

(19)



(11)

EP 3 034 724 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
22.06.2016 Bulletin 2016/25

(51) Int Cl.:
E05B 79/06 (2014.01) E05B 85/16 (2014.01)

(21) Application number: **14199062.2**

(22) Date of filing: **18.12.2014**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

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(54) Handle bracket for an automotive vehicle door handle

(57) The invention relates to a handle bracket (1) for an automotive vehicle door handle, comprising a lever (2) configured to be actuated by a handle grip (5) and in turn actuate an unlatching mechanism of a vehicle door, wherein the lever (2) comprises a flexible leg (3,32) and the lever (2) is moveable between a lever delivery position and a lever operating position, wherein the lever (2) may be actuated so as to move the stretched flexible leg (3,32) out of the seat (10) in order

to move the lever from the lever delivery position to the lever operating position, and wherein the lever (2) may be actuated so as to make the flexible leg (3,31) slide on a movable projecting arm (4) adjacent to the seat (10) in order to move the lever from the lever operating position to the lever delivery position.

The invention further relates to an automotive vehicle door handle and assembling and disassembling methods.

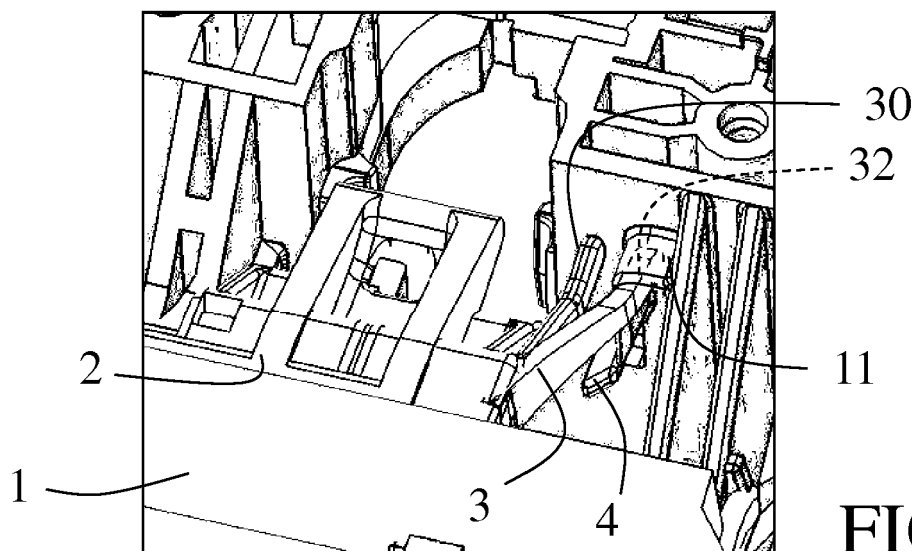


FIG. 1

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Description

[0001] The present invention relates to a handle bracket, in particular, for an automotive vehicle door handle. The invention further relates to an automotive vehicle door handle and corresponding assembling and disassembling methods.

[0002] Handle brackets and handle grips are components of the access mechanism system of the vehicle doors. Handle brackets generally comprises kinematics such as a lever.

[0003] The lever is rotatably mounted in the bracket and configured to be actuated by a handle grip and in turn actuate an unlatching mechanism of a vehicle door, such as a Bowden cable. For this purpose, the lever is configured to be mechanically connected to a handle column of the handle grip on a vehicle door when mounting the handle.

[0004] The kinematics may also comprise devices of the bracket configured to prevent unintentional openings of the door due to accelerations of the handle grip for example in case of side impacts.

[0005] The assembling method for handle comprises disposing the bracket on an inner side of a vehicle door panel and the handle grip on an outer side of a vehicle door panel and mechanically connecting the handle grip to the lever of the bracket.

[0006] In such a method, the lever may not be in the correct position for connecting it with the handle grip. Indeed, the operators that install the parts have to move the kinematics in order to allow the handle column to reach the lever. This disadvantage significantly slows down the assembling of the handle.

[0007] In the prior art of vehicle handles, handle brackets have been proposed with a lever delivery position function, wherein the lever comprises a leg that is engaged in a bracket surface or rib. Then by pulling the handle grip, the lever is irreversibly moved from a lever delivery position to a lever operating position.

[0008] The disadvantage of such a configuration is that in case of defects of a handle part, it is no more possible to put back the lever in the lever delivery position and disassemble the handle easily.

[0009] Another delivery position function was proposed wherein the bracket comprises a movable a fork configured to engage a lever and a counterweight.

[0010] The disadvantage of such a configuration is that it requires much space in the bracket for the movement of the structures of the fork involved in the engagement of the lever and of the counterweight. Furthermore, the fork of such a configuration increases significantly the weight of the handle bracket.

[0011] Thus, there is a need for a handle bracket having low space and weight requirements and further having a reversible lever delivery position in order to be easily disassembled.

[0012] In view of such a need, the invention proposes a handle bracket for an automotive vehicle door handle,

comprising:

a lever rotatably mounted in the bracket, and configured to be actuated by a handle grip and in turn actuate an unlatching mechanism of a vehicle door, wherein the lever comprises a flexible leg extending in a direction non parallel to the rotation axis of the lever, wherein the lever is moveable between

- a lever delivery position in which the flexible leg is stretched and engaged in a seat of the bracket, the said lever being blocked by a movable projecting arm being in an arm delivery position in which the arm projects adjacent to the seat,
- a lever operating position in which the lever is configured to be mechanically connected to a handle grip, and the leg is disengaged from the seat, the said lever being free to rotatably move, the movable projecting arm being in an arm operating position in which the arm is retracted from the seat,

wherein the lever is configured to move from the lever delivery position to the lever operating position by actuating the lever so as to move the stretched flexible leg out of the seat, the moveable projecting arm being retracted in the arm operating position, and wherein the lever is configured to move from the lever operating position to the lever delivery position by actuating the lever so as to make the flexible leg slide on the movable projecting arm being in the arm delivery position so that the leg is stretched and blocked in the seat.

[0013] Advantageously, the handle bracket according to the invention has low space and weight requirements. Indeed, when the leg has a volume much less than the lever, the moveable arm does not require a lot of space. Furthermore the bracket has a reversible lever delivery position and may be easily disassembled.

[0014] According to further embodiments which can be considered alone or in combination:

- the arm is configured to project on the path of the flexible leg when the lever is rotated; and/or
- the lever and the handle grip are configured such that by actuating the handle grip, the lever is actuated so as to move the stretched flexible leg out of the seat; and/or
- the arm is part of a fork inserted in the bracket; and/or
- the fork is configured so that a movement of the fork towards the bracket moves the arm in the arm delivery position, and a movement of the fork out of the bracket moves the arm in the arm operating position; and/or
- the leg extends in a direction perpendicular to the rotation axis of the lever, and is stretched in a direc-

tion parallel to the rotation axis of the lever; and/or

- the seat has a concavity for receiving the leg.

[0015] The invention also relates to an automotive vehicle door handle comprising

- a handle bracket according to the invention, and
- a handle grip configured to actuate the lever, the lever being configured to in turn actuate an unlatching mechanism of a vehicle door.

[0016] The invention further relates to a method for assembling an automotive vehicle door handle comprising the following steps

- a) providing a handle bracket comprising a lever rotatably mounted in the handle bracket, a seat and a moveable arm configured to project adjacent to the seat,
- b) mounting a handle grip in the handle, the handle grip being configured to actuate the lever, and the lever is configured to in turn actuate an unlatching mechanism of a vehicle door,
- c) retracting the arm from a projecting position adjacent to the seat,
- d) actuating the lever so as to move a stretched flexible leg of the lever out of the seat.

[0017] According to further embodiments which can be considered alone or in combination:

- in step d) the lever is actuated by actuating the handle grip; and/or
- the arm is part of a fork, and in step c) the arm is retracted by actuating the fork.

[0018] The invention further relates to a method for disassembling an automotive vehicle door handle comprising

- a handle bracket comprising a lever rotatably mounted in the handle bracket, a seat and a moveable arm configured to project adjacent to the seat; and
- a handle grip configured to actuate the lever, and the lever is configured to in turn actuate an unlatching mechanism of a vehicle door, the method comprising the following steps:
- e) moving the arm in a projecting position adjacent to the seat,
- f) actuating the lever so as to make the flexible leg slide on the projecting arm so that the leg is stretched and engaged in the seat,
- g) disconnecting mechanically the handle grip from the lever.
- h) disassembling a handle grip from the handle bracket.

[0019] According to further embodiments which can be

considered alone or in combination:

- in step f) the lever is actuated by actuating the handle grip; and/or
- the arm is part of a fork, and in step e) the arm is moved in the projecting position by actuating the fork.

[0020] 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 a close view of a lever of the bracket of the invention, in an engaged and in a disengaged positions;
- figure 2 is a schematic drawing of the engagement of the leg of the lever of figure 1 in a seat;
- figure 3 is a schematic drawing of the disengagement of the leg of the lever of figure 1 out of the seat;
- figure 4 is a close view of the lever of the bracket of the invention, in a disengaged position;
- figure 5 is a side view of the bracket of the invention.

[0021] Referring to figures 1 to 5, the invention relates to a bracket 1 that comprises a supporting part of the handle. The bracket 1 is configured to be disposed inside the door and comprises devices useful for the functioning of the handle.

[0022] The bracket 1 comprises a lever 2 rotatably mounted in around a rotation axis in the bracket 1. The bracket 1 preferably comprises a stop limiting the rotation of the lever 2.

[0023] The lever 2 is configured to be mechanically connected to a handle grip 5 via a handle column of the handle grip 5. The lever 2 is further configured to be mechanically connected to an unlatching mechanism, such as a Bowden cable (not represented). In such a configuration, when the handle grip 5 is actuated, the lever 2 is rotated and actuates the unlatching mechanism so as to unlatch a corresponding door.

[0024] The lever 2 is configured to move between a lever delivery and a lever operating position. In the lever delivery position, the lever is secured in the bracket 1 and enables the handle column to reach an operating position where the handle column may be mechanically connected to the lever 2 without being disturbed by movements of the lever 2. In the lever operating position, the lever 2 is unsecured and may be rotated about its rotation axis.

[0025] The lever 2 comprises a flexible leg 3 extending in a direction non parallel to the rotation axis of the lever 2, in particular in a direction perpendicular to the rotation axis of the lever 2.

[0026] The flexible leg 3 also has an operating position 30 and a delivery position 32 corresponding to the respective positions of the lever 2. In the leg operating position 30, the flexible leg 3 is free in the bracket 1. In the leg delivery position 32, the flexible leg 3 is engaged in

a seat 10 disposed in the bracket 1.

[0027] The seat 10 comprises at least a first wall 11 perpendicular to the longitudinal direction of flexible leg 3, and disposed between the leg's operating position 30 and the leg's delivery position 32. The seat 10 further comprises a second wall 12 perpendicular to the first wall 11. In particular, the first and second walls 11, 12 form a concavity for receiving the leg 3 in the leg delivery position 32. When the lever 2 is rotatably moved, the flexible leg 3 is in turn moved along the wall 11 of the seat 10.

[0028] The flexible leg 3 is configured to be stretched out of the leg operating position 30 unto the leg delivery position 32, held at least by the wall 11. In addition, the flexible leg 3 is configured to return from the leg delivery position 32 unto the leg operating position 30, when the leg 3 is moved beyond the wall 11. In particular the flexible leg 3 is first moved along the wall 11 so as to reach a leg intermediate position 31 before being moved unto the leg delivery position 32 or the leg operating position 30. In the normal use of the handle, the leg occupies a normal functioning position 33 corresponding to the position enabling the opening of the door. The said normal position 33 is disposed on the same side of the wall 11 of the seat. Here, the normal functioning position 33 is sensibly aligned with the operating position 30.

[0029] More particularly, the bracket 1 comprises an arm 4 configured to move between an arm delivery position shown in figures 1 and 2, and an arm operating position shown in figures 3 and 4. In the arm delivery position, the arm 4 projects adjacent to the wall 11, such that the arm 4 extends in the continuation of an end of the wall 11. In addition, the arm 4 is oblique with respect to the wall 11. In the arm operating position, the arm 4 is retracted from the wall 11.

[0030] The arm 4 is configured to project on the path of the flexible leg 3, between the leg operating position 30 and the leg intermediate position 31. Thus, when the flexible leg 3 is in the intermediate position and the arm 4 is projected, the flexible leg and the arm 4 are configured such that the flexible leg 3 can slide on arm 4 and thus be stretched toward the leg delivery position 32 as the lever 2 is rotated. More particularly, when the arm 4 is projected in the arm delivery position, the flexible leg 3 of the lever 2 is forced to be housed in the seat 10 of the bracket as shown in figure 2.

[0031] When the flexible leg 3 is in the intermediate position 31 and the arm 4 is retracted, the flexible leg 3 returns to its non-stretched state which is the leg operating position 30. More particularly, when the arm is retracted in the arm delivery position, the arm 4 is out of the way of the flexible leg 3. The flexible leg 3 once actuated is thus free to move out of the seat 10 of the bracket as shown in figure 3, and functions normally between the leg operating position 30 and the leg normal functioning position 33.

[0032] Advantageously, the arm 4 enables to stretch the flexible leg 3 without having to insert a tool in the bracket to move the flexible leg 3 towards the seat 10,

or out of the seat 10. This leads to a quick disposition of the lever 2 in the delivery position and thereby a quick disassembling and assembling method.

[0033] Referring to figure 5, the bracket 1 is of general form known as such in the prior art except from the features of the present invention.

[0034] The arm 4 is part of a fork 40 mounted in the bracket 1. The fork 40 enables to control the movements of the arm 4 from outside the bracket. The fork 40 may be configured such that a movement of the fork 40 towards the bracket 1 moves the arm 4 in the arm delivery position, and a movement of the fork 40 out of the bracket 1 moves the arm 4 in the arm operating position. For example, the fork 40 may comprise a threaded part mechanically connected to the arm 4. Such a threaded part is configured such that when the threaded part is turned in a given sense, the arm 4 is retracted from the seat; and when the threaded part is turned in the opposite sense, the arm 4 is projected adjacent to the wall 11 of the seat 10.

[0035] More particularly, during the assembly of the handle, the fork 40 is screwed. The arm 4 is then retracted in the arm operating position and the arm 4 is out of the way of the flexible leg 3. The handle is then free to be used normally by an user.

[0036] During the disassembly, the fork 40 is unscrewed. The arm 4 is then projected in the delivery position, and enables to put back the flexible leg 3 in the seat 10, when the lever 2 is actuated.

[0037] Another system for moving the fork 40 may be used such as at least one push button.

[0038] A handle grip 5 is configured to be mechanically connected to the lever 2 by means of a handle column, and the lever 2 may then be actuated by actuating the handle grip.

[0039] Advantageously, the lever 2 are configured such that the lever 2 may be actuated so as to move between the lever operating position and the lever delivery position, by actuating the handle grip 5 without having to insert a tool in the bracket to move the lever 2 accordingly. This leads to a quick displacement of the lever 2 in the delivery position and in the operating position and thereby a quick disassembling and assembling method.

[0040] The method for assembling an automotive vehicle door handle comprising the bracket 1 starts with the steps of (a) providing a handle bracket 1 of the invention, and disposing the bracket 1 on an inner side of a vehicle door panel.

[0041] The assembling method further comprises the step of (b) mounting the handle grip 5 in the handle from outside or the door panel, and connecting mechanically the handle grip 5 to the lever 2 by means of the handle column. In such a configuration, the handle grip 5 is configured to actuate the lever 2, and the lever 2 is configured to in turn actuate an unlatching mechanism of a vehicle door.

[0042] The assembling method further comprises the step of (c) actuating the fork such that the arm 4 is re-

tracted from its projecting position adjacent to the seat 10. More particularly, in step (c) the fork 4 is screwed such that the arm 4 is retracted in the arm operating position.

[0043] The assembling method further comprises the step of (d) actuating the handle grip 5 and thereby actuating the lever 2 so as to move a stretched flexible leg 3 out of the a leg delivery the position 32 in the seat 10 unto the leg operating position 30.

[0044] The method for disassembling an automotive vehicle door handle comprising the bracket 1 starts with the steps of (e) actuating the fork 40 for example by turning a threaded part of the fork 40. The arm 4 of the fork is thus moved in the projecting position adjacent to the seat 10. More particularly, in step (e) the fork 4 is unscrewed such that the arm 4 is projected in the arm delivery position.

[0045] The disassembling method further comprises the step of (f) actuating, in particular pulling the handle grip 5 and thereby actuating the lever 2 so as to move the flexible leg 3 from the leg operating position 30 to the normal functioning position 33. The flexible leg 3 then slides on the projecting arm 4 according to the arrow f_2 to the intermediate position 31; and actuating, in particular releasing the handle grip 5 and thereby actuating the lever 2 so as to move the flexible leg 3 from the leg intermediate position 31 unto the leg delivery position 32 by following the arrow f_3 . The leg 3 is thus stretched and engaged in the seat 10.

[0046] The disassembling method further comprises the step of (g) disconnecting mechanically the handle grip 5 from the lever 2, and (h) disassembling a handle grip 5 from the handle bracket 1.

Claims

1. Handle bracket (1) for an automotive vehicle door handle, comprising:

a lever (2) rotatably mounted in the bracket (1), and configured to be actuated by a handle grip (5) and in turn actuate an unlatching mechanism of a vehicle door,
wherein the lever (2) comprises a flexible leg (3,32) extending in a direction non parallel to the rotation axis of the lever (2),
wherein the lever (2) is moveable between

- a lever delivery position in which the flexible leg (3,32) is stretched and engaged in a seat (10) of the bracket (1), the said lever (2) being blocked by a movable projecting arm (4) being in an arm delivery position in which the arm projects adjacent to the seat (10),
- a lever operating position in which the lever (2) is configured to be mechanically con-

nected to a handle grip (5), and the leg (3,32) is disengaged from the seat (10), the said lever (2) being free to rotatably move, the movable projecting arm (4) being in an arm operating position in which the arm is retracted from the seat (10),

wherein the lever (2) is configured to move from the lever delivery position to the lever operating position by actuating the lever (2) so as to move the stretched flexible leg (3,32) out of the seat (10), the moveable projecting arm being retracted in the arm operating position, and
wherein the lever (2) is configured to move from the lever operating position to the lever delivery position by actuating the lever so as to make the flexible leg (3,31) slide on the movable projecting arm (4) being in the arm delivery position so that the leg (3,32) is stretched and blocked in the seat (10).

2. Handle bracket according to claim 1, wherein the arm (4) is configured to project on the path of the flexible leg (3) when the lever (2) is rotated.
3. Handle bracket according to claim 1 or 2, wherein the lever (2) and the handle grip (5) are configured such that by actuating the handle grip (5), the lever (2) is actuated so as to move the stretched flexible leg (3,32) out of the seat (10).
4. Handle bracket according to any of claims 1 to 3, wherein the arm (4) is part of a fork (40) inserted in the bracket.
5. Handle bracket according to claim 4, wherein the fork (40) is configured so that a movement of the fork (40) towards the bracket (1) moves the arm (4) in the arm delivery position, and a movement of the fork (40) out of the bracket (1) moves the arm (4) in the arm operating position.
6. Handle bracket according to any of claims 1 to 5, wherein the leg (3,30,31,32) extends in a direction perpendicular to the rotation axis of the lever (2), and is stretched in a direction parallel to the rotation axis of the lever (2).
7. Handle bracket according to any of claims 1 to 6, wherein the seat (10) has a concavity for receiving the leg (3,32).
8. Automotive vehicle door handle comprising
 - a handle bracket (1) as claimed in any of claims 1 to 7, and
 - a handle grip (5) configured to actuate the lever (2), the lever being configured to in turn actuate

an unlatching mechanism of a vehicle door.

9. Method for assembling an automotive vehicle door handle comprising the following steps

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- a) providing a handle bracket (1) comprising a lever (2) rotatably mounted in the handle bracket (1), a seat (10) and a moveable arm (4) configured to project adjacent to the seat (10),
- b) mounting a handle grip (5) in the handle, the handle grip (5) being configured to actuate the lever (2), and the lever (2) is configured to in turn actuate an unlatching mechanism of a vehicle door,
- c) retracting the arm (4) from a projecting position adjacent to the seat (10),
- d) actuating the lever (2) so as to move a stretched flexible leg (3,32) of the lever (2) out of the seat (10).

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10. Method according to claim 9, wherein in step d) the lever (2) is actuated by actuating the handle grip (5).

11. Method according to claim 9 or 10, wherein the arm (4) is part of a fork (40), and in step c) the arm is retracted by actuating the fork (40).

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12. Method for disassembling an automotive vehicle door handle comprising

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- a handle bracket (1) comprising a lever (2) rotatably mounted in the handle bracket, a seat (10) and a moveable arm (4) configured to project adjacent to the seat (10); and
 - a handle grip (5) configured to actuate the lever (2), and the lever (2) is configured to in turn actuate an unlatching mechanism of a vehicle door,
- the method comprising the following steps:
- e) moving the arm (4) in a projecting position adjacent to the seat (10),
 - f) actuating the lever (2) so as to make the flexible leg (3,31) slide on the projecting arm (4) so that the leg (3,32) is stretched and engaged in the seat (11),
 - g) disconnecting mechanically the handle grip (5) from the lever (2).
 - h) disassembling a handle grip (5) from the handle bracket (1).

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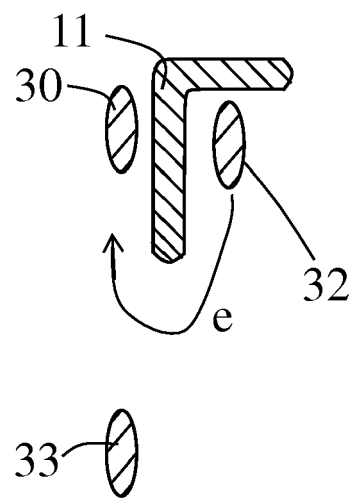
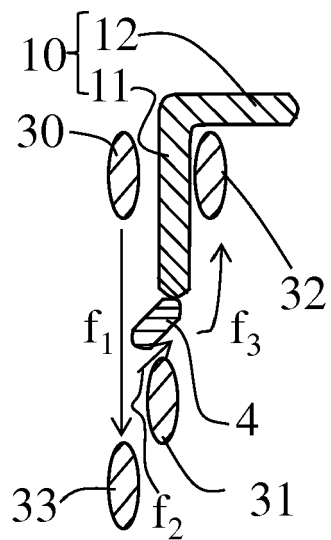
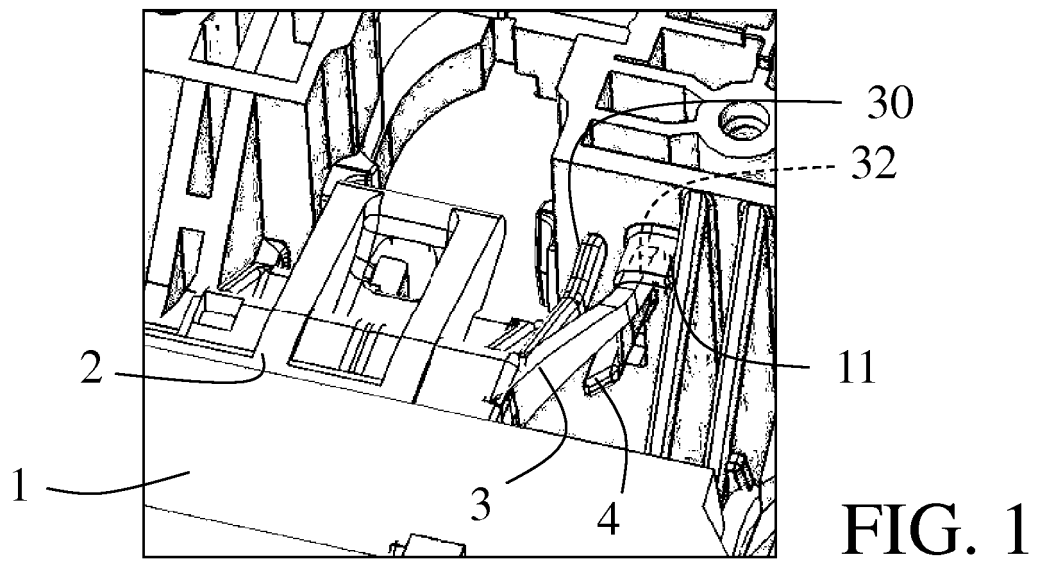
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13. Method according to claim 12, wherein in step f) the lever (2) is actuated by actuating the handle grip (5).

14. Method according to claim 12 or 13, wherein the arm (4) is part of a fork (40), and in step e) the arm is moved in the projecting position by actuating the fork (40).

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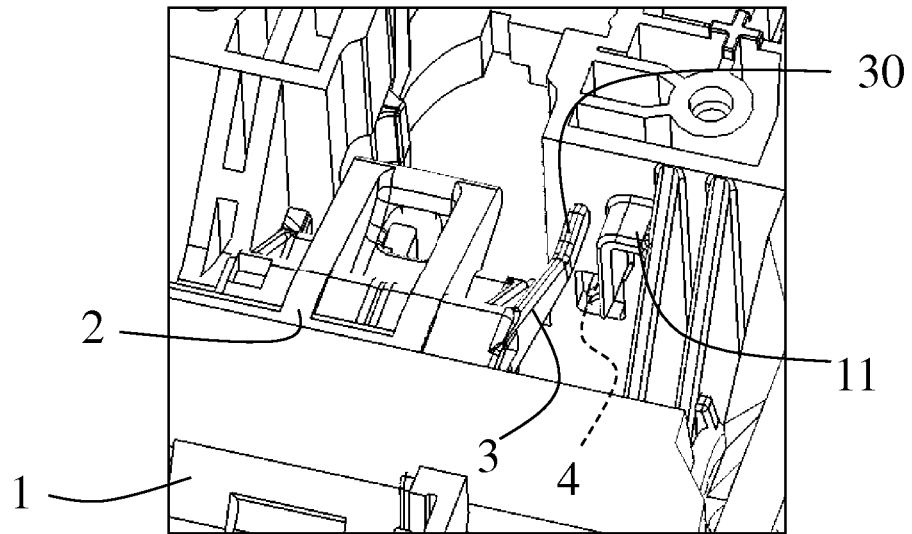


FIG. 4

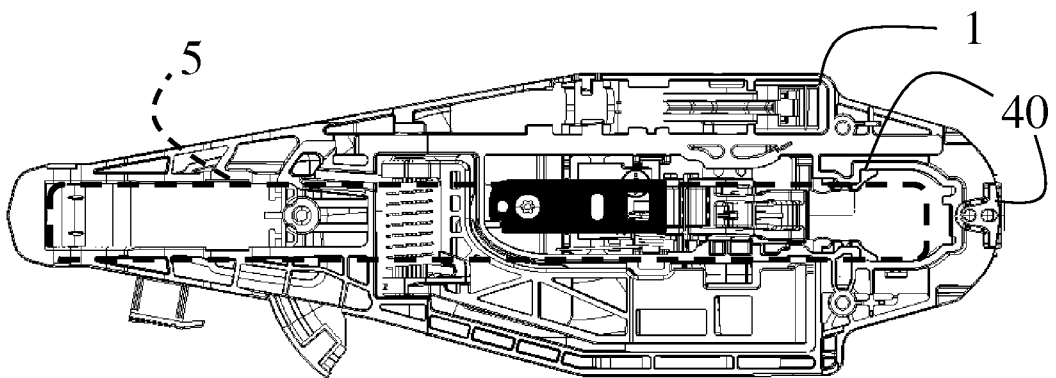


FIG. 5



EUROPEAN SEARCH REPORT

Application Number
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EPO FORM 1503 03/82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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