arranged at an axial end of the piping (30, 130).
6. The drain system according to any of the preceding claims, wherein the diameter of the sleeve (20) is adjustable.
7. The drain system according to claim 6, wherein the sleeve (20) has a cylindrical body being provided with a cut (28).
8. The drain system according to any of the preceding claims, wherein the sleeve (20) is provided with external threads (22), and wherein the drain connector (40) is provided with internal threads (42).
9. The drain system according to any of the preceding claims, further comprising a washer (60) arranged between the drain connector (40) and an axial end portion (32) of the piping (30).
10. The drain system according to claim 9, wherein the washer (60) and the axial end portion (32) of the piping (30) are arranged inside the drain connector (40).
11. The drain system according to any of claims 1 to 5, wherein the at least one radial protrusion (126) of the sleeve (120) is resilient in a radial direction.
12. The drain system according to any of claims 1 to 5, or 11, wherein the sleeve (120) is provided with attachment means (122, 124) for fastening the drain connector (140) to said sleeve (120).
13. The drain system according to claim 12, wherein said fastening means (122) comprises one or more apertures, and wherein the drain system further comprises one or more screws (160) to engage with said apertures (122).
14. A wash basin (1), comprising an outlet portion (7) configured to drain water out from the wash basin, and a drain system (10, 110) according to any of the preceding claims, wherein the sleeve (20, 120) of the drain system (10, 110) is fitted on the exterior of the outlet portion (7) of the wash basin (1).
15. A method for installing a drain system (10, 110) to a wash basin (1), comprising:

arranging a sleeve (20, 120) on the exterior of an outlet portion (7) of the wash basin (1),
 providing a piping (30, 130) configured to receive water being drained through the outlet portion (7) of the wash basin (1), wherein the piping (30, 130) is provided with a drain connector (40, 140), and
 connecting the drain connector (40, 140) to the sleeve (20, 120).



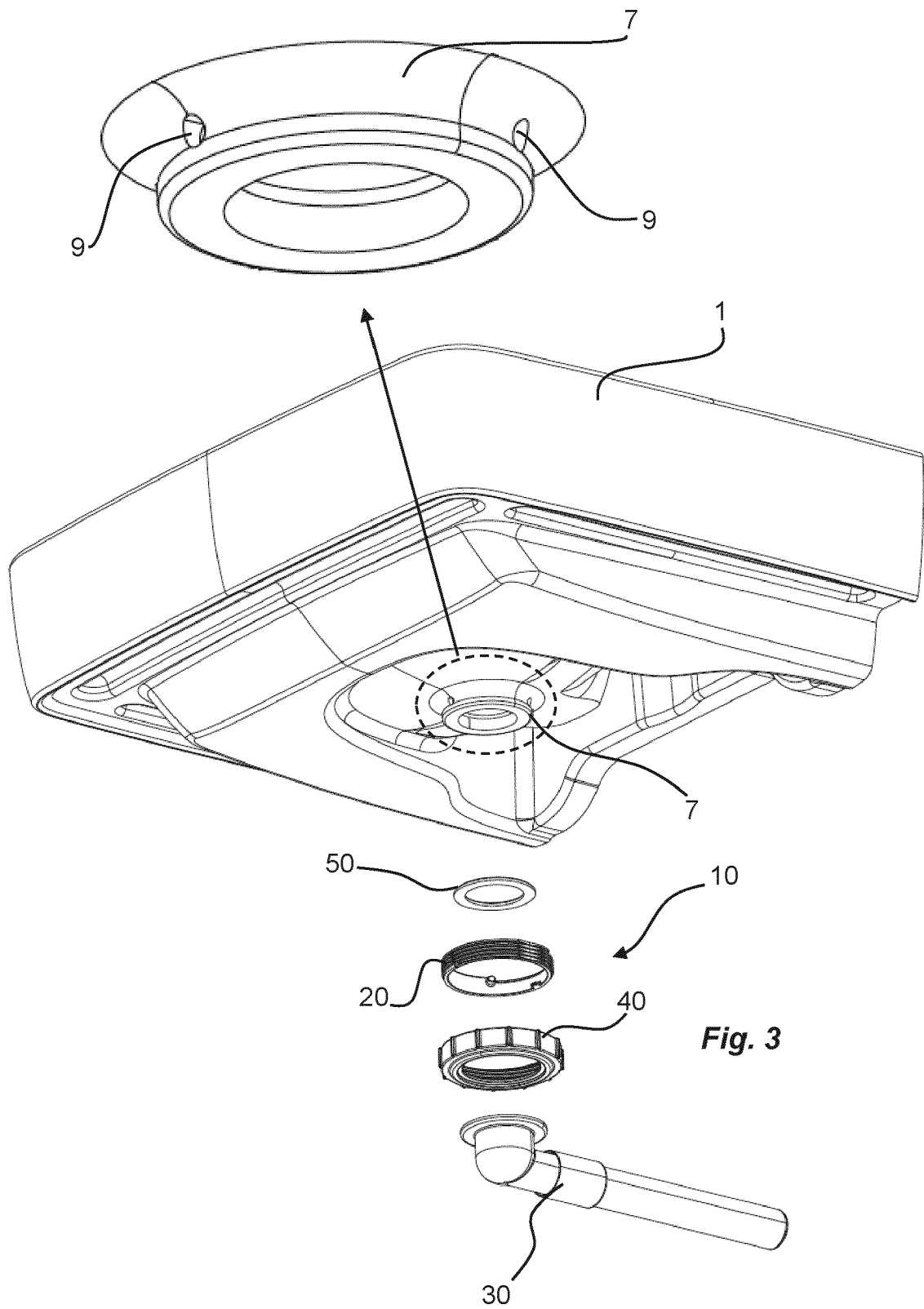
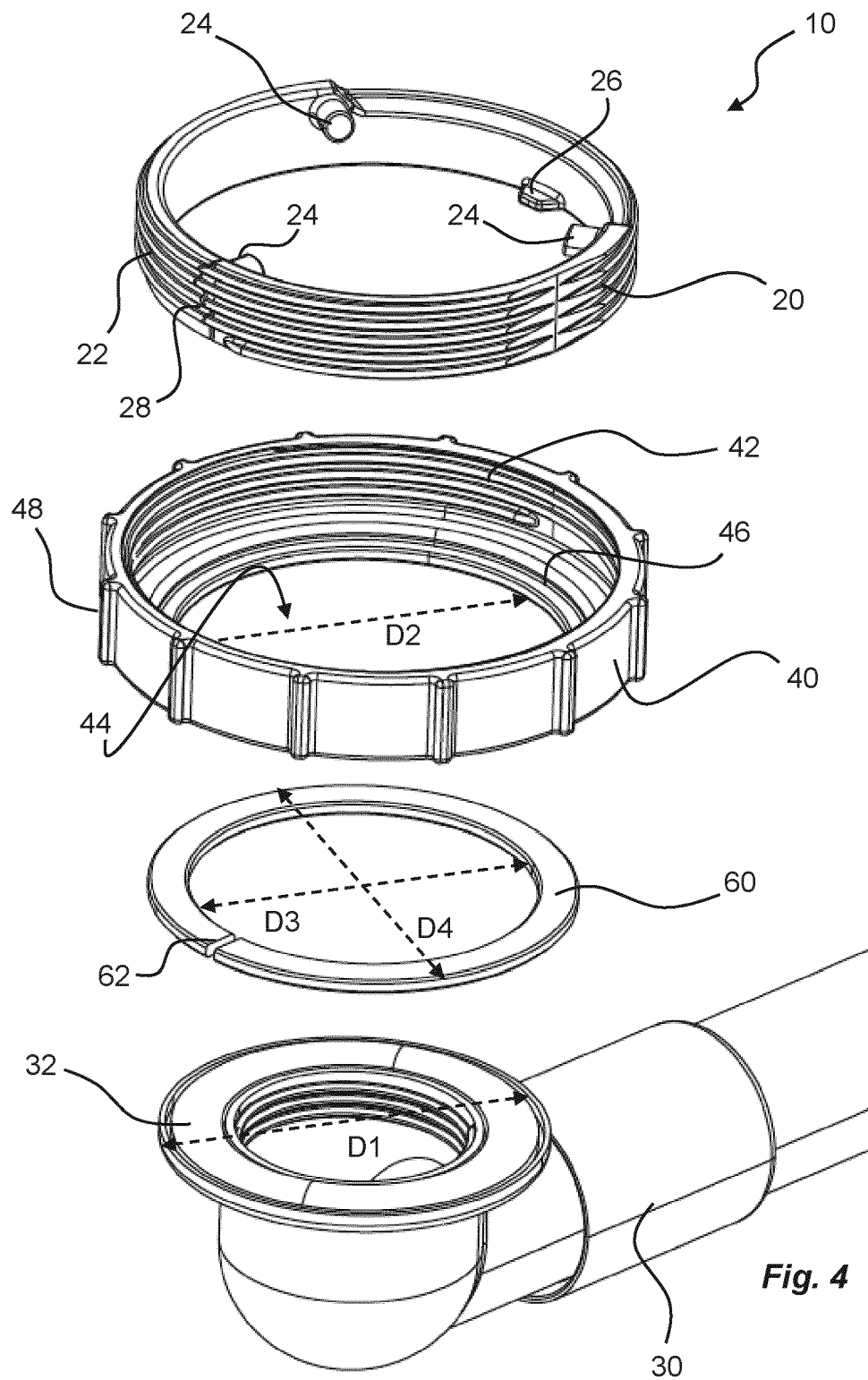


Fig. 3



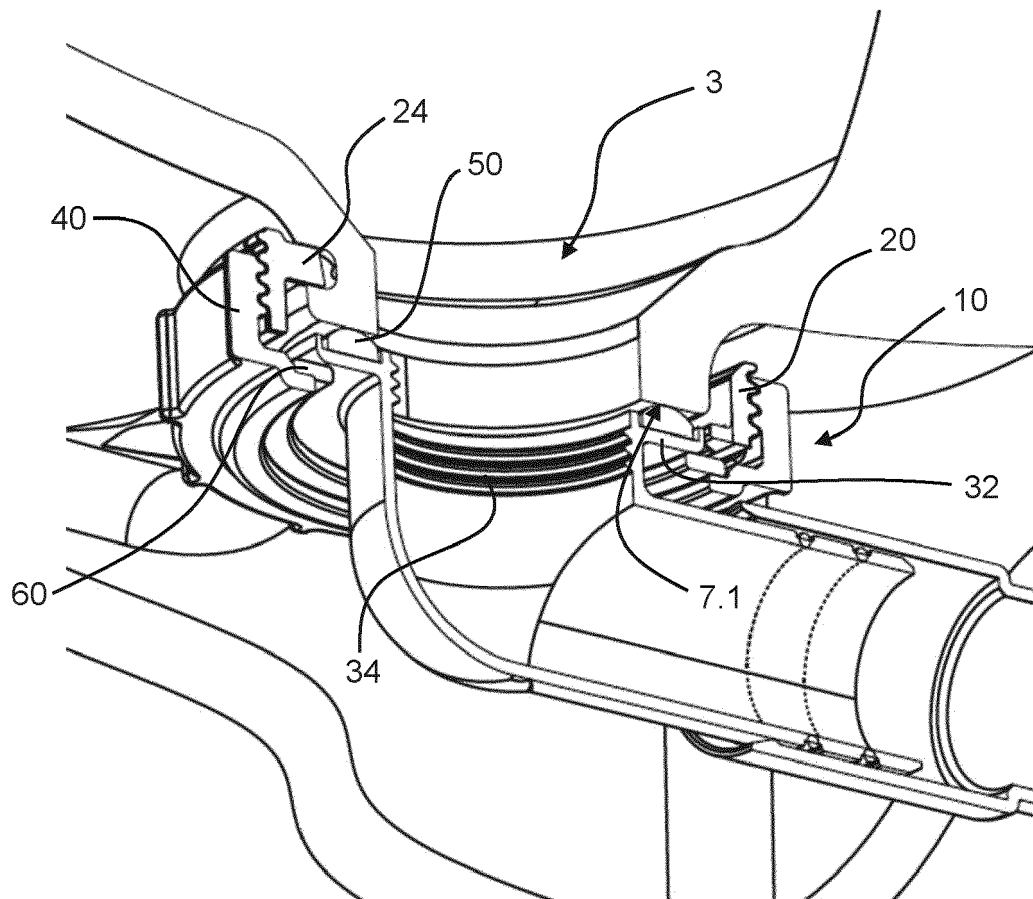


Fig. 5

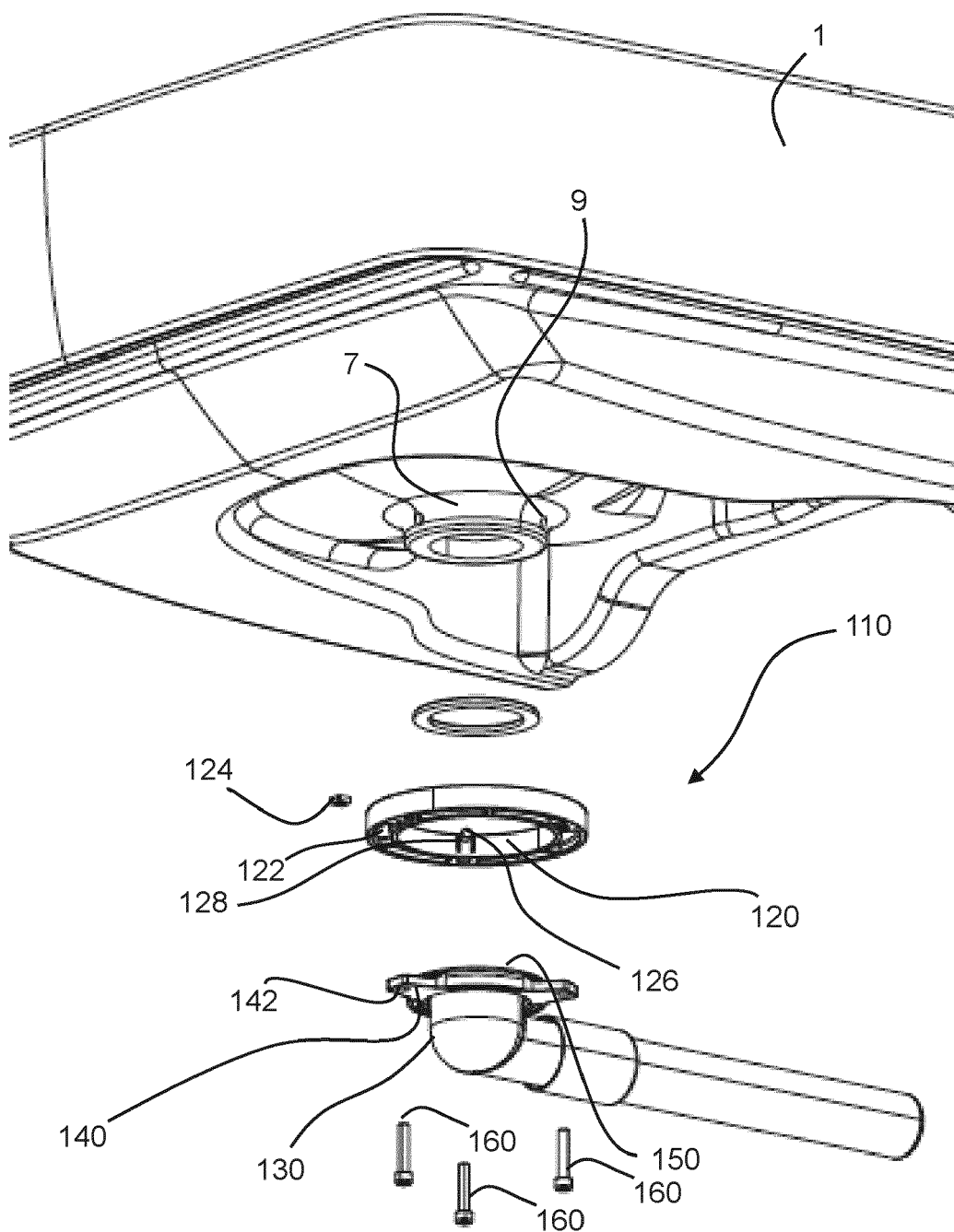


Fig. 6

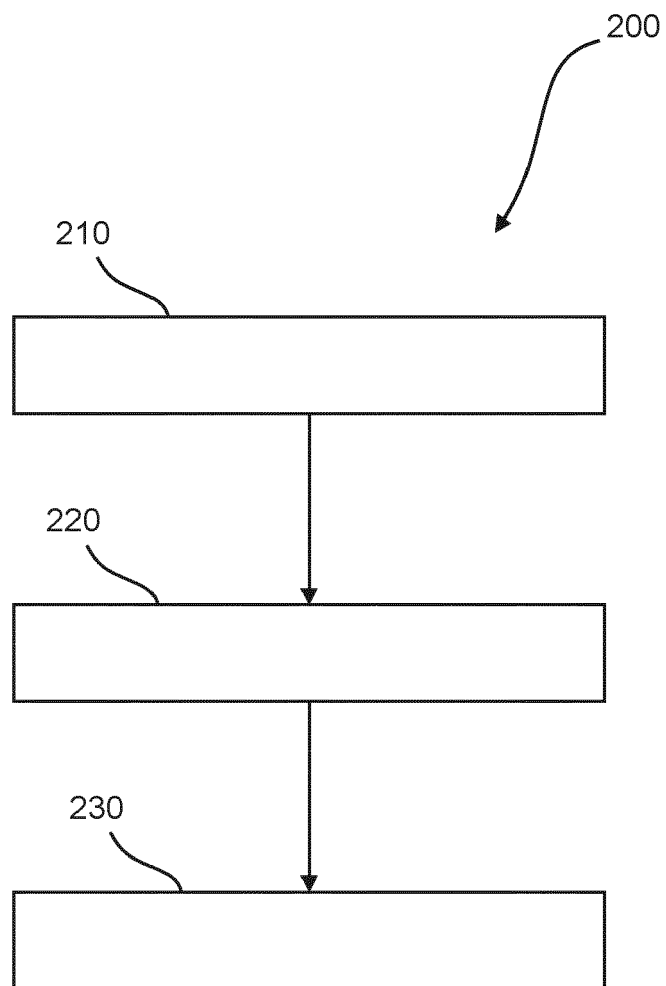


Fig. 7



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Place of search Munich		Date of completion of the search 25 June 2020	Examiner Leher, Valentina
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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