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(54) **SINK AND CORRESPONDING MANUFACTURING METHOD**

(57) A sink (1) configured to be installed on a worktop (P), comprising a concave body (2) and a free rim (3) which is connected to the concave body (2) and protrudes externally with respect to the latter (2), wherein the rim (3) comprises a peripheral end portion (4), which, along a vertical sectional plane with the sink in the operating configuration, comprises a first part (41) and a second part (42) which are substantially rectilinear, the angle formed between an extension of the first part and the second part being comprised between 1° and 45°.

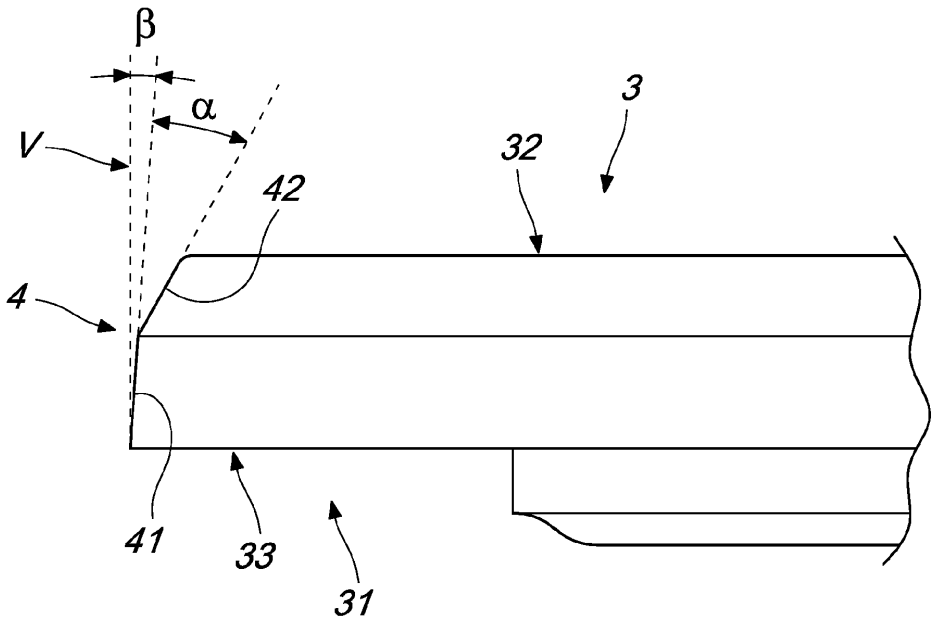

Fig. 4

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Description

[0001] The present invention relates to a sink and to a corresponding manufacturing method.

[0002] In the background art, in the reference field, it is known that sinks have shapes dedicated to the specific techniques for fitting on the worktop.

[0003] In general, substantially four main installation methods are known to which four types of sinks correspond:

- overmount (or "standard") installation, in which the perforated seat on the worktop is smaller than the perimeter of the sink and the latter is inserted from above with its perimetric rim surmounting the worktop around the perforated seat;
- "undermount" installation, in which the perforated seat on the worktop is smaller than the perimeter of the sink and the latter is inserted from below and glued below the worktop;
- installation of the "integrated" type, which differs from the "undermount" installation in that both the sink and the worktop are machined (for example by grinding or polishing) at the coupling region between the two in order to avoid curved parts and give continuity to the installation;
- "flush" installation, which is subdivided into the solution with countersunk milling and the one with step milling: in short,

[0004] in the first solution (countersunk milling), the rim of the perforated seat of the worktop and the rim of the sink are milled so that each has a contact surface that is inclined with respect to the vertical (in the operating condition of the sink);

[0005] in the second solution (step milling), instead, the rim of the perforated seat of the worktop is subjected to grinding, providing a sort of frame defined by orthogonal walls (one vertical and one horizontal) which accommodate the peripheral rim of the sink, which is also subjected to grinding for this purpose, taking care to leave (between the frame and the rim of the sink) tolerances suitable for the insertion of sealing compounds and/or adhesives.

[0006] The solutions that are known and have been described so far entail that once an installation has been chosen one must choose the suitable sink since evidently a sink adapted for a certain installation mode cannot be used in a different mode.

[0007] This entails as an unwanted consequence that an installation technician has to keep in stock a large number of types of sinks, depending on the installations that he will be called to perform.

[0008] In particular, sinks made of composite material are manufactured by injection molding: this technology necessarily leaves on the rim of the sink a draft wall which then extends into a curved blending surface.

[0009] In this case the sink made of composite material is suitable for "standard" mounting, but if it has to be "flush" mounted it must necessarily be machined by removing material from the rim and therefore it is not possible to provide for a new and different use thereof in standard mounting.

[0010] Other limitations of the background art are linked to the fact that the processes on the rim of the sink (for example, in the case of a "flush" installation in general), are relatively complex and expensive (affecting the cost of the sink by even up to 30%).

[0011] Another limitation is that in the case of a "flush" installation the worktop also has to be machined and this entails that is made of high-value material (for example composite, natural stone or compact HPL).

[0012] The aim of the present invention is to provide a sink that is capable of improving the background art in one or more of the aspects mentioned above.

[0013] Within this aim, an object of the invention is to provide a sink, preferably made of composite material, that can be utilized without modifications in at least two different installation solutions, thus reducing the cost and the difficulties of installation linked to the milling machining of the rim of the sink.

[0014] Another object of the invention is to provide a method for manufacturing a sink according to the invention.

[0015] Another object of the invention is to provide a sink that is highly reliable, relatively easy to provide and has competitive costs.

[0016] This aim and these and other objects that will become more apparent hereinafter are achieved by a sink according to claim 1, optionally provided with one or more of the characteristics of the dependent claims.

[0017] Further characteristics and advantages of the invention will become more apparent from the description of a preferred but not exclusive embodiment of the sink according to the invention, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is a view of a sink according to the invention mounted in the operating configuration on a worktop and installed in the "standard" manner;

Figure 2 is a view of a sink according to the invention mounted in the operating configuration on a worktop and installed in the "flush" manner;

Figure 3 is a sectional view, taken along a vertical plane, of the sink according to the invention;

Figure 4 is a sectional view, taken along a vertical plane, of a rim of the sink of the preceding figure;

Figure 5 is a sectional view, taken along a vertical plane, of a rim of the sink according to the invention when installed as in Figure 1;

Figure 6 is a sectional view, taken along a vertical plane, of a rim of the sink according to the invention when installed as in Figure 2.

[0018] With reference to the figures and particularly to the sectional view of Figure 3, the sink according to the

invention, generally designated by the reference numeral 1, comprises a concave body 2 and a free rim 3 which is connected to the concave body 2.

[0019] The free rim 3 of the sink is recognizable because it constitutes the portion of the sink 1 that protrudes outward with respect to the concave body 2. The latter comprises in turn side walls 21 and a bottom 22.

[0020] The sink 1 is configured to be installed on a worktop P, shown in Figures 1, 2, 5 and 6. The worktop P is for example a top of a kitchen, of a bathroom cabinet or the like.

[0021] The overall shape, in top plan view, of the sink 1 can be any: the figures show, by way of example, a sink 1 having a substantially rectangular plan shape, but the shape might also be different, for example oval or round or shaped in another way. Furthermore, the sink may have multiple basins.

[0022] When reference is made hereinafter to an operating configuration of the sink, this means the configuration in which the sink 1 is fitted into place and is intended to operate.

[0023] With reference also to the detail Figure 4, according to the invention, advantageously, the rim 3 comprises a peripheral end portion 4 which, along a vertical sectional plane (with the sink 1 in the operating configuration), comprises a first part 41 and a second part 42 which are substantially rectilinear, the angle α formed between an extension of the first part 41 and the second part 42 being comprised between 1° and 45°.

[0024] Essentially and in other words, at its thickness, the peripheral portion of the rim 3 has two perimetric surfaces which are extended along the entire thickness of the rim 3 of the sink 1 and around the perimeter of the sink 1: a first rectilinear surface which is extended along the first part 41 and a second rectilinear surface which extends along the second part 42.

[0025] Therefore, the angle between the extension of the first surface and the second surface is comprised between 1° and 45°, like the one comprised between the first part 41 and the second part 42.

[0026] According to an optional characteristic, the first part 41 of the peripheral end portion 4 is inclined with respect to a vertical axis V by an angle β comprised between 0° and 9° when the sink 1 is in the operating configuration.

[0027] This makes it possible advantageously to provide the sink by molding, for example injection molding of a composite material: this inclination in fact fulfills the role of the "draft" needed in order to extract the sink from the mold.

[0028] According to another optional characteristic, the sink 1 according to the invention is in fact made of composite material and is manufactured by injection molding. The first part 41 and the second part 42 of the peripheral end portion 4 are provided together with the rim 3 and monolithically with said body 2 in the same injection molding operation.

[0029] This allows a reduction of the overall costs and the need for additional machining after the sink 1 has been provided.

[0030] In greater detail, the rim 3 comprises a lower surface 31 and an upper surface 32 which are opposite and substantially parallel to each other and are visible in the sectional detail view of Figure 4; the lower surface 31 and the upper surface 32 are connected by the peripheral end portion 4.

[0031] Preferably, the lower surface 31 is directly adjacent to the first part 41 of the peripheral end portion 4 and the upper surface 32 is directly adjacent to the second part 42 of the peripheral end portion 4.

[0032] Preferably, moreover, the lower surface 31 comprises an external portion 33 which is subjected to grinding or on which a removal of material is equivalently provided, and which therefore is the part of the lower surface that is nearest the first part 41.

[0033] According to the invention, the method for manufacturing the sink 1 provides for the step of providing, in the same operation as molding a moldable material, the body 2 and the free rim 3 of the sink 1, the free rim 3 being molded so as to have a peripheral end portion 4 which, along a vertical sectional plane with the sink in the operating configuration, comprises a first part 41 and a second part 42 which are substantially rectilinear, the angle formed between an extension of the first part and the second part being comprised between 1° and 45°.

[0034] Optionally, the method according to the invention provides for the step of providing an operation for removing material 33 at a lower surface 31 of the rim 3 in order to provide an external portion 33 subjected to grinding that is proximate to the first part 41.

[0035] The sink 1 according to the invention can be installed equally in a "standard" manner, as in Figure 1, or in a "flush" manner, as in Figure 2, without the need for additional operations on the sink, as is evident also from Figures 5 and 6. In fact, the rim of the sink 1 thus provided does not need to be machined again as a function of the chosen installation (as occurred instead in the cases of the background art), but is already aesthetically finished, adapting to both shown types of installation.

[0036] Furthermore, the inclination of the second part 42, which in the installed configuration of the sink is the one that is installed highest, constitutes a seat for the application of a sealing compound M when the sink 1 is installed "flush". Advantageously, by virtue of the provision according to the invention, the distance between the rim 3 of the sink 1 and the worktop P is reduced even in the absence of additional machining on the sink, with a consequent reduction of the quantity of compound M applied during finishing in the slit between the two.

[0037] In order to best understand this advantage, it should be considered that in sinks provided according to the background art this region is usually curved and if one wants to install them "flush" the quantity of compound M needed is greater, with an aesthetically unacceptable finish.

[0038] During installation, use of an adhesive C is pro-

vided at the portion 33 subjected to grinding of the lower surface 31.

[0039] An additional advantage deriving from the invention 1 is to reduce the number of types of sinks that have to be kept in stock for the different installations.

[0040] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the accompanying claims.

[0041] All the details may furthermore be replaced with other technically equivalent elements.

[0042] In practice, the materials used, as well as the contingent shapes and dimensions, may be any according to the requirements and the state of the art.

[0043] The disclosures in Italian Patent Application No. 102020000016366 from which this application claims priority are incorporated herein by reference.

[0044] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A sink (1) configured to be installed on a worktop (P), comprising a concave body (2) and a free rim (3) which is connected to the concave body (2) and protrudes externally with respect to the latter (2),
   characterized in that
   the free rim (3) comprises a peripheral end portion (4), which, along a vertical sectional plane with the sink in the operating configuration, comprises a first part (41) and a second part (42) which are substantially rectilinear, an angle formed between an extension of the first part and the second part being comprised between 1° and 45°.

2. The sink (1) according to claim 1, **characterized in that** the first part (41) of the peripheral end portion (4) is inclined with respect to a vertical axis by an angle comprised between 0° and 8° when the sink (1) is in the operating configuration.

3. The sink (1) according to claim 1 or 2, **characterized in that** it is made of composite material and is manufactured by injection molding, said first part (41) and said second part (42) of the peripheral end portion (4) being provided together with said rim (3) and monolithically with said body (2) in the same injection molding operation.

4. The sink (1) according to one or more of the preceding claims, **characterized in that** said free rim (3) comprises a lower surface (31) and an upper surface (32) which are opposite and substantially mutually parallel, the lower surface (31) and the upper surface (32) being connected by the peripheral end portion (4).

5. The sink (1) according to one or more of the preceding claims, **characterized in that** the lower surface (31) is directly adjacent to the first part (41) of the peripheral end portion (4) and the upper surface (32) is directly adjacent to the second part (42) of the peripheral end portion (4).

6. The sink (1) according to one or more of claims 4 or 5, **characterized in that** the lower surface (31) comprises an external portion subjected to grinding.

7. A method for manufacturing a sink (1), comprising the step of providing, in the same operation for molding a moldable material, a body (2) and a free rim (3) of the sink (1), **characterized in that** said free rim (3) is molded so as to have a peripheral end portion (4) which, along a vertical sectional plane with the sink in the operating configuration, comprises a first part (41) and a second part (42) which are substantially rectilinear, an angle formed between an extension of the first part and the second part being comprised between 1° and 45°.

8. The method according to claim 7, **characterized in that** it further provides for the step of providing an operation for removing material (33) at a lower surface (31) of the rim (3) in order to provide an external portion (33) subjected to grinding that is proximate to the first part (41).

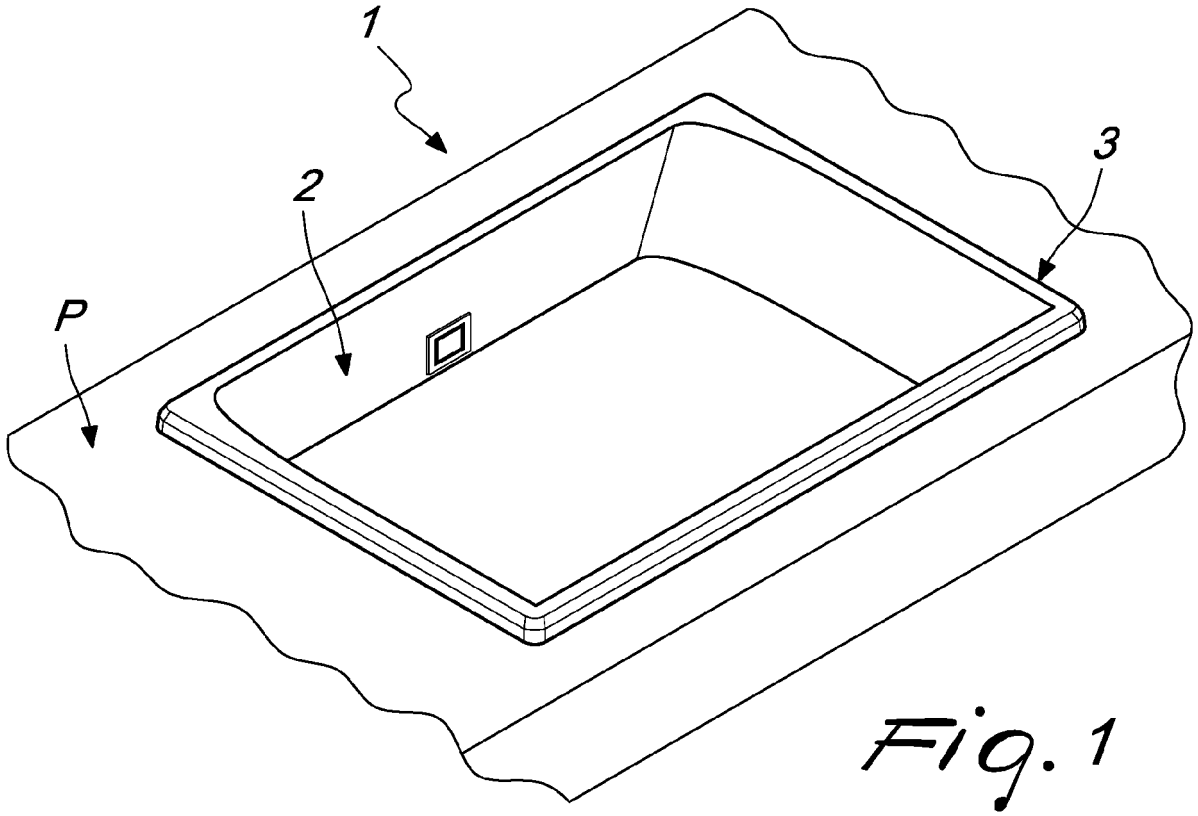

Fig. 1

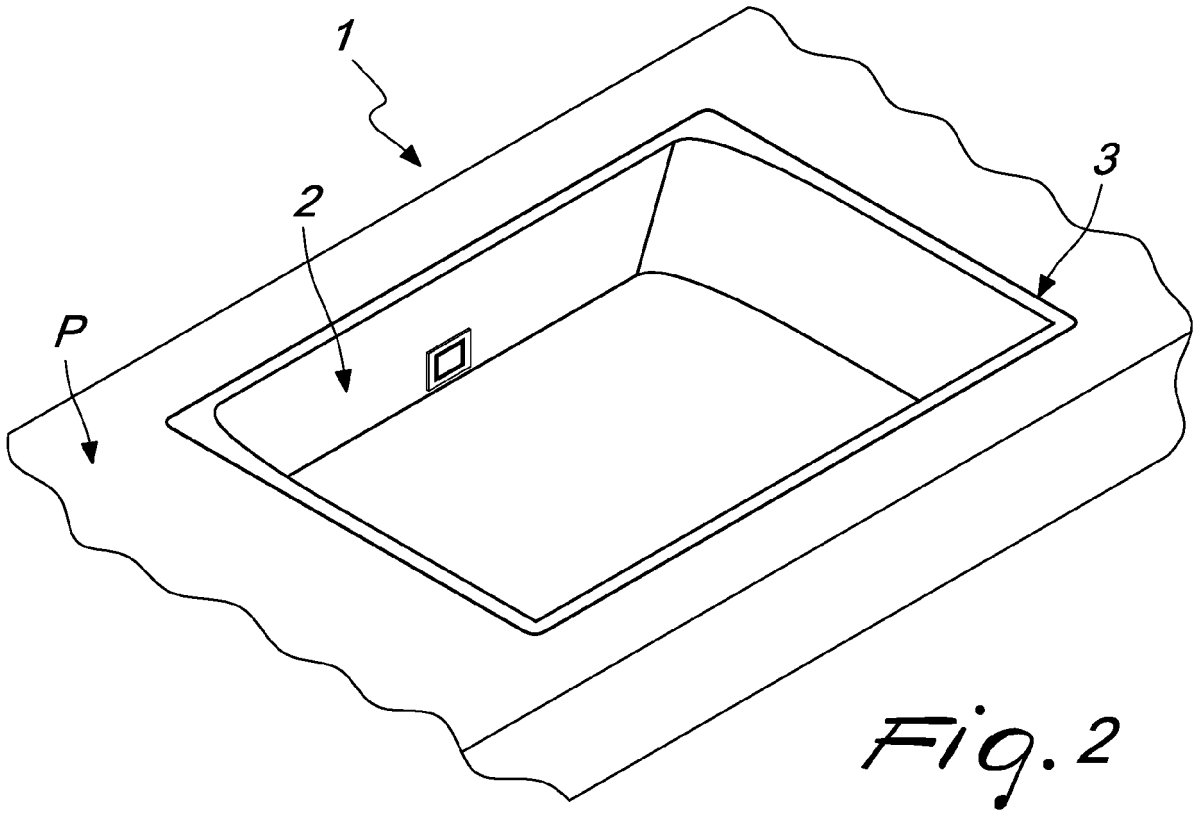

Fig. 2

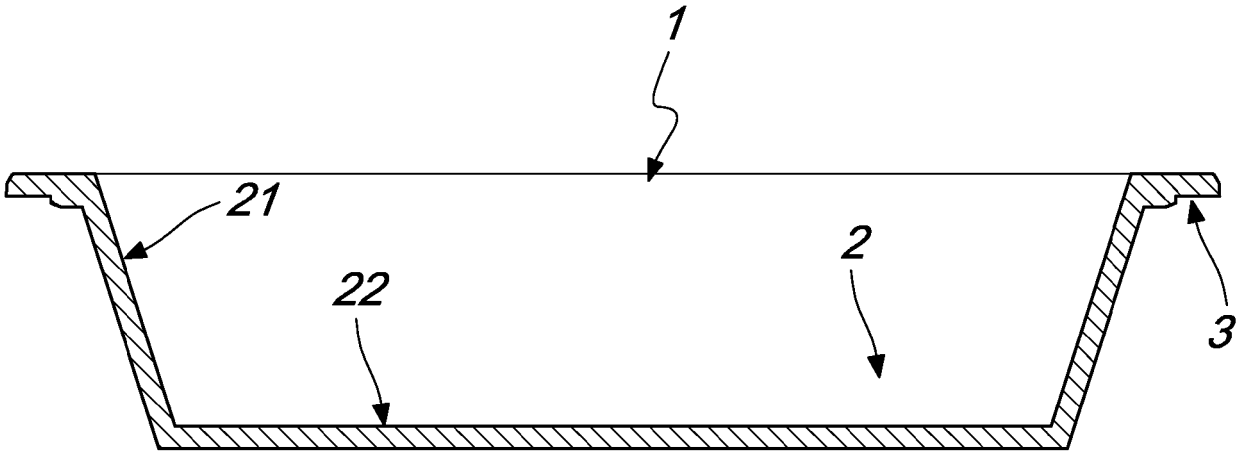

Fig. 3

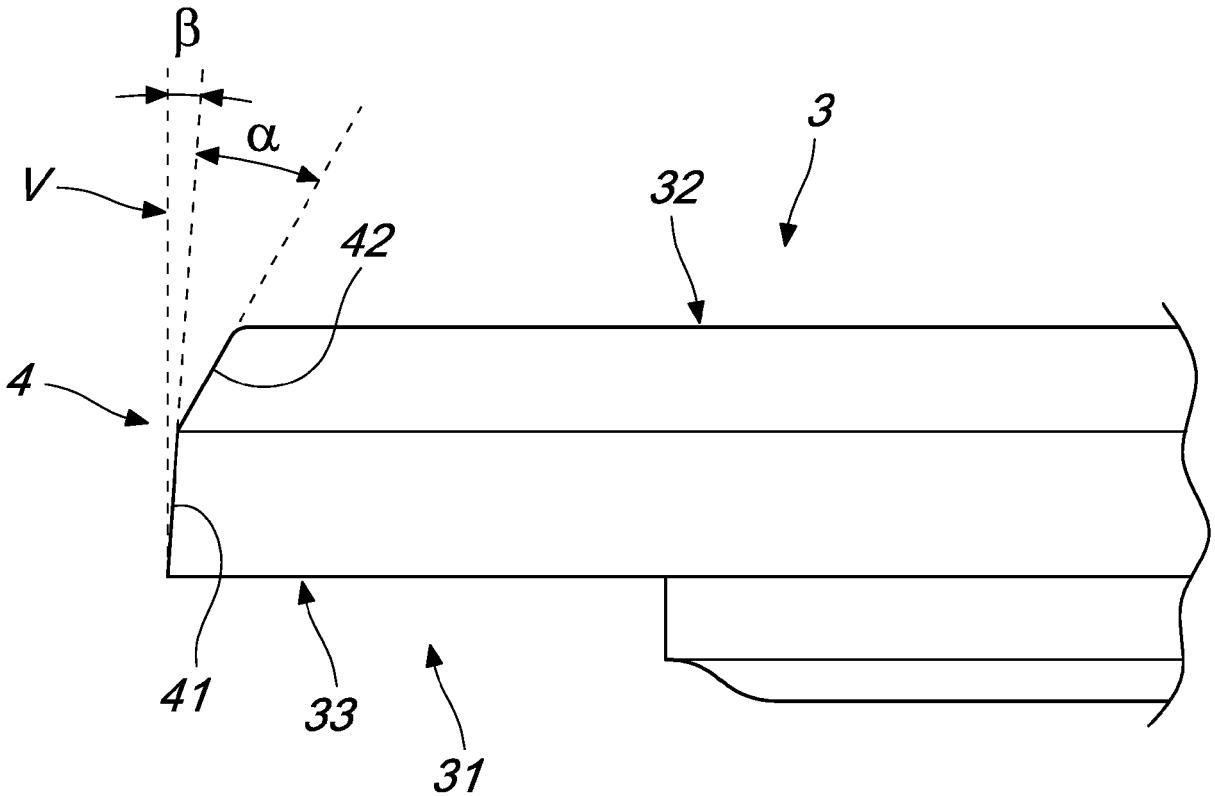

Fig. 4

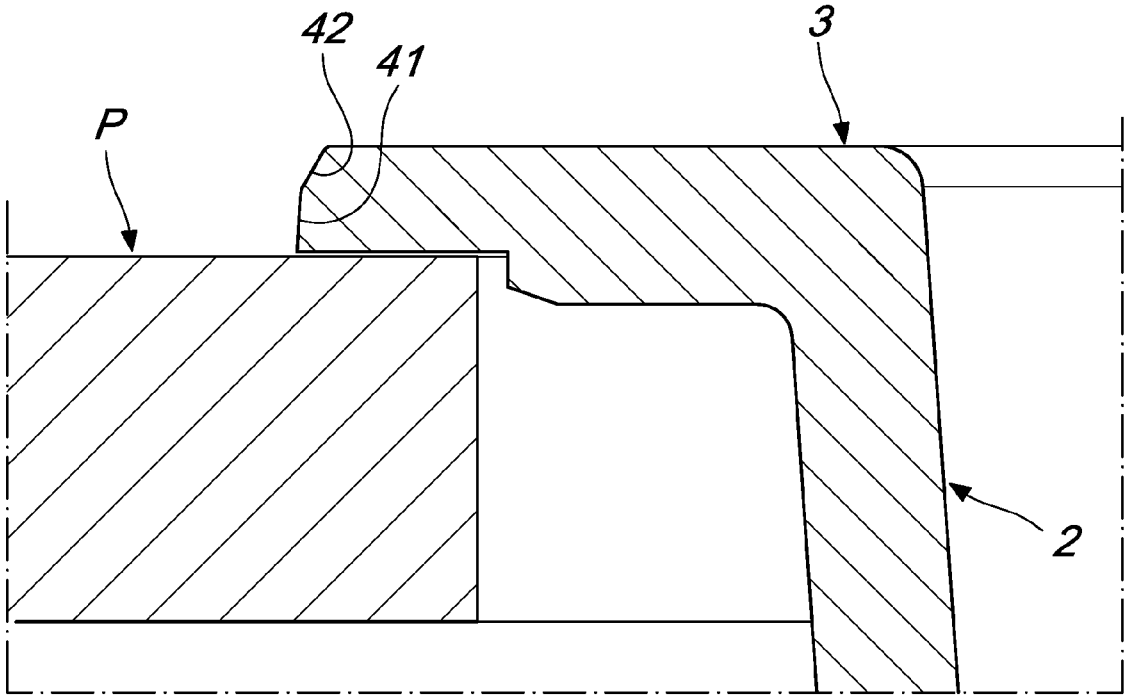

Fig. 5

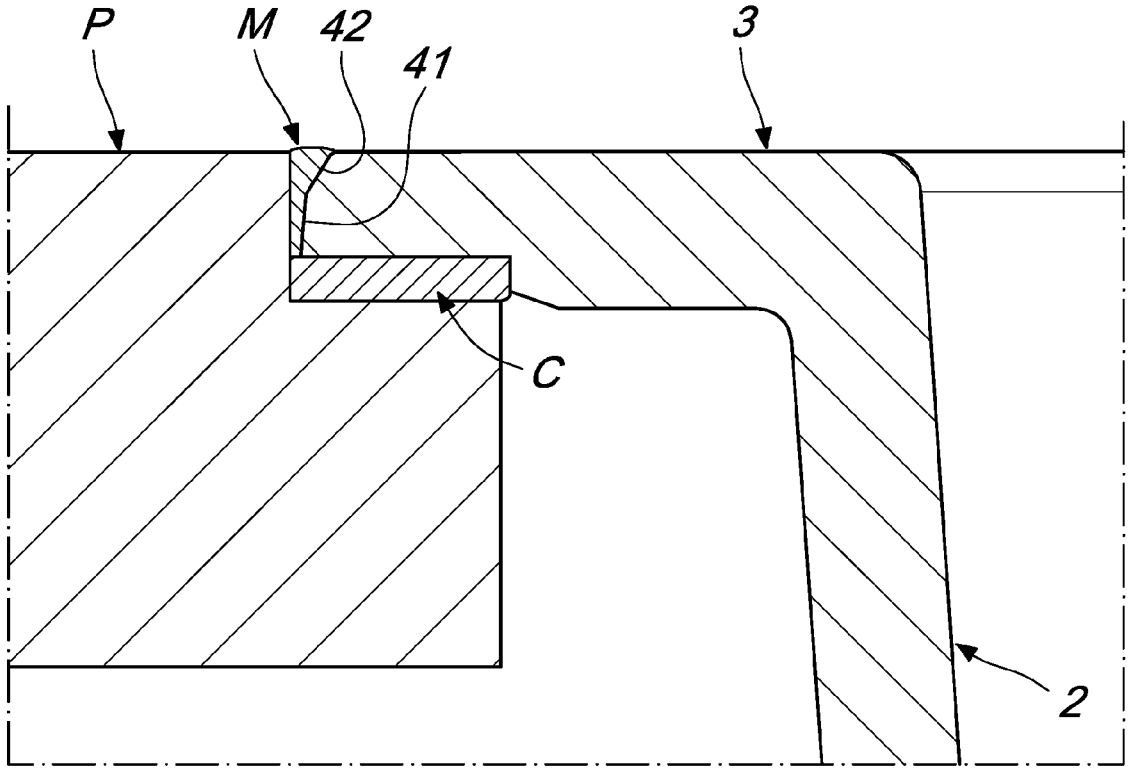

Fig. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 21 17 0543

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 38 24 242 A1 (ROEMMLER H RESOPAL WERK GMBH [DE]) 18 January 1990 (1990-01-18) * the whole document *	1-4,7,8	INV. E03C1/14 E03C1/33 E03C1/18
X	US 3 613 128 A (MOYER HARRIS P) 19 October 1971 (1971-10-19) * figure 2 *	1,4,5	
X	EP 1 905 905 A1 (BLANCO GMBH & CO KG [DE]) 2 April 2008 (2008-04-02) * figure 5 *	1-8	
A	EP 0 531 590 A1 (CASTLE NEROCHE INTERIORS LTD [GB]) 17 March 1993 (1993-03-17) * figure 2 *	1	

TECHNICAL FIELDS SEARCHED (IPC)
E03C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	14 September 2021	Leher, Valentina

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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EPO FORM 1503 03.82 (P04C01)

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14-09-2021

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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