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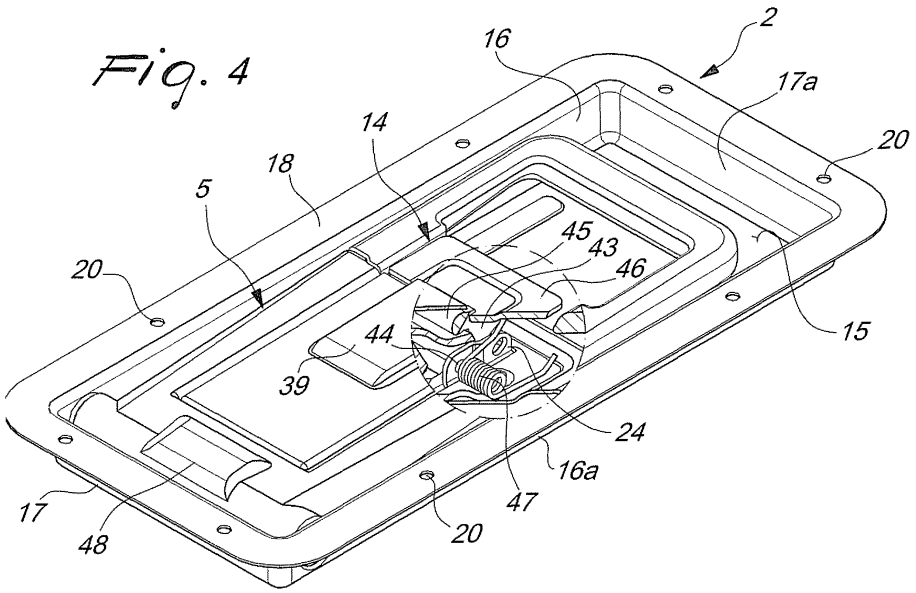
(54) Handle device for opening and closing the door of the body of trucks, trailers and the like

(57) A handle device for opening and closing the door of the body of trucks, trailers and the like, comprising at least one base (2), which is inserted in a respective seat (3) provided in the door (4), which is adapted to accommodate at least one grip bar (5) which is articulated, at a first end (6), to at least one rod (7) for actuating pawl means adapted to couple the door (4) to the frame of the body and forms, at the second end (8), at least one substantially ergonomic grip wing (9) for the operator, the grip bar (5) being able to turn manually between at least one closed angular position, in which it is accommodated within the base (2) and in which the pawl means are coupled to the frame of the body, and at least one open angular position, in which the grip bar (5) is substantially spaced from the base (2) and the pawl means are uncoupled from the frame of the body, so as to allow the free opening of the door (4), the base (2) comprising at least one first substantially box-like open element (10), which has a substantially laminar three-dimensional shape and is locked in the seat (3), and at least one second element (11), which has a substantially laminar three-dimensional shape, is associated with the first element (10) and forms rotary support means (13) for a button (14) for manual safety locking and release of the grip bar (5), the grip bar (5) having a substantially laminar three-dimensional shape so as to form, at the first end (6), at least one substantially tubular portion (29) for keying along the rod (7).

Fig. 4



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Description

[0001] The present invention relates to a handle device for opening and closing the door of the body of trucks, trailers and the like.

[0002] Devices for opening and closing the doors of trucks are currently made of materials such as steel or cast iron, sized appropriately in order to ensure optimum mechanical strength and maximum durability. Meeting these requirements entails the use of a sufficient amount of raw material, the cost of which affects considerably the total production cost of the items being considered; further, the manufacture of these products entails planning a series of cycles which provide for the production of respective blanks, consequently using various pieces of equipment and machine tools. Substantially, these traditional production technologies currently affect the final cost of the item decisively and to an extent that is no longer acceptable. At the same time, the need is felt to provide opening and closure devices that allow to achieve the maximum assurance of security against any attempted break-in or tampering.

[0003] The aim of the present invention is to obviate the above-mentioned drawbacks and meet the mentioned requirements, by providing a handle device for opening and closing the door of the body of trucks, trailers and the like, which although offering excellent characteristics of strength and durability can be manufactured with a smaller amount of raw materials and in a smaller number of cycles, so as to limit cycle times.

[0004] Within this aim, an object of the present invention is to provide a handle device for opening and closing the door of the body of trucks, trailers and the like that is adapted to provide users with the maximum assurances of safety against attempts to break into, or tamper with, the vehicle.

[0005] Another obj ect of the present invention is to provide a handle device which is simple, relatively easy to provide in practice, safe in use, effective in operation, and has a relatively low cost.

[0006] This aim and these and other objects that will become better apparent hereinafter are achieved by the present handle device for opening and closing the door of the body of trucks, trailers and the like, characterized in that it comprises at least one base, which is inserted in a respective seat provided in the door, which is adapted to accommodate at least one grip bar which is articulated, at a first end, to at least one rod for actuating pawl means adapted to couple said door to the frame of the body and forms, at the second end, at least one substantially ergonomic grip wing for the operator, said grip bar being able to turn manually between at least one closed angular position, in which it is accommodated within said base and in which said pawl means are coupled to the frame of the body, and at least one open angular position, in which said grip bar is substantially spaced from said base and said pawl means are uncoupled from the frame of the body, so as to allow the free opening of the door, said base comprising at least one first substantially box-like open element, which has a substantially laminar three-dimensional shape and is locked in said seat, and at least one second element, which has a substantially laminar three-dimensional shape, is associated with said first element and forms rotary support means for a button for manual safety locking and release of said grip bar, said grip bar having a substantially laminar three-dimensional shape so as to form, at said first end, at least one substantially tubular portion for keying along said rod.

[0007] Further characteristics and advantages of the invention will become better apparent from the following detailed description of a preferred but not exclusive embodiment of a handle device for opening and closing the door of the body of trucks, trailers and the like, according to the invention, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is a front view of the handle device according to the invention, with the handle in the closed angular position;
Figure 2 is a partially sectional side elevation view of the device;
Figure 3 is a transverse sectional view of the device, taken along the line III-III of Figure 1;
Figure 4 is a partially sectional perspective view of the device with the grip bar in the closed angular position;
Figure 5 is a front view of the first element of the base of the device according to the invention;
Figure 6 is a front view of the second element of the base of the device;
Figure 7 is a perspective view of said second element;
Figure 8 is a front view of a detail of the grip bar of the device according to the invention;
Figure 9 is a perspective view of said detail of the grip bar.

[0008] In the exemplary embodiments that follow, individual characteristics, given in relation to specific examples, may actually be interchanged with other different characteristics that exist in other exemplary embodiments.

[0009] Moreover, it is noted that anything found to be already known during the patenting process is understood not to be claimed and to be the subject of a disclaimer.

[0010] With reference to the figures, the reference numeral 1 generally designates a handle device for opening and closing the door of the body of trucks, trailers and the like according to the invention.

[0011] The device according to the invention is particularly of the type adapted to open and close the door of the body of vehicles used to transport goods, for example and preferably vehicles provided with a hermetic body.

[0012] According to the invention, the device comprises advantageously at least one base, generally desig-

nated by the reference numeral 2, which is inserted in a respective seat 3 provided in a door 4: the seat 2 is adapted to accommodate at least one grip bar, generally designated by the reference numeral 5, which is articulated, at a first end 6, to at least one rod 7 (Figure 8) for actuating pawl means, not shown for the sake of simplicity in the figures but of a substantially known type, which are adapted to couple the door 4 to the frame of the body. The grip bar 5 forms, at its second end 8, a substantially ergonomic grip wing 9 for the operator.

[0013] The grip bar 5 can be turned conveniently manually between a closed angular position, in which it is accommodated within the base 2 and in which the pawl means are rigidly coupled to the frame of the body so as to close the door 4, and an open angular position, in which the grip bar 5 is substantially spaced from the base 2 and the pawl means are uncoupled from the frame of the body, so as to allow the free opening of the door 4.

[0014] Conveniently, the base 2 comprises a first open box-like element 10 (Figure 5), which has a substantially laminar three-dimensional shape and is locked in the seat 3 by way of fixing means (for example rivets, screws or the like); the base 2 further comprises a second element 11, which also has a substantially laminar three-dimensional shape, is rigidly associated with the first element 10 in the central portion 12, and forms means 13 for the rotary support of a button 14 for manual safety locking and release of the grip bar 5.

[0015] In greater detail, the first element 10 comprises conveniently a bottom 15, four side walls 16, 16a, 17, 17a, which are connected to the bottom 15 and are substantially perpendicular thereto, and a perimetric frame 18, which is connected to the side walls 16, 16a, 17, 17a and is substantially flat and parallel with respect to the bottom 15; the bottom 15 is affected by a respective distribution of first holes 19a, 19b, which are adapted respectively to fix (in the case of the first holes 19a) by means of rivets (or other equivalent elements) the second element 11, and to fix and center the element 11 (in the case of the first holes 19b). The perimetric frame 18 is instead affected by a respective distribution of peripheral holes 20, which are adapted for fixing to the door 4 with the most suitable elements (rivets, screws or others).

[0016] The bottom 15 of the first element 10 forms at least one protrusion 21 (Figure 5), which is adapted to surround the perimeter of the second element 11, so that said second element can be positioned easily and correctly on the first element 10 and be fixed thereto. The protrusion 21 is conveniently adapted to constitute a structural stiffening member for the first element 10.

[0017] The first element 10 is advantageously made of a material such as steel plate or the like (for example other metals); this choice makes its manufacture extremely convenient, saving materials and resources.

[0018] The second element 11 of the base 2 (Figures 6, 7) is conveniently made of a material such as steel plate and is simple and cheap to manufacture. The second element 11 comprises, as mentioned above, the rotary support means 13 for the button 14 for safety manual release and locking of the grip bar 5; such rotary support means conveniently comprise a first pair of mutually facing eyelets 22a, 22b. In particular, the first eyelets 22a, 22b are formed by portions of the first element 11 which are conveniently blanked along the edges and folded at right angles.

[0019] The second element 11 forms a second pair of eyelets 23a, 23b, on which respective customs seals can be fastened. The eyelets 23a, 23b are obtained from portions of the first element 11 which are conveniently blanked along the edges and folded at right angles.

[0020] The second element 11 comprises a rear eyelet 24 for the engagement of a security padlock (not shown in the figures, but of a conventional type) to be positioned below the safety locking and release button 14: the padlock allows advantageously to prevent, by interference, the actuation of the button 14 and accordingly prevent the rotation of the grip bar 5 in the direction for opening the door 4. This allows to increase the security of the device against any attempts at breaking in or tampering, and the placement of the padlock on the inside prevents it from damaging external parts of the device: moreover, the padlock remains completely recessed within the contour of the device, without protruding parts.

[0021] Further, the second element 11 comprises advantageously a front eyelet 25 for the engagement of a first end of a first spring 26, which is adapted to retain the grip bar in the closed position (Figures 2, 3). The second element 11 forms a distribution of second holes 27 for fixing (for example by means of rivets) to the first element 10, which are provided on respective studs and are arranged substantially at the first holes 19, and a central circular opening 28. The second element 11 forms centrally a sort of ridge 28a, which has a substantially C-shaped geometry and constitutes a stiffening member of the second element 11.

[0022] The grip bar 5 has a substantially laminar three-dimensional shape, so as to form, particularly at the first end 6, a substantially tubular portion 29 for rigid keying along the rod 7: the grip bar 5 is made conveniently of a material such as steel plate. In particular, the tubular portion 29 is obtained advantageously by folding over an end flap of the metal plate.

[0023] The grip bar 5 has the second end 8 which comprises two extensions 30, 31, which are substantially mutually parallel, each having a substantially L-shaped transverse cross-section (Figure 9), the ergonomic grip wing 9 being rigidly coupled thereto and being made for example of synthetic material such as plastics or the like (Figures 2 and 3 in particular). One of the extensions 30 forms a lateral eyelet 32, which is adapted to fix the second tip of the first spring 26 for retaining the grip bar 5 in the closed angular position of the door 4.

[0024] The grip bar 5 forms a central opening 33, which is substantially circular with parallel bevels and in which a key-operated detent 34 of a substantially traditional type is fixed, allowing to prevent, in its closed configura-

tion, the actuation of the safety locking and release button 14 of the grip bar 5. With the grip bar 5 in the closed angular position, the end of the key-operated detent 34 is accommodated in the central opening 28 of the second element 11.

[0025] The grip bar 5 forms, substantially at the first end 6, a substantially rectangular cutout 35, which forms, along one of the sides, a sort of central tab 36, which is affected by two parallel slots 37, within which the second pair of eyelets 23a, 23b for the application of customs seals are adapted to engage when the grip bar 5 is in the closed angular position.

[0026] The substantially rectangular cutout 35 forms, along one of the sides, a first perforated lateral tab 38, which is substantially perpendicular to the plane of the grip bar 5 and supports rotatably, by way of pivot means, a protective flap 39 for closing at the front the grip bar 5, also preferably made of steel plate.

[0027] The rectangular cutout 35 forms, along another one of the sides, a second lateral tab 40, which is perforated and is substantially flat and parallel with respect to the plane of the grip bar 5 and is intended to engage one of the ends of a second spring 41 for retaining the flap 39 in its closed position (Figure 3). The grip bar 5 further forms conveniently a contoured edge 42, which is comprised between the two extensions 30 and 31.

[0028] The locking and release button 14 comprises a substantially rocker-like body 43, which is provided with a through pivot 44 adapted to engage rotatably, with its opposite ends, in the first pair of eyelets 22a, 22b, a sort of lug 44a, and an end tooth 45, which abuts against the contoured edge 42 of the grip bar 5 so as to retain it in the closed angular position; with the button 14 in the position for locking the grip bar 5, the lug 44a is arranged below the key-operated detent 34 and interferes with it. The rocker-like body 43 is associated with a substantially flat upper surface 46 for manual actuation, which is arranged between the two extensions 30, 31. Advantageously, the center of rotation of the rocker-like body 43 with respect to the first pair of eyelets 23a, 23b is arranged so that when the button 14 is in the position for locking the grip bar 5 any moment applied to the grip bar 5 in the direction for opening it produces, by reaction, a moment on the rocker-like body 43 in the direction for retaining the grip bar 5, thus ensuring maximum closure safety in any operating condition.

[0029] At least one of the two pivot-like tabs 44 is conveniently associated with a respective spiral spring 47, which is adapted to retain elastically the button 14 in the position for locking the grip bar 5 in the closed angular position of the door 4. In greater detail, the device comprises conveniently two mutually opposite spiral springs 47, which are associated respectively with the two pivot-like tabs 44: this ensures optimum retention of the grip bar 5 even if one of the spiral springs 47 breaks accidentally.

[0030] The grip bar 5 forms conveniently, at the first end 6, a sort of surface camber 48, which is conveniently contoured and sized and is adapted to give strength and rigidity to the grip bar 5; in particular, the surface camber 48 allows to increase the resisting cross-section of the grip bar 5 without increasing weight and increasing the material used, and accordingly the risk of the onset of cracks is reduced. Two longitudinal lateral bevels 49 are provided for this purpose.

[0031] The grip bar 5, in an angular position for closing the door 4, is accommodated completely within the base 2 and does not protrude from it, so as to contain the maximum dimensions of the vehicle.

[0032] It should be noted that the steel plate with which the grip bar 5, the first element 10 and the second element 11 are made is preferably rather thin and appropriately sized so as to minimize the weight and cost of these components without however penalizing thereby the strength characteristics of the grip bar 5. This, moreover, allows to increase the thickness of the door 4 for an equal total thickness of the assembly, giving it greater strength.

[0033] The method of use of the device according to the invention is as follows. When the door 4 is closed, in order to open it, it is necessary, after opening the flap 39, to remove the customs seals engaged in the second pair of eyelets 23a, 23b, remove the security padlock fixed in the rear eyelet 24 and act on the key-operated detent 34. In this manner it is possible to release the button 14 and accordingly turn the grip bar 5 in order to open the door 4.

[0034] It has thus been shown that the invention achieves the intended aim and objects.

[0035] The device according to the invention can be provided advantageously with minimum use of raw materials and further by having a single blank instead of several traditional blanks.

[0036] Further, security against break-ins and tampering is evidently increased thereby.

[0037] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

[0038] All the details may further be replaced with other technically equivalent ones.

[0039] The embodiment of the present invention shall be carried out in the most scrupulous compliance with the statutory and regulatory provisions related to the products of the invention or correlated thereto and following any required authorization of the corresponding competent authorities, with particular reference to regulations related to safety, environmental pollution and health.

[0040] In practice, the materials used, as well as the shapes and dimensions, may be any according to requirements without thereby abandoning the scope of the protection of the appended claims.

[0041] The disclosures in Italian Patent Application No. BO2005A000569 from which this application claims priority are incorporated herein by reference.

[0042] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increas-

ing 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 handle device for opening and closing the door of the body of trucks, trailers and the like, **characterized in that** it comprises at least one base (2), which is inserted in a respective seat (3) provided in the door (4), which is adapted to accommodate at least one grip bar (5) which is articulated, at a first end (6), to at least one rod (7) for actuating pawl means adapted to couple said door (4) to the frame of the body and forms, at the second end (8), at least one substantially ergonomic grip wing (9) for the operator, said grip bar (5) being able to turn manually between at least one closed angular position, in which it is accommodated within said base (2) and in which said pawl means are coupled to the frame of the body, and at least one open angular position, in which said grip bar (5) is substantially spaced from said base (2) and said pawl means are uncoupled from the frame of the body, so as to allow the free opening of the door (4), said base (2) comprising at least one first substantially box-like open element (10), which has a substantially laminar three-dimensional shape and is locked in said seat (3), and at least one second element (11), which has a substantially laminar three-dimensional shape, is associated with said first element (10) and forms rotary support means (13) for a button (14) for manual safety locking and release of said grip bar (5), said grip bar (5) having a substantially laminar three-dimensional shape so as to form, at said first end (6), at least one substantially tubular portion (29) for keying along said rod (7).

2. The handle device according to claim 1, **characterized in that** said first element (10) comprises a bottom (15), four side walls (16, 16a, 17, 17a) connected to said bottom (15) and substantially perpendicular thereto, and a perimetric frame (18) which is connected to said side walls (16, 16a, 17, 17a) and is substantially flat and parallel with respect to said bottom (15), which is affected by a distribution of first holes (19) adapted for fixing said second element (11), said perimetric frame (18) being affected by a distribution of peripheral holes (20) adapted for fixing to the door (4).

3. The handle device according to claims 1 and 2, **characterized in that** said bottom (15) of said first element (10) forms at least one protrusion (21) adapted to surround the perimeter of said second element (11) so as to allow its correct positioning and fixing to said first element (10), said protrusion (21) being adapted to constitute a stiffening member of said first element (10).

4. The handle device according to one or more of the preceding claims, **characterized in that** said first element (10) is made of a material such as steel plate.

5. The handle device according to one or more of the preceding claims, **characterized in that** said rotary support means (13) for said manual safety locking and release button (14) comprise a first pair of eyelets (22a, 22b) formed by said second element (11).

6. The handle device according to one or more of the preceding claims, **characterized in that** said second element (11) forms a second pair of eyelets (23a, 23b) for fastening respective customs seals.

7. The handle device according to one or more of the preceding claims, **characterized in that** said second element (11) comprises at least one rear eyelet (24) for engaging a security padlock arranged below said security locking and release button (14), adapted to prevent by interference the actuation of said button (14) and accordingly prevent the manual rotation of said grip bar (5), said padlock being arranged so as to not produce external space occupations that protrude from the contour of the device.

8. The handle device according to one or more of the preceding claims, **characterized in that** said second element (11) comprises at least one front eyelet (25) for the engagement of a first end of a first spring (26) for retaining said grip bar (5) in the closed angular position of the door (4).

9. The handle device according to one or more of the preceding claims, **characterized in that** said second element (11) forms a distribution of second holes (27) for fixing to said first element (10), which are arranged at said first holes (19).

10. The device according to one or more of the preceding claims, **characterized in that** said second element (11) is fixed to said first element (10) by means of rivets and/or the like.

11. The handle device according to one or more of the preceding claims, **characterized in that** said second element (11) is made of a material such as steel plate.

12. The handle device according to one or more of the preceding claims, **characterized in that** said grip bar (5) is made of a material such as steel plate.

13. The handle device according to one or more of the preceding claims, **characterized in that** said grip bar (5) has said second end (8) which comprises two mutually substantially parallel extensions (30, 31), each of which has a substantially L-shaped transverse cross-section, said ergonomic grip wing (9) being rigidly coupled to said extensions.

14. The handle device according to one or more of the preceding claims, **characterized in that** at least one of said extensions (30, 31) forms a lateral eyelet (32) which is adapted to fix the second end of said first spring (26) for retaining said grip bar (5) in the closed angular position.

15. The handle device according to one or more of the preceding claims, **characterized in that** said grip bar (5) forms at least one central opening (33) which is substantially circular with parallel bevels and accommodates a respective key-operated detent (34), which is adapted to prevent, in the closed configuration, the actuation of said safety locking and release button (14) of said grip bar (5).

16. The handle device according to one or more of the preceding claims, **characterized in that** said grip bar (5) forms, substantially at said first end (6), a substantially rectangular opening (35), which forms, along one of the sides, a sort of central tab (36), which is affected by two parallel slots (37) within which said second pair of eyelets (23a, 23b) is adapted to engage when said grip bar (5) is in the closed angular position.

17. The handle device according to one or more of the preceding claims, **characterized in that** said substantially rectangular cutout (35) forms, along one of the sides, a first perforated lateral tab (38), which is substantially perpendicular to the plane of said grip bar (5), for supporting rotatably a flap (39) for the front closure of said grip bar (5).

18. The handle device according to one or more of the preceding claims, **characterized in that** said rectangular cutout (35) forms, along one of the sides, a second perforated lateral tab (40), which is substantially flat and parallel with respect to the plane of said grip bar (5) and is adapted to engage one of the ends of a second spring (41) for retaining said flap (39) in the closed position.

19. The handle device according to one or more of the preceding claims, **characterized in that** said grip bar (5) forms a contoured edge (42), which is comprised between said two extensions (30, 31) and is adapted for the abutment of an end tooth (45) of said safety locking and release button (14) of said grip bar (5).

20. The handle device according to one or more of the preceding claims, **characterized in that** said locking and release button (14) comprises a substantially rocker-like body (43), which is provided with a through pivot (44), the ends of which are adapted to engage in said first pair of eyelets (22a, 22b), a sort of lug (44a) and said end tooth (45), said rocker-like body (43) being associated with a substantially flat surface (46) for manual actuation, which is comprised between said extensions (30, 31), said lug (44a) being adapted to engage below said key-operated detent (34) when said button (14) is in the position for locking said grip bar (5).

21. The handle device according to one or more of the preceding claims, **characterized in that** the center of rotation of said rocker-like body (43) with respect to said first pair of eyelets (22a, 22b) is arranged so that when said button (14) is in the position for locking said grip bar (5), any moment applied to said grip bar (5) in the direction for opening it produces, by reaction, a moment on said rocker-like body (43) in the direction for retaining said grip bar (5).

22. The handle device according to one or more of the preceding claims, **characterized in that** at least one of said two pivot-like tabs (44) is associated with a respective spiral spring (47), which is adapted to retain elastically said button (14) in the position for locking said grip bar (5) in the angular position for closing the door (4).

23. The handle device according to one or more of the preceding claims, **characterized in that** it comprises two spiral springs (47), which are associated respectively with said pivot-like tabs (44), so as to ensure the retention of the grip bar (5) even if one of said spiral springs (47) breaks.

24. The handle device according to one or more of the preceding claims, **characterized in that** said grip bar (5) forms, at said first end (6), a sort of surface camber (48) which is appropriately sized and is adapted to give strength and rigidity to said grip bar (5).

25. The handle device according to one or more of the preceding claims, **characterized in that** the steel plate with which said grip bar (5), said first element (10) and said second element (11) are made is rather thin and appropriately sized so as to minimize the weight and cost of these components but without thereby penalizing the strength characteristics of said grip bar (5), so as to allow to increase the thickness of the door (4) for an equal total thickness of the assembly, giving it greater strength.

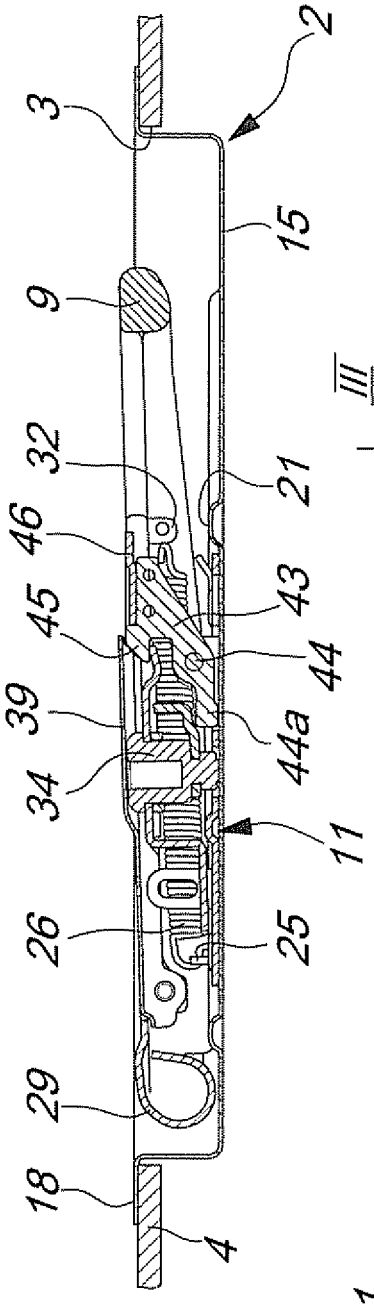

Fig. 2

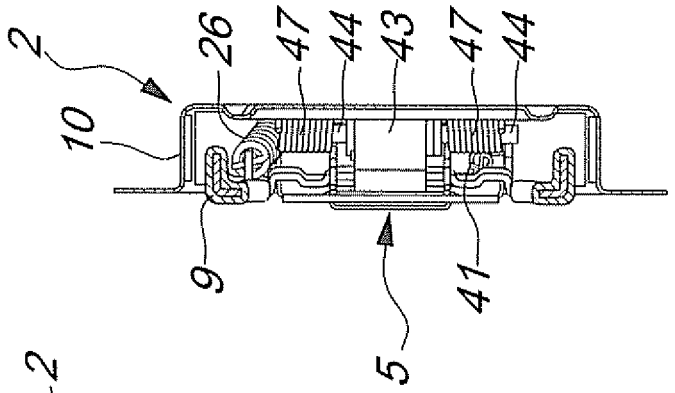

Fig. 3

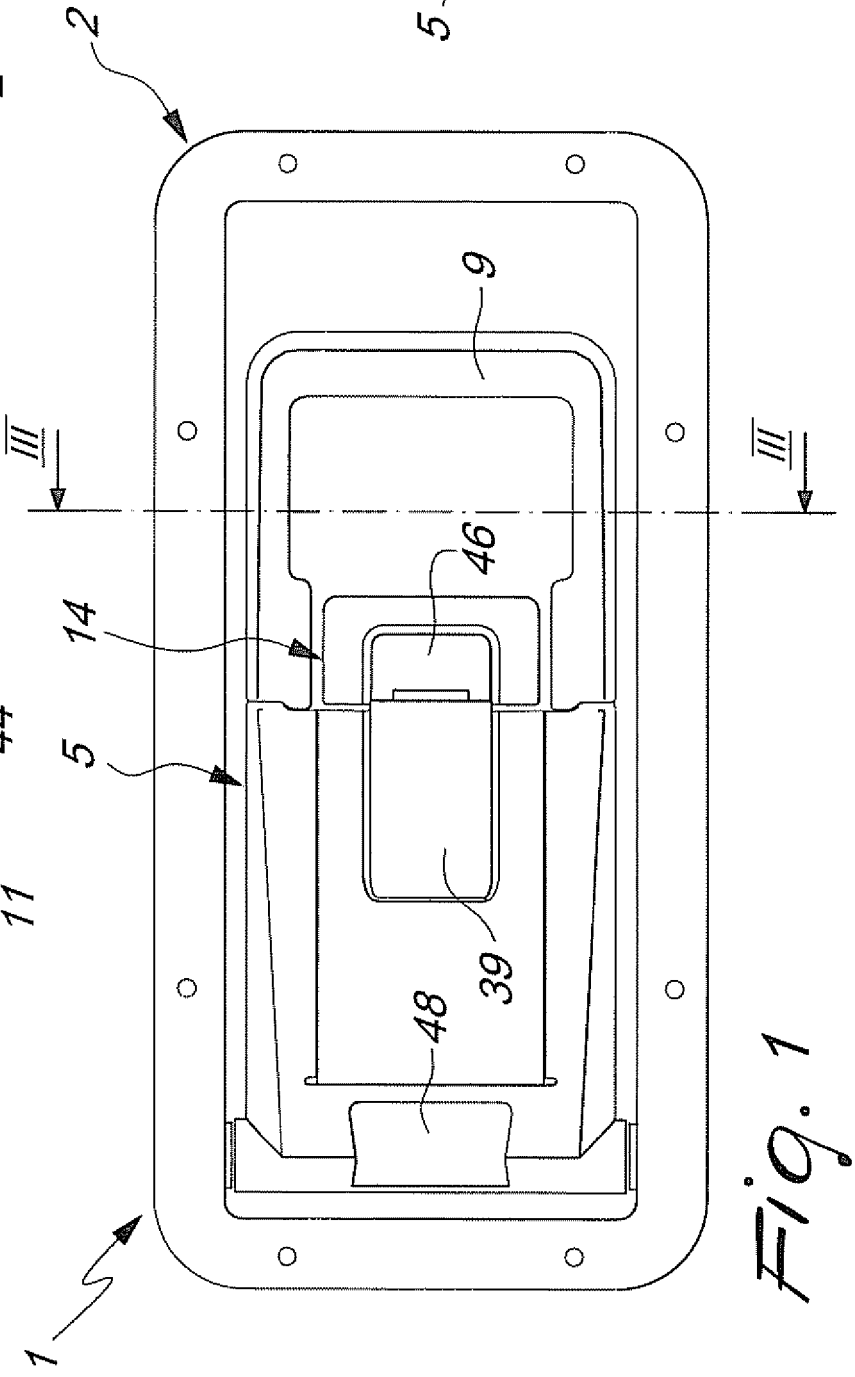

Fig. 1

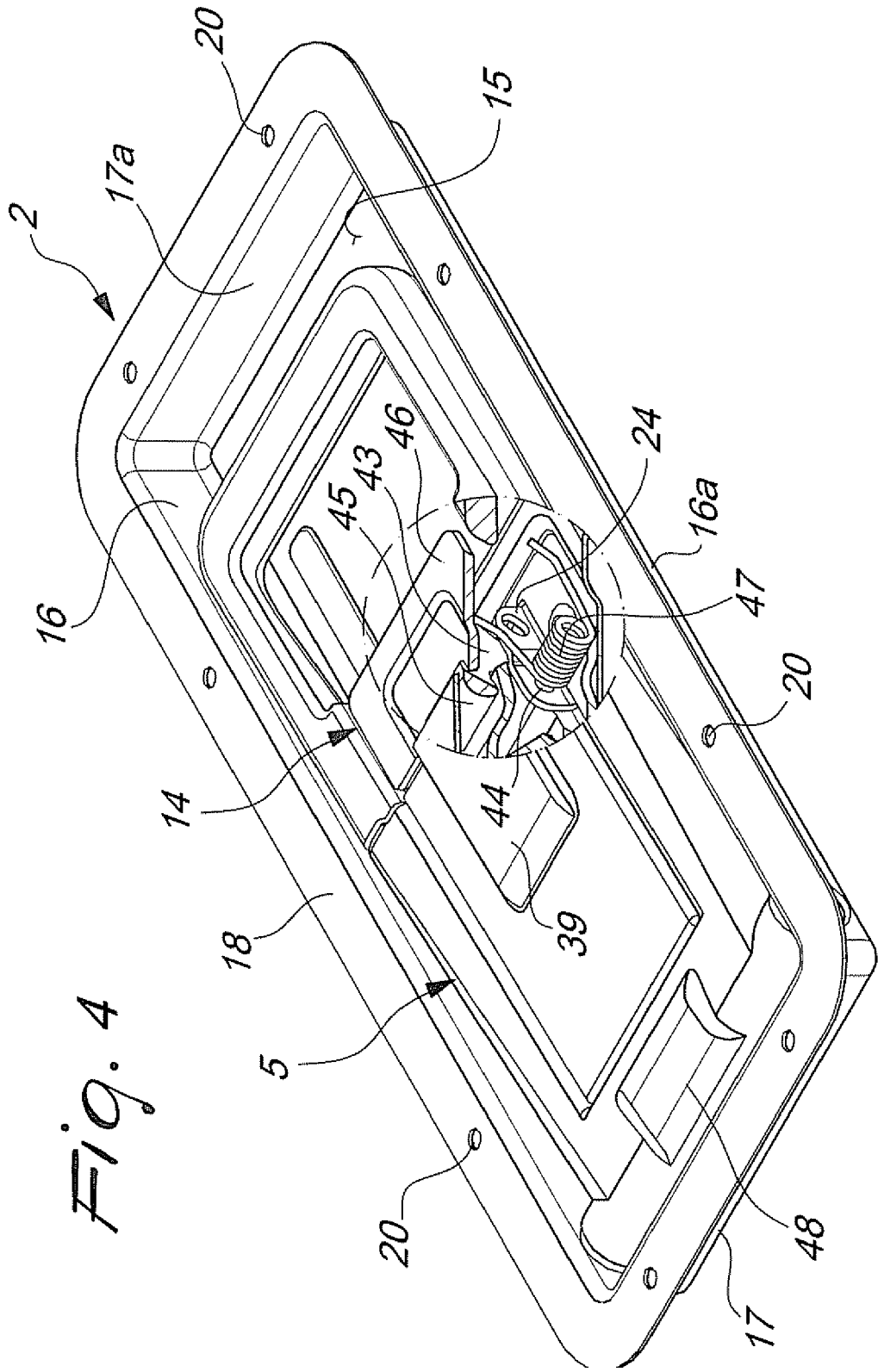

Fig. 4

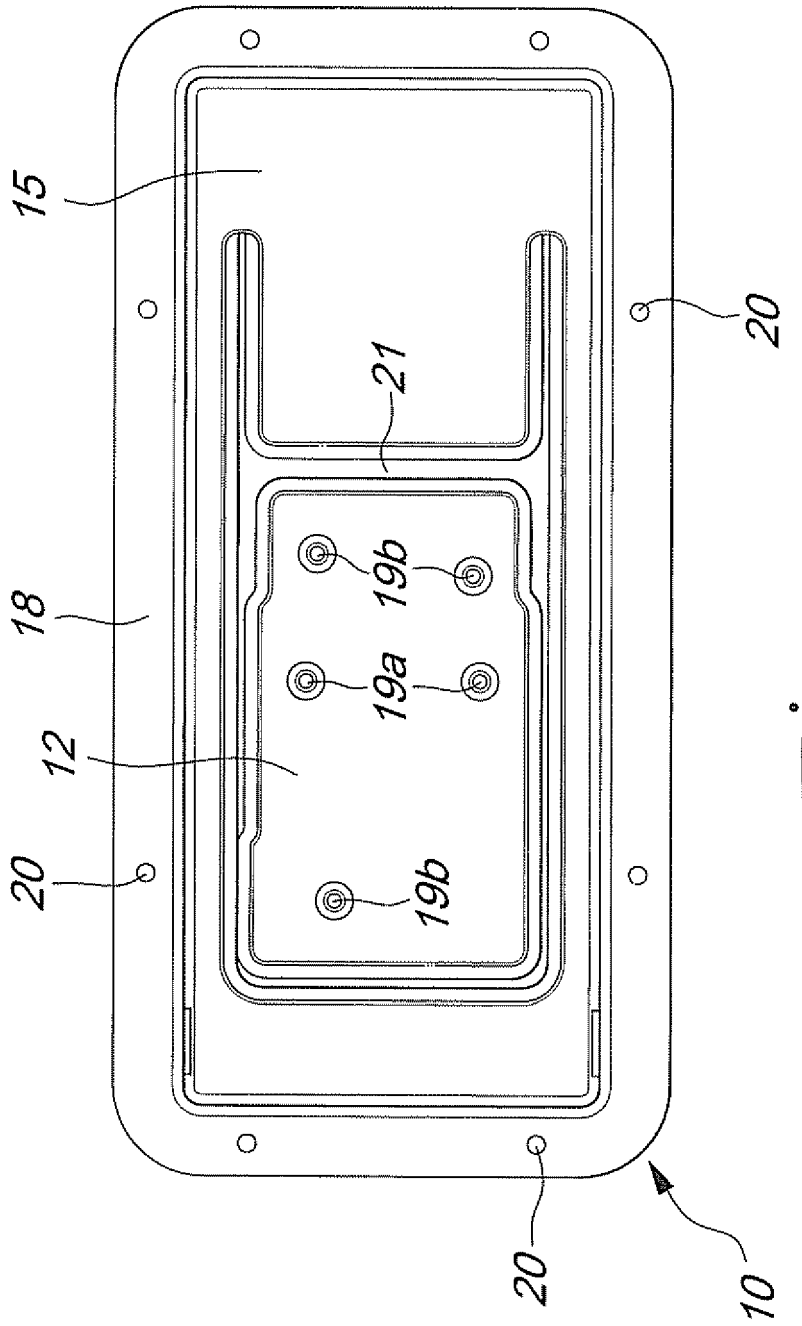

Fig. 5

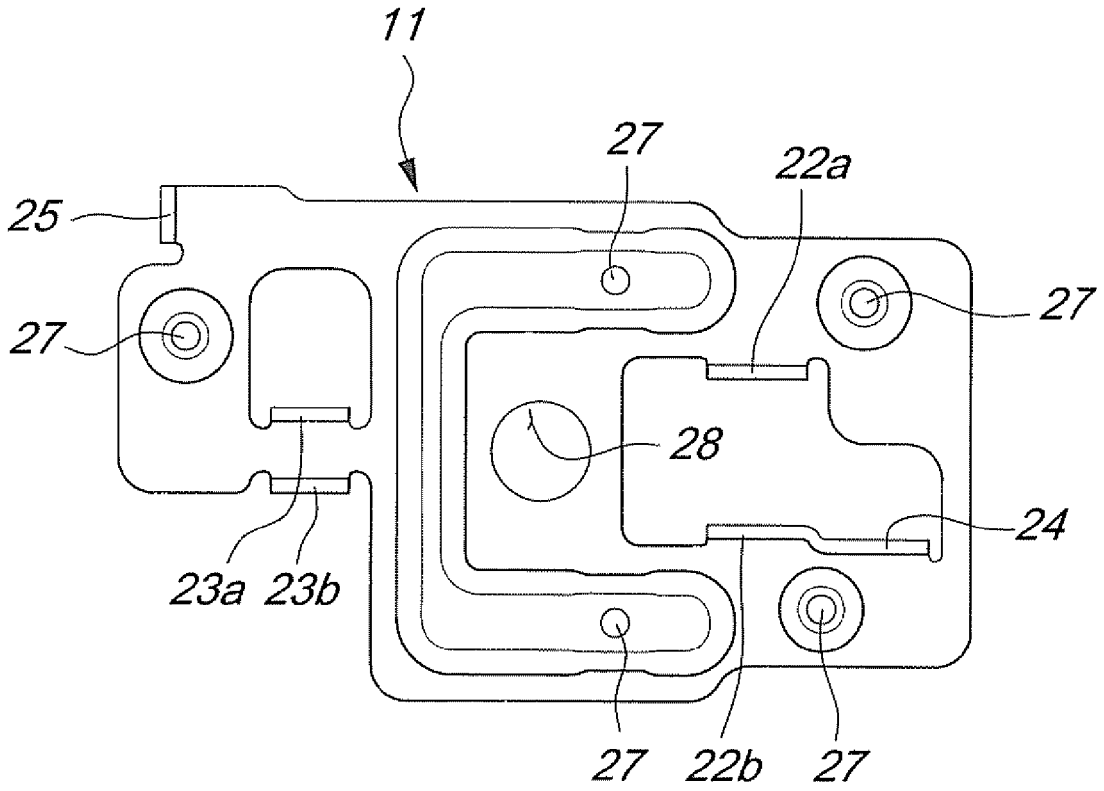
11
27
22a
25
27
27
28
24
23a
23b
27
22b
27

Fig. 6

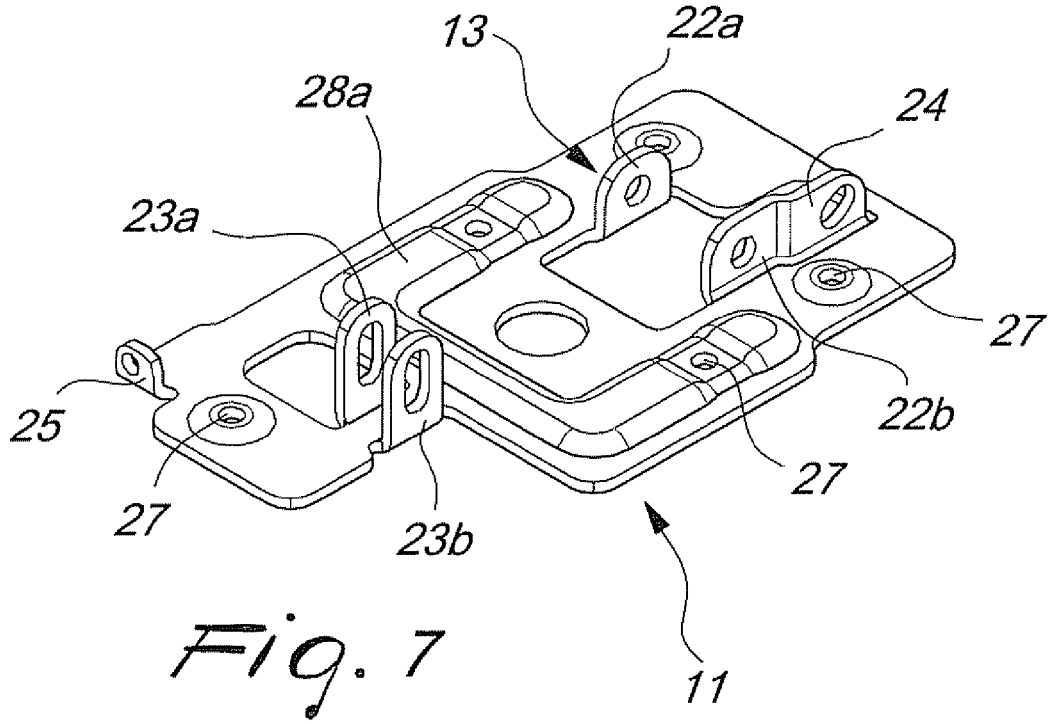
13
22a
28a
24
23a
27
25
22b
27
27
23b
11

Fig. 7

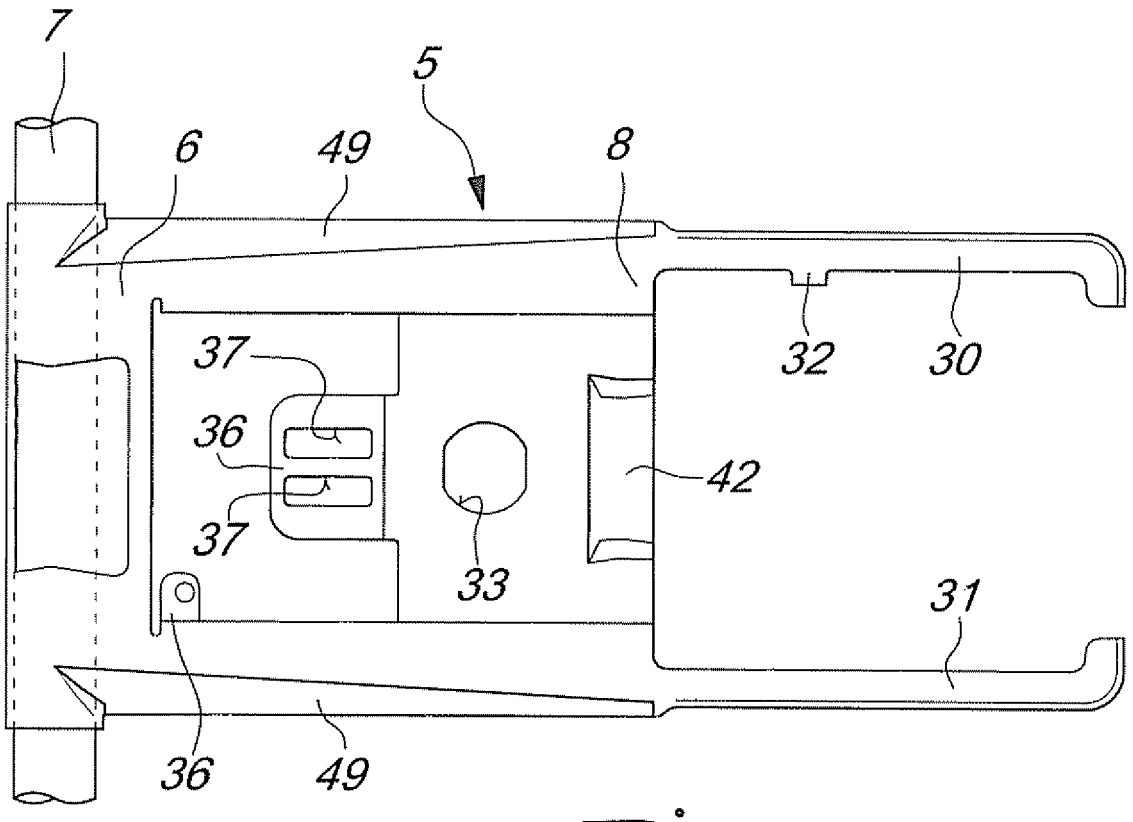

Fig. 8

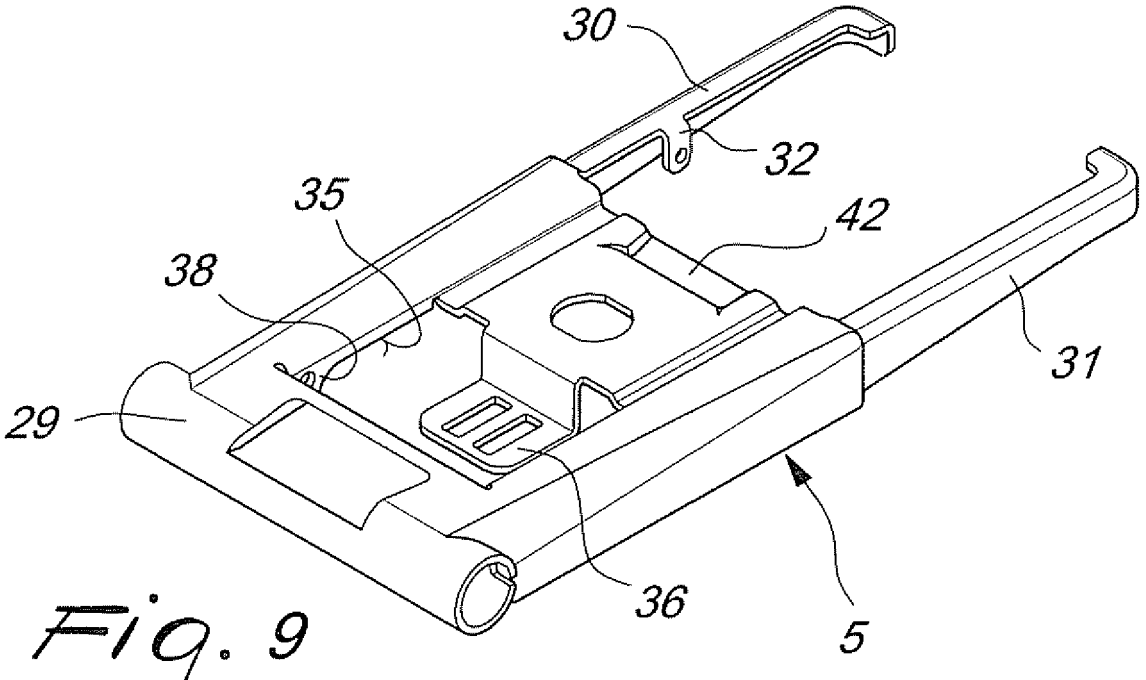

Fig. 9

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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