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Amended claims in accordance with Rule 137(2)
EPC.

(54) **Handle assembly for a vehicle door handle, and its assembling method**

(57) The invention relates to a handle assembly for a vehicle door handle, the handle assembly comprising:

- a bracket (4),
- a handle external structure (2), comprising at least one external protrusion (21, 22),
- a handle internal structure (1) comprising at least one internal protrusion (11, 12), wherein
- the internal (11, 12) and external (21, 22) protrusions are configured to be inserted in one another through the bracket (4), and
- the internal (11, 12) and external (21, 22) protrusions comprise fastening means (13, 23) configured to fasten the handle external (2) and internal (1) structures to one another when the internal (11, 12) and external (21, 22) protrusions are inserted in one another through the bracket (4).

The invention further relates to a handle assembling method.

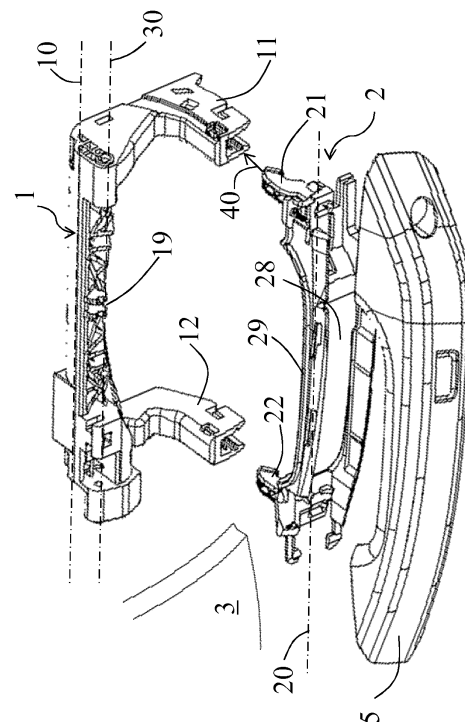


FIG. 1

Description

[0001] The present invention relates to a vehicle door handle, in particular, the invention relates to a handle assembly for such a vehicle handle. The invention further relates to a handle external structure and a handle internal structure for such a handle assembly. The invention also relates to a method for assembling a vehicle door handle.

[0002] Vehicle door handles generally comprise a mobile part essentially external to a door sheet, and a bracket internal to the door sheet. Door handles and the brackets subassemblies are components that have to be designed in order to satisfy many different requirements, including door and vehicle styles, ergonomics, low weight, robustness, esthetical, reliability and car maker assembling constraints.

[0003] The bracket is the fixed part that maintains the kinematics and is usually designed taking into account two kinematics positions, i.e.: a pre-assembly position, and an operating position.

[0004] The above requirements are usually influenced by the handle style and can widely change depending on the handle type to mount on a vehicle door. Generally, the handle mobile part has to be assembled from the external door side after the bracket fixation onto the door internal side. The bracket is positioned in the door and fixed to the metal sheet by means of several solutions depending on the bracket architecture.

[0005] The assembling procedure for the handles of the prior art has some drawbacks, including:

- a long time for the installation of the handle mobile parts in the door and/or bracket, depending on the complexity of the geometry of the handle;
- potential damages caused on the bracket and/or its fixations when the handle is mounted through the door sheet and the bracket, especially for swing type handles as the one described in application FR 2 802 962 A1;
- a need of many additional parts, such as for example screws, a metallic holder, pins and the like in the installation and fixation of the handle;
- a high risk of scrapping the handle and/or the door sheet which are esthetical parts, due to a complicate assembling procedure and/or the use or handling of mounting tools, such as grips, screw drivers.

[0006] These drawbacks lead to an increase of the global assembly costs and potential rework costs.

[0007] Thus, there is a need to improve the handle assembly and assembling process for a quick assembly that would reduce the global assembling costs, including the rework costs.

[0008] An aim of the present invention is to propose a vehicle handle, and more particularly a handle assembly that can be mounted on a vehicle door: in a reduced number of operations and mounting time; with reduced

stress caused to the bracket and its fixations when mounting the handle; using a reduced number of additional parts; and with a low risk of scrapping the handle and/or door sheet.

[0009] To this end, the present invention relates to a handle assembly for a vehicle door handle, the handle assembly comprising:

- a bracket intended to be fixed in the vehicle door,
- a handle external structure, configured to be disposed on one longitudinal side of the bracket and mobile relatively to the said bracket, the handle external structure comprising at least one external protrusion,
- a handle internal structure configured to be disposed on the other longitudinal side of the bracket, the handle internal structure comprising at least one internal protrusion, wherein
- the internal and external protrusions are configured to be inserted in one another through the bracket, and
- the internal and external protrusions comprise fastening means configured to fasten the handle external and internal structures to one another when the internal and external protrusions are inserted in one another through the bracket.

[0010] Advantageously, the handle assembly comprises internal and external protrusions that are inserted in one another, and are fastened and locked in each other. The part on which the user puts his hand is then not fixed on the bracket but through the latter without inducing stress on the said bracket.

[0011] The handle assembly thereby avoids time consuming steps for mounting handle; reduces the stress caused to the bracket or its fixations upon mounting; and reduces the number of additional parts and mounting tools required when mounting the handle assembly.

[0012] This leads to a reduction of the risk of scrapping the handle and/or the door sheet and also a reduction of the global assembling costs, including the rework costs.

[0013] According to further embodiments which can be considered alone or in combination:

- the handle external structure comprises two or more external protrusions, and the handle internal structure comprises two or more internal protrusions; and/or
- the fastening means are complementary; and/or
- the complementary fastening means are clip fastening means; and/or
- the handle external structure has a longitudinal shape along an external axis, the handle internal structure has a longitudinal shape along an internal axis, and the handle is configured so that the external and internal axes are substantially parallel to one another; and/or

- the handle external structure rotates according to a rotation axis substantially perpendicular or parallel to the internal and external axes; and/or
- the internal protrusion comprises at least one internal stop means, the external protrusion comprises at least one external stop means, the internal and external stop means being configured to cooperate when the internal and external protrusions are inserted in one another so as to block relative movements of the handle external and internal structures in a direction opposite to the insertion direction; and/or
- one of the external or internal protrusion has a U-shaped portion for engaging the other of the external or internal protrusion, and the fastening means are configured to block relative movements of the handle external and internal structures in a direction extending from the base of the U-shaped portion to the open side of the U-shaped portion; and/or
- the opposite branches of the U-shaped portion extend in a direction substantially perpendicular to the external and internal axes; and/or
- the opposite branches of the U-shaped portion comprise clip fastening means; and/or
- the base of the U-shaped portion comprises stop means; and/or.
- one of the external or internal protrusion has a hook shaped portion configured to be inserted in the U-shaped portion of the other protrusion; and/or
- the hook shaped portion comprises clip fastening means arranged to cooperate with the clip fastening means of the opposite branches of the U-shaped portion; and/or
- the hook shaped portion comprises stop means arranged to cooperate with the stop means of the U-shaped portion.

[0014] The invention further relates to a vehicle door handle comprising the handle assembly of the invention, and a bracket intended to be fixed in the vehicle door and disposed between the internal and external structures.

[0015] In addition, the invention relates to a handle external structure configured to be disposed on one longitudinal side of a bracket and mobile relatively to the said bracket, the handle external structure comprising at least one external protrusion, the external protrusion being configured to be inserted in or to receive an internal protrusion, wherein the external protrusion comprises external fastening means configured to fasten corresponding internal fastening means of the internal protrusion, when the internal and external protrusions are inserted in one another.

[0016] Moreover, the invention relates to a handle internal structure configured to be disposed on one longitudinal side of a bracket, the handle internal structure comprising at least one internal protrusion, the internal protrusion being configured to be inserted in or to receive an external protrusion, wherein the internal protrusion

comprises internal fastening means configured to fasten corresponding external fastening means of the external protrusion, when the internal and external protrusions are inserted in one another.

[0017] Furthermore, the invention relates to a method for assembling a vehicle door handle, the method comprising steps for

- fixing a bracket on a vehicle door sheet,
- placing a handle internal structure at one longitudinal side of the bracket fixed on the door sheet, the handle internal structure comprising at least one internal protrusion,
- approaching a handle external structure, externally to the door sheet, close to the other longitudinal side of the bracket and facing the handle internal structure, the handle external structure comprising at least one external protrusion, wherein the at least one external protrusion is positioned besides the at least one internal protrusion,
- inserting the internal and external protrusions in one another,
- fastening the handle external and internal structures to one another.

[0018] According to further embodiments which can be considered alone or in combination:

- one of the handle external or internal structures has a U-shaped portion, and wherein the handle external structure is fixed to the handle internal structure by a movement from the open side of the U-shaped portion to the base of the U-shaped portion; and/or
- the movement is substantially circular.

[0019] Other features and advantages of the present invention will become apparent from the following description of non-limitative embodiments, with reference to the attached drawing in which:

- figure 1 is an exploded view of the vehicle door handle assembly of a preferred embodiment of the invention,
- figure 2 is a space view of an internal protrusion of a handle internal structure of a preferred embodiment of the invention,
- figure 3 is a space view of an external protrusion of a handle external structure of a preferred embodiment of the invention,
- figures 4A to 4C are space views of the vehicle door handle assembly of figure 1, in the assembling method according to an embodiment of the invention,
- figure 5 is a space view of an external side of a vehicle door handle according to a preferred embodiment of the invention, and
- figure 6 is a space view of an internal side of a vehicle door handle according to a preferred embodiment of the invention.

[0020] The vehicle door handle assembly of a preferred embodiment of the invention, as illustrated by the figures, comprises a handle external structure 2, a handle internal structure 1 and a bracket 4.

[0021] The invention is particularly adapted to swing type handles, i.e.: where the mobile part of the handle is rotatably mounted along a rotation axis substantially parallel to a longitudinal axis of the handle. The invention may also be implemented for other types of handles, for example for grip-type handles, i.e.: where the mobile part of the handle is rotatably mounted along a rotation axis substantially perpendicular to a longitudinal axis of the handle.

[0022] The handle internal 1 and external 2 structures and the bracket 4 have longitudinal shapes. In particular, the bracket 4 has two opposite longitudinal faces. The handle external structure 2 is configured to be disposed on a longitudinal side of the bracket 4, more particularly on a longitudinal face of the bracket 4. The handle internal structure 1 is configured to be disposed on the other longitudinal side of the bracket 4, more particularly on the other longitudinal face of the bracket 4.

[0023] The handle internal structure 1 and the bracket 4 are configured to be placed internally relatively to a vehicle door sheet 3. The handle external structure 2 is configured to be placed externally relatively to the vehicle door sheet 3. For example, the handle external structure 2 is placed substantially outside the vehicle when the handle is mounted so that an user can grip the handle external structure and open the door. Additionally, the handle internal structure 1 and the bracket 4 are placed substantially inside the vehicle door when the handle is mounted and are intended not to be visible from inside and outside the vehicle.

[0024] The handle external 2 and internal 1 structures, the bracket 4 and the door sheet 3 are configured such that the handle external structure 2 can be fixed on the handle internal structure 1 through the door sheet 3 and through the bracket 4 so as to form the handle. To this end the external protrusions 21,22 are inserted in the internal protrusions 11,12 according to an insertion direction 40, through the bracket.

[0025] The door sheet 3 is configured for enabling the grip of the handle external structure. Therefore, the said door sheet may have a recess substantially in a convex shape oriented outside the vehicle. Such a convex side is an external side of the door sheet and the opposite concave side is the internal side of the door sheet.

[0026] The bracket 4 has one side, in particular one face, designed to be fixed on the door sheet 3. The bracket 4 is a support for the kinematics of the handle, specifically the kinematics for acting on the lever actuating the latch mechanism.

[0027] The bracket 4 is shown in figures 6 and 7 and will be further detailed below.

[0028] Referring to figures 1 and 2, the handle internal structure 1 extends longitudinally along an internal axis 10. The handle internal structure 1 comprises two internal

protrusions 11, 12. The internal protrusions 11,12 may be symmetric to each other with respect to a central plane of the handle internal structure 1. One internal protrusion 12 will be described in detail.

[0029] The internal protrusion 12 projects outwardly towards the door sheet 3 through the bracket 4 when the bracket 4 is placed on the internal side of the door sheet 3.

[0030] The handle assembly of the invention enables a quick and simple mounting by putting the handle external structure 2 in the handle internal structure 1 through the bracket 4 with decreased stress caused to the door sheet 3 and the bracket 4, especially for swing type handles.

[0031] The handle internal structure 1 comprises an elongated shaft 19 along the internal axis 10. The elongated shaft 19 is configured for being rotatably mounted around an axis 30. For example, the elongated shaft 19 comprises one or more recesses for receiving a pin along axis 30.

[0032] The shaft 19 has at its both ends, two arms 18. The arms 18 may be L-shaped and are preferably perpendicular to the shaft 19. Each arm 18 has an outwardly curved shape as shown in the figures. The arms 18 end with the internal protrusions 11, 12. The arms 18 may be symmetric to each other with respect to a central plane of the handle internal structure 1.

[0033] Referring to figure 2, the internal protrusion 12 ends with a U-shaped portion 15. The U-shaped portion 15 of the internal protrusion 12 is configured for receiving the external protrusion 22.

[0034] The U-shaped portion 15 has a base 16 and two opposite branches 17. The two branches 17 extend in a direction substantially perpendicular to the internal axis 10. The U-shaped portion comprises an open side opposite to the base 16.

[0035] The branches 17 end with internal fastening means 13, in particular other than a screw, a rivet, a pin or their female parts. More particularly, the internal fastening means 13 are clip fastening means. The internal clip fastening means are preferably internal protuberances. Different clip fastening means may be used such as an internal recess. The fastening means 13 are configured to prevent the external protrusion 22 from moving in a direction extending from the base 16 to the open side of the U-shaped portion 15. In particular, the internal protuberance comprises a supporting surface 13a substantially parallel to the insertion direction 40.

[0036] The base 16 comprises an internal stop 14. The internal stop 14 is configured to prevent the external protrusion 22 from moving in a direction opposite to the insertion direction 40. To this end, the internal stop 14 comprises an abutting surface substantially perpendicular to the insertion direction 40.

[0037] The internal protrusion 12 further comprises an internal structure guide 15a placed at least partially inwardly to the U-shaped portion 15 relatively to the end of the internal protrusion 12. In particular, the structure guide 15a is placed besides the open side of the U-

shaped portion 15.

[0038] Referring to figures 1 and 3, the handle external structure 2 extends longitudinally along an external axis 20. The handle external structure 2 comprises two external protrusions 21, 22, that may be symmetric to each other with respect to a central plane of the handle external structure 2. One external protrusion 22 will be described in detail.

[0039] The external protrusion 22 projects inwardly through the door sheet 3 when the handle external structure 2 is mounted.

[0040] The handle external structure 2 comprises an external shaft 29 along the external axis 20. The external shaft 29 comprises a housing 28 for electronic components of the handle. The external shaft is covered with a cover 5 for masking the electronic components and the handle external structure 2.

[0041] The external protrusions 21, 22 are placed at both ends of the external shaft 29.

[0042] Referring to figure 3, the external protrusion 22 has a hook shaped portion 25. The hook shaped portion 25 is configured to be inserted in the internal protrusion 12, in particular between the branches 17. The hook shaped portion 25 has a concavity oriented in the same sense as the concavity of the U-shaped portion 15 of the internal protrusion 12.

[0043] The hook shaped portion 25 has two opposite sides 27 facing the branches 17 when the external protrusion 22 is inserted in the internal protrusion 12. The hook shaped portion 25 further has a top side 26 facing the base 16 when the external protrusion 22 is inserted in the internal protrusion 12.

[0044] The hook shaped portion 25 comprises a sliding surface 25a placed opposite to the top side 26 on the external protrusion 22. The sliding surface 25a is configured to receive the structure guide 15a when the external protrusion 22 is inserted in the internal protrusion 12.

[0045] The opposite sides 27 both comprise external fastening means 23, in particular other than a screw, a rivet, a pin or their female parts. More particularly, the external fastening means 23 are clip fastening means. The external clip fastening means are preferably external protuberances. Different clip fastening means may be used such as an external recess. The fastening means 23 are configured to prevent the external protrusion 22 from moving in a direction extending from the base 16 to the open side of the U-shaped portion 15. To this end, the external fastening means 23 are complementary to the internal clip fastening means 13.

[0046] The clip fastening means 23 are placed at least partially inwardly to the hook shaped portion 25 relatively to the end of the external protrusion 22.

[0047] In particular, the external protuberance comprises a maintaining surface 23a substantially parallel to the insertion direction 40.

[0048] The external and internal complementary fastening means 13, 23 enable avoiding using many additional parts, such as for example a metallic holder,

screws, pins, rivets and the like in the installation and the fixation of the handle. The fixation is made by the complementary fastening means which leads to a significant decrease of the global assembly costs.

[0049] Moreover, the external and internal complementary fastening means 13, 23 enable avoiding using mounting tools, such as grips, screw drivers which significantly decreases the risk of scrapping the handle and/or the door sheet which are esthetical parts. This leads to a decrease of the rework costs.

[0050] The top side 26 comprises an external stop 24. The external stop 24 is configured to prevent the external protrusion 22 from moving in a direction opposite to the insertion direction 40. To this end, the external stop 24 comprises an external maintaining surface 24a substantially perpendicular to the insertion direction 40. The external maintaining surface 24a cooperates with the abutting surface of the internal stop 14 when the external protrusion 22 is inserted in the internal protrusion 12.

[0051] The assembling method according to a preferred embodiment of the invention will now be described based on figures 4A to 4C. The bracket 4 is fixed on an internal face of the door sheet 3. The handle internal structure 1 is placed at a longitudinal side of the bracket 4, more particularly along a longitudinal face of the bracket 4. The internal protrusions 11, 12, project outwardly towards the door sheet 3 through the bracket 4.

[0052] The bracket 4 has not been shown in figures 4A to 4C in order to focus the description on the interaction between the handle internal 1 and external 2 structures.

[0053] Referring to figure 4A, the assembling method of a preferred embodiment of the invention comprises an approaching step, wherein the handle external structure 2 is approached externally to the door sheet 3, close to the other longitudinal side, in particular the other longitudinal face, of the bracket 4.

[0054] In the approaching step, the external protrusions 21, 22 are placed besides the internal protrusions 11, 12, so that the external protrusions may be inserted in the internal protrusions 21, 22.

[0055] Referring to figure 4B, the assembling method further comprises a positioning step, wherein the external protrusion 22 is inserted in the internal protrusion 12 in an oblique manner such that the internal 12 and external 22 protrusions are not aligned. In particular, the hook shaped portion 25 is inserted in the U-shaped portion 15 such that the sliding portion 25a slides on and then receives the structure guide 15a.

[0056] The clip fastening means 13, 23 are not locked at this stage. The structure guides 15a form a center of rotation, such that the external protrusion 22 may be rotated to be aligned and fixed to the internal protrusion 12. The centers of rotation for both external protrusions 11, 12 are illustrated by the axis 50 in figure 4B.

[0057] The position where the internal 1 and external 2 protrusions are not aligned is enabled by the U-shaped portion, and especially, the opened side of the U-shaped portion 15.

[0058] The assembling method further comprises a rotation and clipping step, wherein the handle is rotated according to a movement 27. Movement 27 is a circular movement enabled by the hooked portion 25 and the structure guide 15a. In addition, the structure guide supports the external protrusion 22 and thereby the handle external structure 2 during the movement 27.

[0059] During movement 27, the external protrusion 22 is rotated about axis 50 such that the external clip fastening means 23 cooperate with the internal clip fastening means 13, and the external stops 24 cooperate with the internal stops 14, such that the handle external structure 2 is fastened to the handle internal structure 1.

[0060] After movement 27, the external protrusion 22 is aligned with the internal protrusion 12 and the handle external structure 2 is secured as can be seen on figure 4C.

[0061] Referring to figures 5, after the handle external structure 2 is fixed on the handle internal structure 1, the cover 5 is mounted on the handle internal structure 2.

[0062] The cover 5 comprises a handle cover 51 and a lock cover 52. The lock cover 52 covers a cylinder lock or a void space.

[0063] The handle assembly is configured such that a user may actuate the handle external 2 and internal 1 structures according to arrow 60, so as to in turn actuate an opening mechanism of the door mechanically connected to the handle internal structure 1, and thereby open the door.

[0064] The handle internal structure is rotated about axis 30 until arm 18 abuts on bracket 4.

[0065] Figure 6 shows how the handle internal structure 1 is mounted so as to rotate about axis 30, and how the handle inertial systems are mounted on the bracket 4. The inertial system enables avoiding that the vehicle handle opens the door when actuated by inertial forces in cases of accident or a car crash. For example a reversible inertial system 7 is mounted on the bracket, and also an inertial system 6 based on a counterweight and a lever spring.

[0066] The invention has been described above with the aid of embodiments without limitation of the general inventive concept as defined in the claims.

[0067] Many modifications and variations will suggest themselves to those skilled in the art upon making reference to the foregoing illustrative embodiments, which are given by way of example only and which are not intended to limit the scope of the invention, that being determined solely by the appended claims. For example, the invention is described in details for swing-type handle but the skilled person may adapt the invention to other types of handles such as grip-type handles. In such handles, the handle internal structure comprises the axes enabling the rotation of the external handle structure according to the rotation axis substantially perpendicular to the longitudinal axis of the bracket.

[0068] In the claims, the word "comprising" does not exclude other elements or steps, and the indefinite article

"a" or "an" does not exclude a plurality. The mere fact that different features are recited in mutually different dependent claims does not indicate that a combination of these features cannot be advantageously used. Any reference signs in the claims should not be construed as limiting the scope of the invention.

Claims

1. Handle assembly for a vehicle door handle, the handle assembly comprising:

- a bracket (4) intended to be fixed in the vehicle door,
- a handle external structure (2), configured to be disposed on one longitudinal side of the bracket and mobile relatively to the said bracket (4), the handle external structure (2) comprising at least one external protrusion (21, 22),
- a handle internal structure (1) configured to be disposed on the other longitudinal side of the bracket, the handle internal structure (1) comprising at least one internal protrusion (11, 12),

wherein

- the internal (11, 12) and external (21, 22) protrusions are configured to be inserted in one another through the bracket (4), and
- the internal (11, 12) and external (21, 22) protrusions comprise fastening means (13, 23) configured to fasten the handle external (2) and internal (1) structures to one another when the internal (11, 12) and external (21, 22) protrusions are inserted in one another through the bracket (4).

2. Handle assembly according to claim 1, wherein the fastening means (13, 23) are complementary.

3. Handle assembly according to claim 2, wherein the complementary fastening (13, 23) means are clip fastening means.

4. Handle assembly according to anyone of the previous claims, wherein:

- the handle external structure (2) has a longitudinal shape along an external axis (20),
- the handle internal structure (1) has a longitudinal shape along an internal axis (10), and
- the handle is configured so that the external (20) and internal (10) axes are substantially parallel to one another.

5. Handle assembly according to claim 4, wherein the handle external structure rotates according to a ro-

tation axis substantially perpendicular or parallel to the internal and external axes.

6. Handle assembly according to any of the preceding claims, wherein

- the internal protrusion (11, 12) comprises at least one internal stop means (14),
- the external protrusion (21, 22) comprises at least one external stop means (24),

the internal (14) and external (24) stop means being configured to cooperate when the internal (11, 12) and external (21, 22) protrusions are inserted in one another so as to block relative movements of the handle external (2) and internal (1) structures in a direction opposite to the insertion direction (40).

7. Handle assembly according to any of the preceding claims, wherein one of the external or internal (11, 12) protrusion has a U-shaped portion (15) for engaging the other of the external (21, 22) or internal protrusion, and the fastening means (13, 23) are configured to block relative movements of the handle external (2) and internal (1) structures in a direction extending from the base (16) of the U-shaped portion (15) to the open side of the U-shaped portion (15).

8. Handle assembly according to claim 7, wherein the opposite branches (17) of the U-shaped portion (15) comprise clip fastening means (13).

9. Handle assembly according to any of claims 7 to 8, claim 6 applying, wherein the base (16) of the U-shaped portion (15) comprises stop means (14).

10. Handle assembly according to any of claims 7 to 9, wherein one of the external (21, 22) or internal protrusion has a hook shaped portion (25) configured to be inserted in the U-shaped portion (15) of the other protrusion (11, 12).

11. Handle assembly according to claim 10, claim 8 applying, wherein the hook shaped portion (25) comprises clip fastening means (23) arranged to cooperate with the clip fastening means (13) of the opposite branches (17) of the U-shaped portion (15).

12. Handle assembly according to any of claims 7 to 11, claims 9 and 10 applying, wherein the hook shaped portion (25) comprises stop means (24) arranged to cooperate with the stop means (14) of the U-shaped portion (15).

13. Vehicle door handle comprising

- the handle assembly as claimed in any of claims 1 to 12,

- a bracket (4) intended to be fixed in the vehicle door and disposed between the internal and external structures.

14. Method for assembling a vehicle door handle, the method comprising steps for

- fixing a bracket on a vehicle door sheet,
- placing a handle internal structure (1) at one longitudinal side of the bracket fixed on the door sheet, the handle internal structure (1) comprising at least one internal protrusion (11, 12),
- approaching a handle external structure (2), externally to the door sheet (3), close to the other longitudinal side of the bracket and facing the handle internal structure (1), the handle external structure comprising at least one external protrusion (21, 22),

wherein the at least one external protrusion (21, 22) is positioned besides the at least one internal protrusion (11, 12),

- inserting the internal (11, 12) and external (21, 22) protrusions in one another,
- fastening the handle external and internal structures to one another.

15. Method according to claim 14, wherein one of the handle external (2) or internal (1) structures has a U-shaped portion (15), and wherein the handle external structure (2) is fixed to the handle internal structure (1) by a movement (27) from the open side of the U-shaped portion (15) to the base of the U-shaped portion (15).

Amended claims in accordance with Rule 137(2) EPC.

1. Handle assembly for a vehicle door handle, the handle assembly comprising:

- a bracket (4) intended to be fixed in the vehicle door,
- a handle external structure (2), configured to be disposed on one longitudinal side of the bracket and mobile relatively to the said bracket (4), the handle external structure (2) comprising at least one external protrusion (21, 22),
- a handle internal structure (1) configured to be disposed on the other longitudinal side of the bracket, the handle internal structure (1) comprising at least one internal protrusion (11, 12),

wherein

- the internal (11, 12) and external (21, 22) protrusions are configured to be inserted in one another through the bracket (4), and

- the internal (11, 12) and external (21, 22) protrusions comprise fastening means (13, 23) configured to fasten the handle external (2) and internal (1) structures to one another when the internal (11, 12) and external (21, 22) protrusions are inserted in one another through the bracket (4).
2. Handle assembly according to claim 1, wherein the fastening means (13, 23) are complementary.
3. Handle assembly according to claim 2, wherein the complementary fastening (13, 23) means are clip fastening means.
4. Handle assembly according to anyone of the previous claims, wherein:
- the handle external structure (2) has a longitudinal shape along an external axis (20),
 - the handle internal structure (1) has a longitudinal shape along an internal axis (10), and
 - the handle is configured so that the external (20) and internal (10) axes are substantially parallel to one another.
5. Handle assembly according to claim 4, wherein the handle external structure rotates according to a rotation axis substantially perpendicular or parallel to the internal and external axes.
6. Handle assembly according to any of the preceding claims, wherein
- the internal protrusion (11, 12) comprises at least one internal stop means (14),
 - the external protrusion (21, 22) comprises at least one external stop means (24),
- the internal (14) and external (24) stop means being configured to cooperate when the internal (11, 12) and external (21, 22) protrusions are inserted in one another so as to block relative movements of the handle external (2) and internal (1) structures in a direction opposite to the insertion direction (40).
7. Handle assembly according to any of the preceding claims, wherein one of the external or internal (11, 12) protrusion has a U-shaped portion (15) for engaging the other of the external (21, 22) or internal protrusion, and the fastening means (13, 23) are configured to block relative movements of the handle external (2) and internal (1) structures in a direction extending from the base (16) of the U-shaped portion (15) to the open side of the U-shaped portion (15).
8. Handle assembly according to claim 7, wherein the opposite branches (17) of the U-shaped portion (15) comprise clip fastening means (13).
9. Handle assembly according to any of claims 7 to 8, claim 6 applying, wherein the base (16) of the U-shaped portion (15) comprises stop means (14).
10. Handle assembly according to any of claims 7 to 9, wherein one of the external (21, 22) or internal protrusion has a hook shaped portion (25) configured to be inserted in the U-shaped portion (15) of the other protrusion (11, 12).
11. Handle assembly according to claim 10, claim 8 applying, wherein the hook shaped portion (25) comprises clip fastening means (23) arranged to cooperate with the clip fastening means (13) of the opposite branches (17) of the U-shaped portion (15).
12. Handle assembly according to any of claims 7 to 11, claims 9 and 10 applying, wherein the hook shaped portion (25) comprises stop means (24) arranged to cooperate with the stop means (14) of the U-shaped portion (15).
13. Vehicle door handle comprising
- the handle assembly as claimed in any of claims 1 to 12,
 - a bracket (4) intended to be fixed in the vehicle door and disposed between the internal and external structures.
14. Method for assembling a vehicle door handle, the method comprising steps for
- fixing a bracket on a vehicle door sheet,
 - placing a handle internal structure (1) at one longitudinal side of the bracket fixed on the door sheet, the handle internal structure (1) comprising at least one internal protrusion (11, 12),
 - approaching a handle external structure (2), externally to the door sheet (3), close to the other longitudinal side of the bracket and facing the handle internal structure (1), the handle external structure comprising at least one external protrusion (21, 22),
- wherein the at least one external protrusion (21, 22) is positioned besides the at least one internal protrusion (11, 12),
- inserting the internal (11, 12) and external (21, 22) protrusions in one another,
 - fastening the handle external and internal structures to one another.
15. Method according to claim 14, wherein one of the handle external (2) or internal (1) structures has a

U-shaped portion (15), and wherein the handle external structure (2) is fixed to the handle internal structure (1) by a movement (27) from the open side of the U-shaped portion (15) to the base of the U-shaped portion (15).

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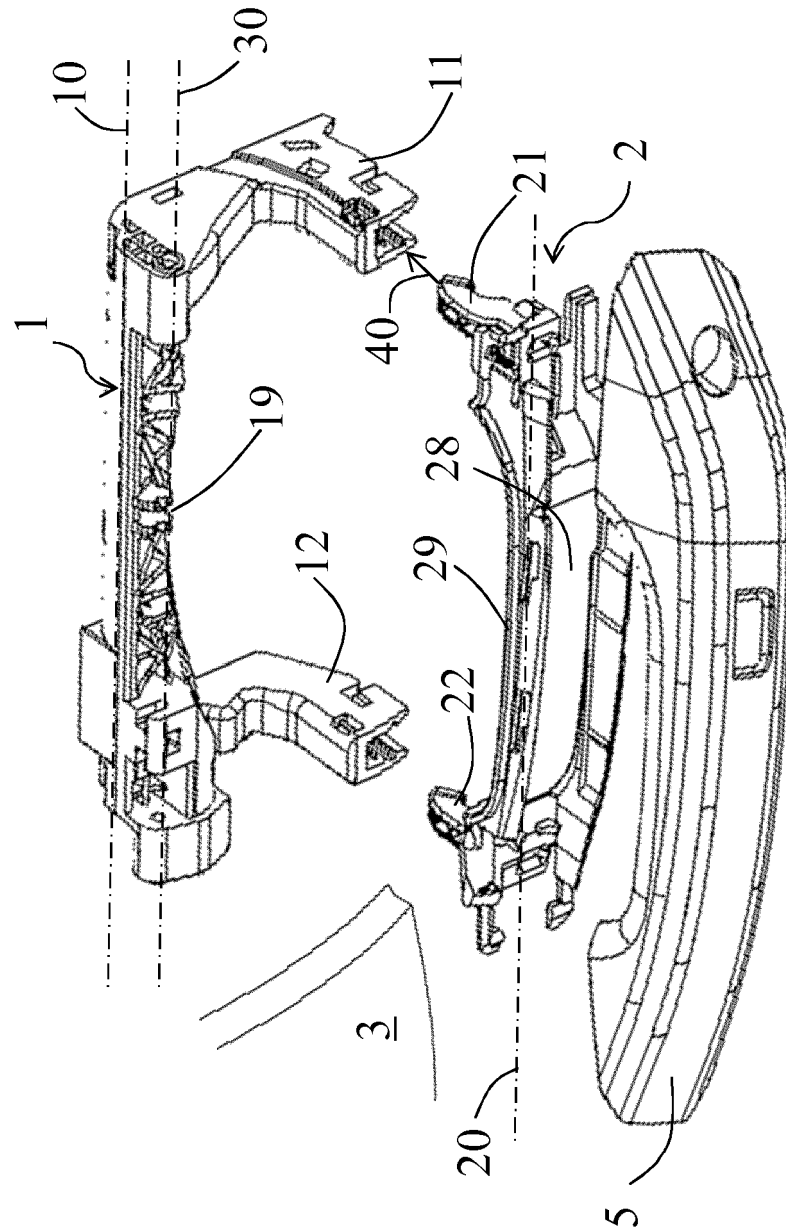


FIG. 1

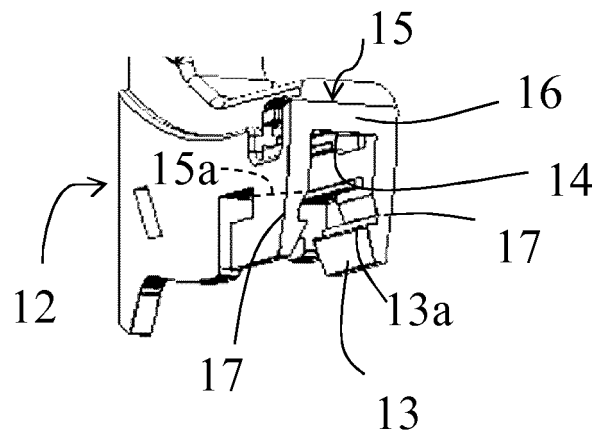


FIG. 2

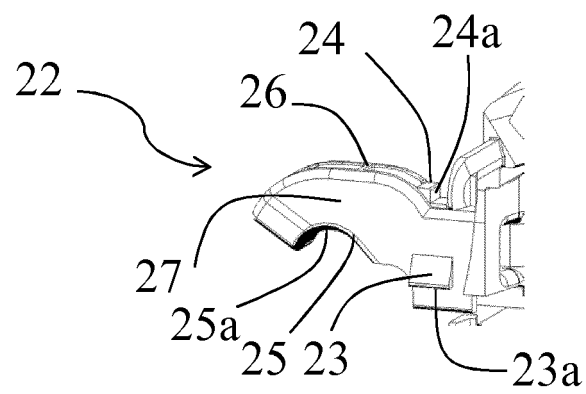


FIG. 3

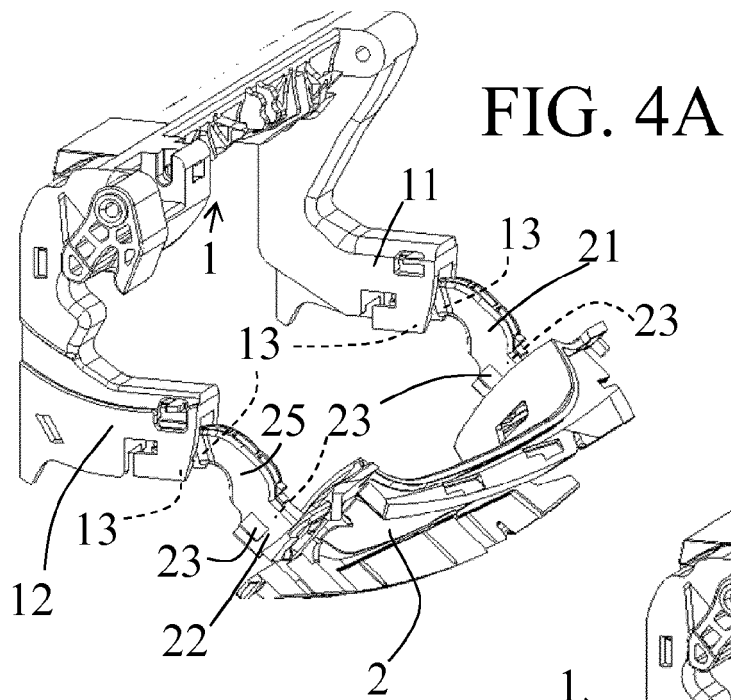


FIG. 4B

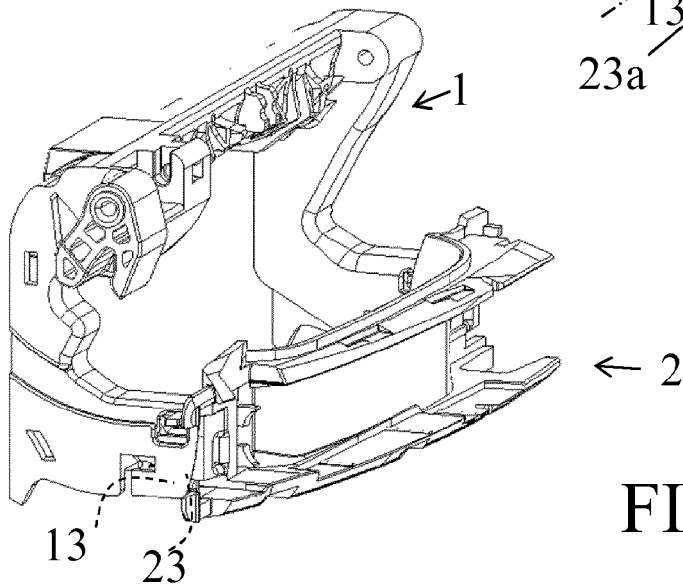
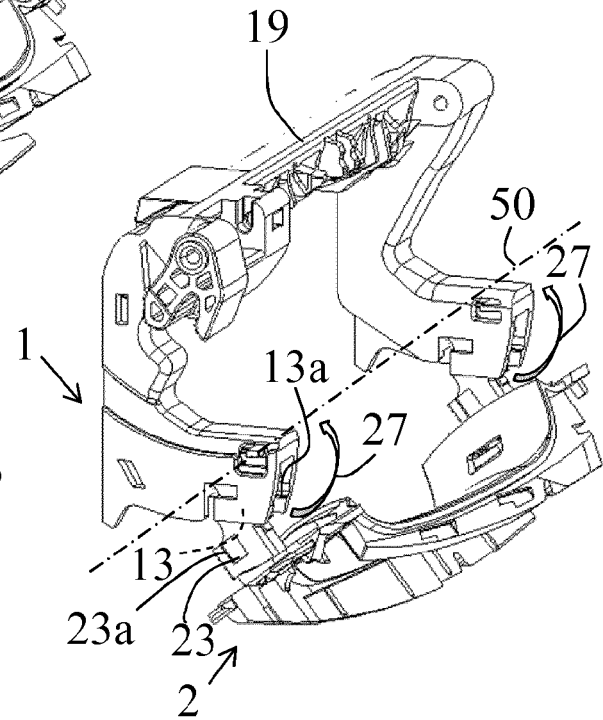
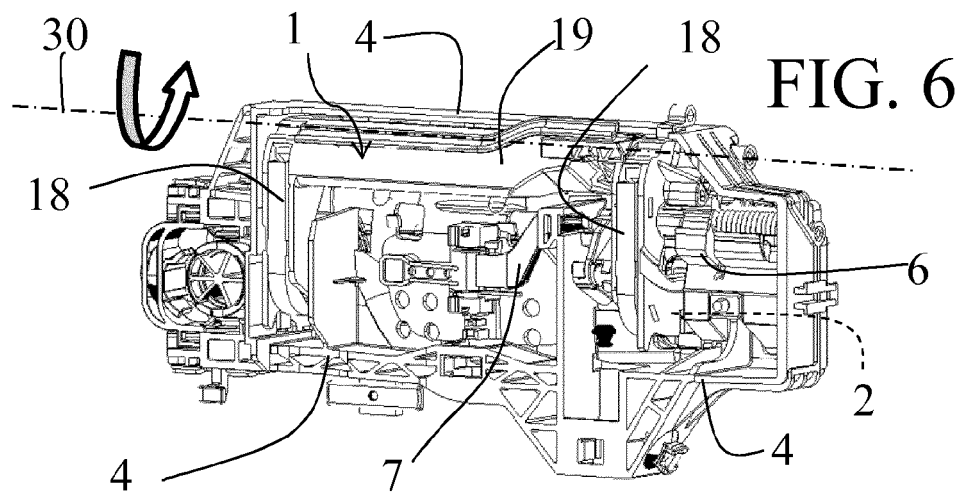
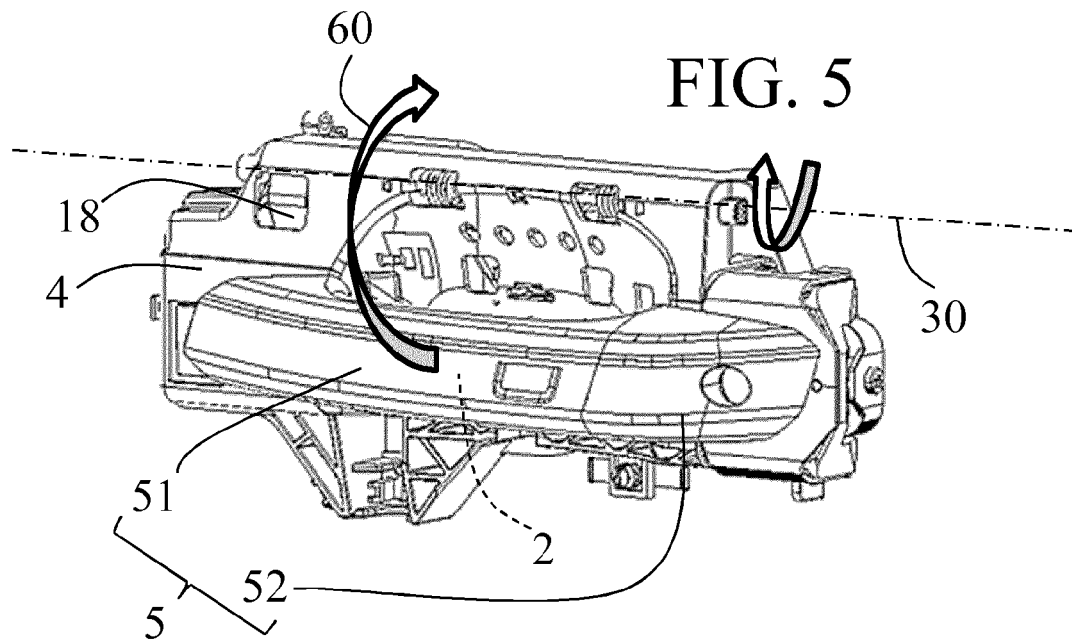


FIG. 4C





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