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(54) **Gripping or supporting element.**

(57) The invention is a gripping or supporting element (1), comprising a shaped body (2) provided with ends (2a, 2b) connected to a bearing structure (S), bushes (3, 4) applied to the bearing structure (S) through first fastening means (5) that project from the outer surface (S_e) of the bearing structure (S) and second fastening means (6) that permanently connect said shaped body (2) to the bushes (3, 4). The gripping or supporting element (1) comprises shaped inserts (7, 8) joined to the ends (2a, 2b) of the shaped body (2) through third fastening means (9), said inserts being coupled to the bushes (3, 4) when the shaped body (2) is positioned against the bearing structure (S).

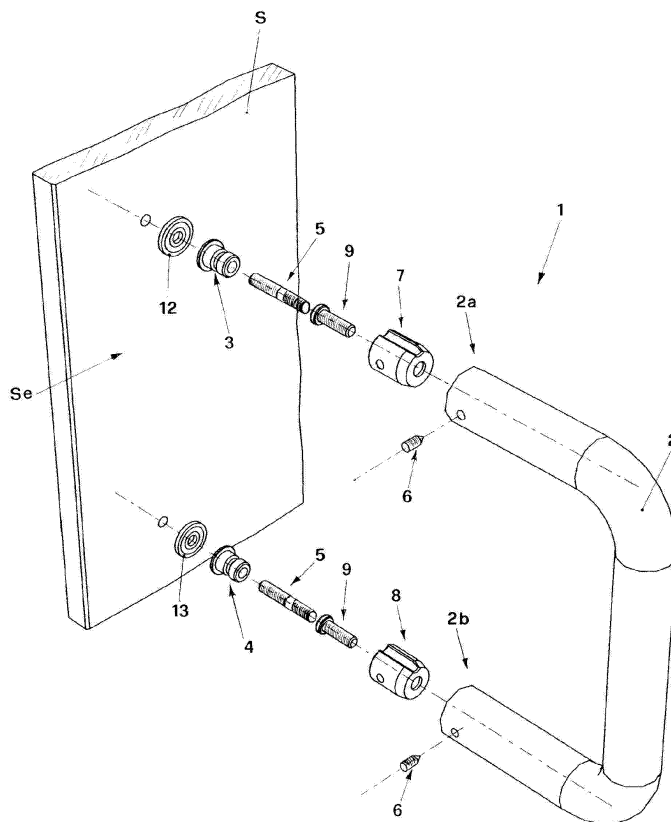


FIG.1

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Description

[0001] The present invention concerns a gripping or supporting element, particularly suited to make up a handle of a door wing, a drawer, or the like.

[0002] The gripping or supporting element for which protection is sought herewith may also be used as a furnishing accessory, like, for example, a towel rail to be installed in the bathrooms of private houses or in the toilets of other types of building.

[0003] It is known that the handles currently available on the market comprise a shaped body that is fixed, at least at one end, to a bearing structure, constituted for example by a door wing or by the wall of a room in a building.

[0004] In the case at hand, the applicant would like to focus on the special type of handles in which the shaped body has a solid, hollow or partially hollow structure, and is made of a synthetic plastic material, like for example polyamide or polypropylene.

[0005] The form of the shaped body is such as to ensure comfortable and safe gripping by the user: in most cases, the cross section of said shaped body as a circular profile.

[0006] To apply the shaped body to the bearing structure connection means are generally used, which comprise a bush provided with a thread that engages with a nut screw obtained in a blind hole made in the ends of the shaped body. The bush is also provided on its inner surface with a counter thread engaging with a further screw, associated with a screw anchor pressure-fitted into the bearing structure, according to a technique that is well known to those skilled in the art.

[0007] To make the connection between the shaped body and the bearing structure more stable, sometimes screw fastening means are provided, comprising a dowel inserted in coaxial through holes obtained in the shaped body and in the bush.

[0008] However, the gripping or supporting elements just described have some significant drawbacks.

[0009] A first drawback is represented by the fact that the connection between the shaped body and the bush requires the use of screw means that are inevitably going to loosen due to the continuous traction force exerted on the gripping or supporting element by the users.

[0010] Therefore, the loads transmitted onto the gripping or supporting elements affect, after a certain period, the stability and resistance of the connection between the shaped body and the bush.

[0011] This is even worsened by the fact that the screw means engage with the synthetic plastic material of the shaped body, so that the connection is less stable compared to the connection of elements made of a metallic material.

[0012] A further drawback is due to the fact that the use of the above mentioned screw means increases the number of operations that must be carried out to connect the gripping or supporting element to the bearing structure, consequently increasing assembly costs and times.

[0013] The present invention intends to eliminate the drawbacks mentioned above.

[0014] In particular, the main aim of the present invention is to carry out a gripping or supporting element that, once coupled to a bearing structure of any type, has greater mechanical resistance than the known equivalent elements at the level of the points of connection to the bearing structure itself.

[0015] It is a further aim of the invention to simplify, compared to the prior art, the operations that must be carried out to connect the gripping or supporting element to a bearing structure.

[0016] The aims mentioned above have been achieved through the implementation of a gripping or supporting element that, in accordance with the contents of the main claim, comprises:

- a shaped body provided with at least one end suited to be connected to a bearing structure;
- at least one bush suited to be applied to said bearing structure through first fastening means that project from the outer surface of said bearing structure;
- second fastening means suited to permanently connect said shaped body to said bush,

characterized in that it comprises at least one shaped insert, joined to said end of said shaped body through third fastening means, suited to be coupled to said bush when said shaped body is positioned against said bearing structure.

[0017] Advantageously, the gripping or supporting element carried out according to the invention offers, when applied to a bearing structure, a mechanical resistance to loads, in particular traction loads, that is greater than the resistance ensured by analogous elements carried out according to the prior art.

[0018] Workshop tests carried out by the applicant have shown, in fact, that the gripping or supporting element, that is the subject of the present invention, resists to a high number of load cycles, in the order of 150,000, exerted on said element by means of an air-operated piston when it is fixed to a bearing structure, for example a door wing.

[0019] Still to advantage, the invention facilitates the installation of the gripping or supporting element on the bearing structure, because it requires the use of fewer screw means than in the prior art, with consequent advantages in terms of connected costs.

[0020] Still to advantage, the aesthetic effect obtained with the application of the gripping or supporting element subject of the invention to a bearing structure is quite pleasant.

[0021] Further characteristics and details of the object claimed herewith will be highlighted in the description of a preferred embodiment of the invention itself, provided as an example without limitation with reference to the attached drawings, wherein:

- Figure 1 is an exploded axonometric view of the gripping or supporting element carried out according to the invention installed on a bearing structure;
- Figure 2 is an axonometric view of a first detail of Figure 1;
- Figure 3 is an exploded axonometric view of a second enlarged detail of Figure 1;
- Figure 4 is a front view of a component of Figure 3;
- Figure 5 shows a cross section of Figure 2.

[0022] The gripping or supporting element that is the subject of the invention is shown in Figure 1, where it is indicated as a whole by **1**, while it is being applied to a bearing structure **S**.

[0023] In the example described herein, the gripping or supporting element **1** is a handle, while the bearing structure **S** is the wing of a door.

[0024] In other embodiments of the invention, not represented herein, the gripping or supporting element may be any handle installed on a piece of furniture or onto a wall of a room in a building, or a supporting component, such as the towel rail in the bathroom of a house, for thin objects, like towels, that can be folded over it.

[0025] It can be observed that the gripping or supporting element **1** comprises:

- a shaped body **2**, in this case cylindrical in shape and made of a synthetic plastic material, preferably but not necessarily polyamide (also known under the commercial name "nylon"), provided with ends **2a**, **2b** connected to the bearing structure **S**;
- a pair of bushes **3**, **4**, preferably made of a metallic material, applied to the bearing structure **S** through first fastening means, indicated as a whole by **5** and of the type known per se, which project from the outer surface **S_e** of the bearing structure **S**;
- second fastening means, indicated as a whole by **6**, used to permanently connect the shaped body **2** to the bushes **3**, **4**.

[0026] In other embodiments of the invention, the synthetic plastic material of which the shaped body is made may be a different material, for example polypropylene or polyethylene.

[0027] According to the invention, the gripping or supporting element **1** comprises a pair of shaped inserts **7**, **8**, associated with the ends **2a**, **2b** of the shaped body **2** through third fastening means, generally indicated by **9**, which are coupled to the corresponding bushes **3**, **4** when the shaped body **2** is arranged against the bearing structure **S**.

[0028] It is important to underline that in further construction variants, not illustrated herein, the shaped body may be provided with a single end connected to the bearing structure.

[0029] It is clear that, in this case, the gripping or supporting element will include a single shaped insert associated with one of the ends of the shaped body.

[0030] As clearly shown in Figure 1, but also in Figure 2, the shaped inserts **7**, **8** are inserted in corresponding cavities **10**, **11**, obtained in the corresponding end **2a**, **2b** of the shaped body **2** and defined by an inner bottom and by the inner side wall of the cavities **10**, **11**.

[0031] To simplify the description, Figure 2 shows only the inner bottom and the inner side wall of the cavity **10**, respectively indicated by **10a** and **10b**.

[0032] Figure 1 also shows that the gripping or supporting element **1** comprises two seals **12**, **13**, respectively placed against the bushes **3**, **4** in order to prevent the direct contact of the same, and also of the shaped body **2**, with the bearing structure **S**.

[0033] The seals **12**, **13** are preferably made of a plastic material, a construction solution that is extremely important because in this case the gripping or supporting element **1** is associated with a bearing structure **S**, constituted, as already said, by a wing that is generally made of aluminium or wood.

[0034] The seals **12**, **13** prevent the contact of the shaped body **2** and of the bushes **3**, **4** with the bearing structure **S** and thus they also prevent excessive wear of the latter over time.

[0035] Figure 2 shows that the gripping or supporting element **1** comprises reference means, indicated as a whole by **14**, associated with the shaped body **2** and with each one of the shaped inserts **7**, **8**, which define the coupling or, better, the insertion direction of the shaped inserts **7**, **8** into the shaped body **2** itself.

[0036] According to the preferred embodiment of the invention described herein, the reference means **14** are constituted by a rib **15**, **16** projecting from the inner side wall, of the type indicated by **10b**, defining the cavities **10**, **11** and, as shown

in Figure 3, by a groove **17** obtained on the outer wall **7b** of the shaped insert **7**.

[0037] The attached figures show only the groove **17** in the shaped insert **7**, but also the shaped insert **8** has a similar groove in its outer wall.

[0038] The profile of the rib **15** matches the profile of the groove **17**, and in the same way the profile of the rib **16** matches the profile of the groove not represented and obtained in the shaped insert **8**.

[0039] The profiles of the ribs **15**, **16** and of the grooves, like the one indicated by **17**, have a substantially semicircular shape.

[0040] According to other embodiments of the invention, not represented herein, the reference means may be constituted by two opposite ribs, projecting from the inner side wall that defines each cavity, as well as by two corresponding opposite grooves obtained on the outer wall of each shaped insert.

[0041] From now onwards and until specified otherwise, to facilitate the explanation the gripping or supporting element **1** will be described with reference to the shaped insert **7** only, coupled to the shaped body **2** at the level of the end **2a**.

[0042] The explanation given is in any case valid also for the shaped insert **8** associated with the end **2b** of the shaped body **2**.

[0043] Figure 3 shows that the shaped insert **7** has substantially the form of a cylindrical cup, with the base **7a** arranged against the bottom **10a** of the cavity **10**.

[0044] The base **7a** of the shaped insert **7** is provided with a central through hole **18**, visible also in Figure 4, coaxial with a blind hole **19**, threaded inside, made in the central area **110a** of the bottom **10a** of the cavity **10**.

[0045] This last construction detail is visible in Figure 5, which shows that the third fastening means **9** are constituted by a screw **20** that passes through the central hole **18** of the shaped insert **7** and engages with the blind hole **19** of the bottom **10a** of the cavity **10**.

[0046] The screw **20** is provided with a head **20a** that is set against the inner wall **71a** of the base **7a** of the shaped insert **7**, said inner wall **71a** defining the outer edge of the central hole **18**.

[0047] As regards the second fastening means **6**, Figure 5 shows that they are constituted by a dowel **21**, arranged in such a way as to pass inside a first through hole **22** made in the shaped body **2**.

[0048] The dowel **21** engages with a screw nut **23** obtained in a second through hole **24** made in the shaped insert **7** and coaxial with the first through hole **22**.

[0049] The pointed end **21a** of the dowel **21** is housed in an annular race **25** obtained in the bush **3** and defined by inclined side surfaces **25a**, **25b** that exert a traction force on the pointed end **21a** of the dowel **21**, forcing it against the bottom **25c** of the annular race **25** when the dowel **21** is inserted in the first through hole **22** and screwed into the second through hole **24** to lock the shaped body **2** and the bush **3** together.

[0050] It is clear that what has just been said with reference to the bush **3** is valid and applicable also to the bush **4**.

[0051] The side surfaces **25a**, **25b** of the annular race **25** are preferably inclined by 45°.

[0052] The bushes **3**, **4** are of the type per se known to a person skilled in the art, and are used for the application of a gripping or supporting element comprising a shaped body in metallic material to a bearing structure.

[0053] Therefore, the invention uses a bush used to connect other types of gripping or supporting elements, different from the one that is the subject of the present invention, to a bearing structure, with no need to resort to bushes with a shape specifically designed for gripping or supporting elements made of a synthetic plastic material, as it currently happens in the prior art.

[0054] The introduction of a gripping or supporting element having the construction characteristics of the invention makes the bush just described universal, independently of the material of which the gripping or supporting element is made.

[0055] Always in Figure 5, it is possible to observe that the gripping or supporting element **1** comprises a covering body **26**, for example made of plastic, applied to the outside of the dowel **21**, which otherwise would remain visible.

[0056] The covering body **26**, therefore, creates a continuous surface between the first through hole **22** and the outer surface **2c** of the shaped body **2**, thus improving the aesthetic effect of the gripping or supporting element **1** in that area.

[0057] In practice, the person who has to install the gripping or supporting element **1** onto the bearing structure **S** inserts the shaped inserts **7**, **8** inside the corresponding cavities **10**, **11** obtained at the ends **2a**, **2b** of the shaped body **2**.

[0058] The insertion is achieved by matching the ribs **15**, **16**, present in the cavities **10**, **11**, and the grooves of the type indicated by **17**, present on the shaped inserts **7**, **8**, so that the second through hole **24**, obtained in the shaped inserts **7**, **8**, is coaxial with the first through hole **22** made in the shaped body **2**.

[0059] Therefore, the operator inserts the screw **20** inside the shaped inserts **7**, **8** and makes it pass through the central hole **18**, thus screwing it inside the blind hole **19** made in the shaped body **2**.

[0060] Successively, the operator applies the shaped body **2**, complete with the shaped inserts **7**, **8**, against the outer surface **S_e** of the bearing structure **S**, arranging the bushes **3**, **4**, previously permanently coupled to the bearing structure **S** through first fastening means **5**, inside the corresponding shaped inserts **7**, **8**.

[0061] Finally, the operator permanently connects the shaped body **2** to the bearing structure **S**, coupling the dowel **21** to the nut screw **23** of the second through hole **24** by placing the pointed end **21a** of the dowel inside the annular

race 25 present in the bushes 3, 4.

[0062] To complete the job, the operator applies the covering body 26 onto the first through hole 22, outside the dowel 21, thus making the outer surface 2d of the shaped body 2 uniform and continuous.

[0063] The gripping or supporting element carried out according to the invention can bear the loads applied to it more effectively and efficiently than the equivalent elements of the known type.

[0064] This is achieved by connecting the bushes to the shaped body through the interposition of shaped inserts that minimize the negative effects generated when screw means are screwed onto a body made of plastic material, consequently increasing the mechanical resistance of the connection compared to that ensured by the prior art.

[0065] The invention also allows the operator to install a gripping or supporting element of the type described above on a bearing structure more quickly than in the prior art.

[0066] Therefore, in the light of the above, it can be understood that the gripping or supporting element carried out according to the invention achieves the aims and offers the advantages described.

[0067] Upon implementation modifications may be made to the gripping or supporting element, said modifications consisting, for example, in a different section of the shaped body compared to that described and represented in the drawings.

[0068] The shaped body may, in other applications, be associated with the bearing structure in a different way than illustrated in the figures below, for example in horizontal position.

[0069] In addition to that, in further construction variants the shaped body may be made of a synthetic plastic material with compact or partially hollow structure, obtained through an air-blowing process.

[0070] Furthermore, the second fastening means may be different from those described above, which however does not affect the advantages offered by the present patent.

[0071] The variants described and mentioned herein, but not represented in the attached drawings, must be considered protected by the present patent, provided that they fall within the scope of the following claims.

Claims

1. Gripping or supporting element (1), comprising:

- a shaped body (2) provided with at least one end (2a, 2b) suited to be connected to a bearing structure (S);
- at least one bush (3, 4) suited to be applied to said bearing structure (S) through first fastening means (5) that project from the outer surface (S_e) of said bearing structure (S);
- second fastening means (6) suited to permanently connect said shaped body (2) to said bush (3, 4),

characterized in that it comprises at least one shaped insert (7, 8) joined to said end (2a, 2b) of said shaped body (2) through third fastening means (9), suited to be connected to said bush (3, 4) when said shaped body (2) is positioned against said bearing structure (S).

2. Element (1) according to claim 1), **characterized in that** said shaped insert (7, 8) is inserted in a cavity (10, 11), obtained in said end (2a, 2b) of said shaped body (2), defined by an inner bottom (10a) and by the inner side wall (10b) of said cavity (10, 11).

3. Element (1) according to claim 2), **characterized in that** said shaped insert (7, 8) has substantially the shape of a cup, with the base (7b) arranged against said bottom (10a) of said cavity (10, 11).

4. Element (1) according to claim 3), **characterized in that** said base (7a) of said shaped insert (7, 8) is provided with a central through hole (18), coaxial with a blind hole (19), threaded inside, made in the central area (110a) of said bottom (10a) of said cavity (10, 11).

5. Element (1) according to claim 4), **characterized in that** said third fastening means (9) comprise a screw (20) passing through said central hole (18) of said shaped insert (7, 8) and engaging with said blind hole (19) of said bottom (10a) of said cavity (10, 11).

6. Element (1) according to claim 5), **characterized in that** said screw (20) is provided with a head (20a) that is set against the inner wall (71 a) of said base (7a) of said shaped insert (7, 8) defining the outer edge of said central hole (18).

7. Element (1) according to claim 1), **characterized in that** it comprises reference means (14), associated with said

shaped body (2) and with said shaped insert (7, 8), suited to defined the coupling direction of said shaped insert (7, 8) into said shaped body (2).

8. Element (1) according to claim 7), **characterized in that** said reference means (14) are constituted by at least one rib (15, 16) projecting from the inner side wall (10b) defining said cavity (10, 11), and by at least one groove (17) obtained in the outer wall (7b) of said shaped insert (7, 8).

9. Element (1) according to claim 8), **characterized in that** the profiles of said rib (15, 16) and of said groove (17) can be matched and are substantially semicircular in shape.

10. Element (1) according to claim 1), **characterized in that** said second fastening means (6) are constituted by a dowel (21) passing inside a first through hole (22) made in said shaped body (2) and engaging with a nut screw (23) obtained in a second through hole (24) made in said shaped insert (7, 8) and coaxial with said first through hole (22).

11. Element (1) according to claim 10), **characterized in that** the pointed end (21 a) of said dowel (21) is housed in an annular race (25) obtained in said bush (3, 4) and defined by inclined side surfaces (25a, 25b) that exert a traction force on said pointed end (21 a) of said dowel (21), forcing it against the bottom (25c) of said annular race (25) when said dowel (21) is inserted in said first (22) and second through hole (24) to lock said shaped body (2) and said bush (3, 4) together.

12. Element (1) according to claim 11), **characterized in that** said side surfaces (25a, 25b) of said annular race (25) are inclined by 45°.

13. Element (1) according to claim 1), **characterized in that** it comprises a seal (12, 13) arranged against each of said bushes (3, 4) to prevent the contact of said shaped body (2) and said bushes (3, 4) with said bearing structure (S) when they are placed the ones against the other.

14. Element (1) according to claim 1), **characterized in that** said shaped body (2) is made of a synthetic plastic material.

15. Element according to claim 14), **characterized in that** said synthetic plastic material has a compact structure.

16. Element according to claim 15), **characterized in that** said structure is at least partially hollow.

17. Element (1) according to claim 14), **characterized in that** said synthetic plastic material is polyamide.

18. Element (1) according to claim 14), **characterized in that** said synthetic plastic material is polypropylene.

19. Element (1) according to claim 14), **characterized in that** said synthetic plastic material is polyethylene.

