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(54) **Support, fixing and damping device for a compressor in a refrigerator**

(57) A support, fixing and damping device for a compressor (2) in a refrigeration appliance having a refrigerator circuit containing said compressor (2), this latter having flat lateral projecting portions (47) provided with at least one through hole (48) and being positioned in a compartment of a cabinet of said refrigeration appliance, in said compartment a bracket (6) being present to which said lateral portions (47) of said compressor are fixed, retention members (13) being provided to cooperate with said lateral portions (47) in order to fix them to the support (6); each retention member (13) presents a flat part (21) on which at least one elastically projecting element (29) is present and is movable relative to a corresponding seat (30) provided in said flat part (21), this latter slidably receiving a projecting lateral portion (47) of the compressor (2) in its movement from a first side (50) of said member to an opposing second side (41) thereof, during said movement the projecting element (29) of said member (13) being urged towards the corresponding seat (30) to subsequently emerge therefrom when it is reached by the hole (48) present in said projecting lateral portion (47) of the compressor (2), in said situation the projecting element (29) penetrating into the hole (48) to block said sliding, said member (13) having lateral means (42) for retaining said lateral portions (47) in a direction perpendicular to that of said sliding.

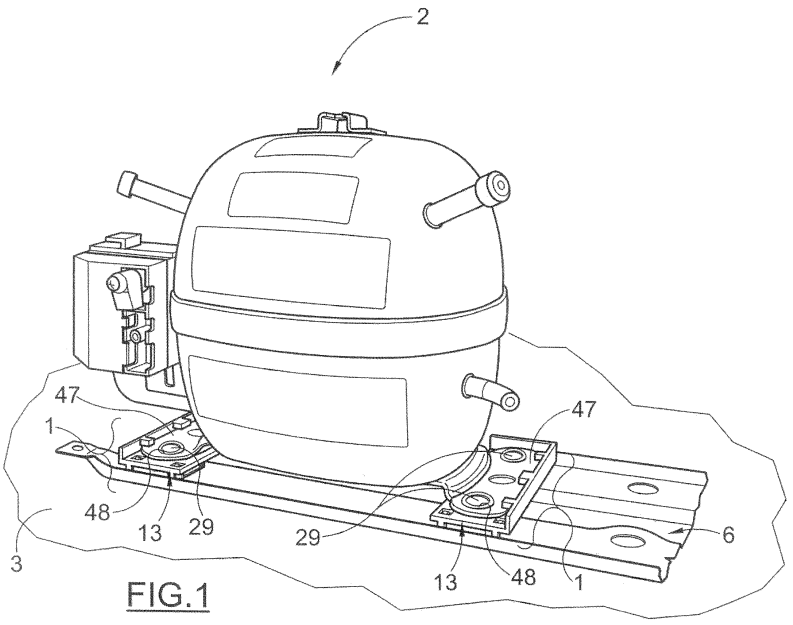

FIG.1

EP 1 837 613 A2

Description

[0001] The present invention relates to a support, fixing and damping device for a compressor in a refrigeration appliance in accordance with the accompanying claims.

[0002] A refrigeration circuit compressor in an appliance of the stated type is usually positioned in a compartment of the appliance cabinet and is fixed to a flat wall of said compartment or to a bracket rigid with the cabinet within said compartment. Fixing is done via projecting side portions of the compressor casing which are usually provided with holes to which pins fixed to the flat wall or to said bracket are coupled. These pins are preferably provided with rubber gaskets to absorb the vibration generated during starting, operation and stoppage of the compressor.

[0003] This known fixing method enables the compressor to be fixed to the refrigeration appliance. However this fixing method is laborious, considering that the projecting side portions of the compressor have to be coupled to pins fixed to the wall of the refrigerator cabinet. Said known method also renders the operations involved in separating the compressor from said cabinet laborious.

[0004] An object of the present invention is to provide a support, fixing and damping device for a compressor within a refrigerator cabinet for securing the compressor to this latter, which is improved compared with similar known devices.

[0005] A particular object of the invention is to provide a device of the stated type which enables the compressor to be quickly secured to the refrigerator cabinet, but which also allows said compressor to be quickly separated therefrom.

[0006] Another object is to provide a device of the stated type which enables the compressor vibration to be effectively absorbed during its starting, operation and stoppage.

[0007] A further object is to provide a device of the stated type which can be used with other compressor types.

[0008] These and other objects which will be apparent to the expert of the art are attained by a device in accordance with the accompanying claims.

[0009] The present invention will be more apparent from the accompanying drawings, which are provided by way of non-limiting example and in which:

Figure 1 is a perspective view of a compressor associated with a support rigid with the refrigerator cabinet via a device according to the invention;

Figure 2 is a perspective view of a part of the device of Figure 1 in a left-hand configuration;

Figure 3 is a perspective view from above of that part of the device shown in Figure 2 associated with the support rigid with the refrigerator cabinet before being secured to the compressor;

Figure 4 is a perspective view from below of that shown in Figure 3;

Figure 5 is a view from above of the device of Figure 2;

Figure 6 is a view of the device of Figure 5 in the direction of the arrow A shown therein; and

Figure 7 is a section on the line 7-7 of Figure 6.

[0010] With reference to said figures, a device according to the invention is indicated overall by 1 and is intended to secure a compressor 2 to a compartment of a refrigerator cabinet (not shown). This securing is achieved by a bracket 6 associated with said compartment in known manner, for example by screws 7 cooperating with corresponding holes provided in arms 10 of this bracket lying in a plane with which the device 1 is associated.

[0011] The device 1 preferably comprises two members 13 (right and left) disposed spaced apart and secured to said arms 10 by substantially cylindrical pins 14 with deformable lugs 15 and intended to penetrate through holes 16 provided in the arms 10.

[0012] The members 13 are disposed transversely to the bracket 6, on its central part 9. As can be seen from Figure 1, they are symmetrical and specular and are usable as the right member and as the left member (with reference to Figure 1). The shape of the lugged pins 14 enables them to be easily inserted through the holes 16 and be easily extracted from them if necessary.

[0013] The pins 14 are associated with ledges 20 fixed to a flat part 21 of each member 13; each ledge is rigid with the corresponding flat part 21 of the respective member 13 via elastically yieldable arched arms 23 associated with the ledge at its opposing ends 24. These arched arms (positioned at apertures 100 provided in the flat part 21) are integral with the ledge and with the flat part 21 of the member 13, and enable the ledge to undergo a damped elastic movement relative to said fixed part at least during those stages in which the compressor is particularly subject to vibration, i.e. during starting, operation and stoppage.

[0014] This prevents direct transfer of this vibration to the bracket 6 and hence to the refrigerator cabinet.

[0015] Each member 13 comprises two pins 14 and corresponding ledges 20. These latter are disposed at that face 26 of the flat part 21 of the member 13 which faces towards the bracket 6. Said flat part 21 comprises another face 28, opposing the face 26, from which elastically movable elements 29 project from corresponding seats 30 lying below them. These elements present a flat upper surface 31 disposed at an angle to the face 28 of the flat part 21 such that a free side 33 of said elements 29 defines a step (see Figures 2 and 7) with said part 21.

[0016] Each element 29 is fixed to the part 21 by an arm 35 rigid with the part 21 and integral with it. Hence from the description it is apparent that each member 13 is in one piece and its various parts or portions (pin 14, ledge 20 and elements 29) form a single component. It is of plastic material, advantageously of thermoplastic elastomer, for example that marketed under the commercial name of Hytrel. This material provides elasticity to

the member 13 and a capacity to absorb vibrations and stresses, so damping them and preventing their transfer to the refrigerator cabinet and making its operation noisy.

[0017] Shoulders 42 and 43, joined together, project from adjacent edges 40 and 41 of the flat parts 21 of each member 13. Said flat part being of rectangular shape, the shoulder 42 is positioned along a major side 40 of said flat part whereas the shoulder 43 is positioned along a minor side 41. The shoulder 42 acts as a guide for the sliding of a corresponding projecting lateral portion 47 of the compressor 2 on the flat part 21, this portion being provided with through holes 48. This guide facilitates the fixing of said portion 47 to the member 13 and hence to the bracket 6, and consequently to the refrigerator cabinet.

[0018] This fixing is achieved by resting the portion 47 on the flat part 21 at that minor side 50 thereof opposite the side 41 and thrusting said portion so that it slides along the shoulder 42. Preferably and advantageously, from a free end 53 of this latter there project at least one tang 54 (three in the figure) for retaining the portion 47 during this movement on the part 21 of the member 13.

[0019] Sliding terminates when this portion abuts against the shoulder 43. During said movement, the portion 47 mounts onto the surface 31 and presses against the projecting elements 29, to urge them towards the corresponding underlying seat 30. When a hole 48 in the compressor portion 47 reaches a position corresponding with these elements, the elements again elastically project from the respective seat 30 by penetrating through the holes 48. As the side 33 of the elements 29 forms a step with the flat part 21 in the opposite direction to that of the movement of the portion 47 along said part (which occurs, as stated, such that said portion surmounts each element 29 by sliding along the respective arm 35, i.e. in the direction of the arrow K of Figure 2), said portion 47 and hence the compressor 3 remain locked on the member 13 in the opposite direction to that of said arrow K.

[0020] It should be noted that the shoulder 43 is provided to halt the movement of the portion 47 along the member 13 when sliding occurs between this portion and this latter during engagement of the elements 29 in the holes 48. The presence of the shoulder 43 ensures simple and rapid connection between the member 13 and the corresponding portion 47. The engagement between the elements 29 and said holes 48 can be easily overcome by pressing each element 29 into its seat with a tool (for example a screwdriver) then, while maintaining it pressed, the compressor 2 can be removed by sliding it along the part 21 in the opposite direction to that of the arrow K. The invention hence facilitates compressor removal, for example for maintenance or replacement.

[0021] Finally, it should be noted that the shoulder 42 ensures rigidity to the member 13, hence increasing its resistance to the stresses which this member undergoes on starting or stopping the compressor.

[0022] A preferred embodiment of the invention has been described, however others are possible in the light of the preceding description (such as one in which the pins 14 are rigid with ledges integral with the part 21, elastic arms being provided on the sides of the ledges to act as damping elements) and are to be considered as falling within the scope of the ensuing claims.

Claims

1. A support, fixing and damping device for a compressor (2) in a refrigeration appliance having a refrigerator circuit containing said compressor (2), this latter having flat lateral projecting portions (47) provided with at least one through hole (48) and being positioned in a compartment of a cabinet of said refrigeration appliance, in said compartment a support or bracket (6) being present to which said lateral portions (47) of said compressor (2) are fixed, retention members (13) being provided to cooperate with said lateral portions in order to fix them to the support (6), **characterised in that** each retention member (13) presents a flat part (21) to slidably receive a corresponding flat lateral portion (47) of the compressor (2), said part (21) presenting fixing means (29) for said lateral portion (47) which enable this latter to move in a direction (K) along the part (21) but prevent such movement in the opposite direction by virtue of their cooperation with the hole (48) in said lateral portion (47), said sliding movement along said flat part (21) enabling said member (13) and the compressor lateral portion (47) to be fitted together, to hence fix the compressor to the refrigerator cabinet.

2. A device as claimed in claim 1, **characterised in that** the fixing means are at least one element (29) elastically projecting from the flat part (21) of said member (13), said element (29) having a free surface (31) inclined to said flat part (21) and a free side (33) projecting from this latter to define a step with it, the inclination of said surface being such as to enable the lateral portion (47) to slide on said flat part (21) while being fitted to the member (13).

3. A device as claimed in claim 2, **characterised in that** the elastically projecting element (29) is movable relative to a corresponding seat (30) provided in the flat part (21) of said member (13) and lying below said element.

4. A device as claimed in claim 3, **characterised in that** the elastically projecting element (29) is secured to said flat part (21) by an arm (35) rigid with this latter and integral therewith, said projecting element (29) being a prolongation of said arm and hence also being integral with said flat part (21).

5. A device as claimed in claim 2, **characterised in**

that each elastically projecting element (29) projects from a first face (28) of the flat part (21) on which the lateral portion (47) of the compressor (2) is made to slide, guide means (54) for said sliding being present on said face.

6. A device as claimed in claim 5, **characterised in that** the guide means are at least one tang (54) disposed above said first face (28) of the flat element (21) in correspondence with a first side (40) of this latter, this side being parallel to the direction in which said lateral portion (47) slides.

7. A device as claimed in claim 6, **characterised in that** from said first side there upwardly projects a shoulder (42), from a free edge (53) of which there extends the tang (54) for guiding the sliding movement of the compressor lateral portion (47), said tang (54) being disposed parallel to said first face (28) of the flat element (21), said shoulder (42) defining means for laterally retaining said portion (47) in a direction perpendicular to that of said movement.

8. A device as claimed in claim 5, **characterised in that** the flat part (21) comprises a second face (26) opposing the first (28), in correspondence with which means (14) are provided for its coupling to the refrigerator cabinet and means for damping the stresses exerted by the compressor on the retention member (13) during its operation.

9. A device as claimed in claim 8, **characterised in that** said coupling means are a pin (14) carried by a ledge (20) spaced from the second face (26) of the flat part (21) and connected to this latter by elastically yieldable arms (23), these latter defining the damping means.

10. A device as claimed in claim 9, **characterised in that** said pin (14), said ledge (20), the elastically yieldable arms (23) and the flat part (21) form a single piece.

11. A device as claimed in claim 9, **characterised in that** the elastically yieldable arms (23) are arched.

12. A device as claimed in claim 8, **characterised in that** the damping means are yieldable arms positioned on sides of the coupling means (14) and are integral with said flat part (21), the coupling means being pins (14) rigid with said flat part (21).

13. A device as claimed in claim 1, **characterised in that** said member (13) is of plastic material.

14. A device as claimed in claim 13, **characterised in that** said member (13) is of thermoplastic material.

15. A device as claimed in claim 1, **characterised in that** said member (13) cooperates with a bracket (6) to which said member is fixed, said bracket being fixed to the refrigerator.

16. A device as claimed in claim 1, **characterised in that** a limit stop (43) is provided on the flat part (21) for the sliding of the compressor lateral portion (47).

17. A device as claimed in claim 16, **characterised in that** the limit stop is a shoulder (43) projecting upwards from a second side of the flat part (21) perpendicular to the first (40) and perpendicular to the direction in which the lateral portion (47) slides on said flat part (21).

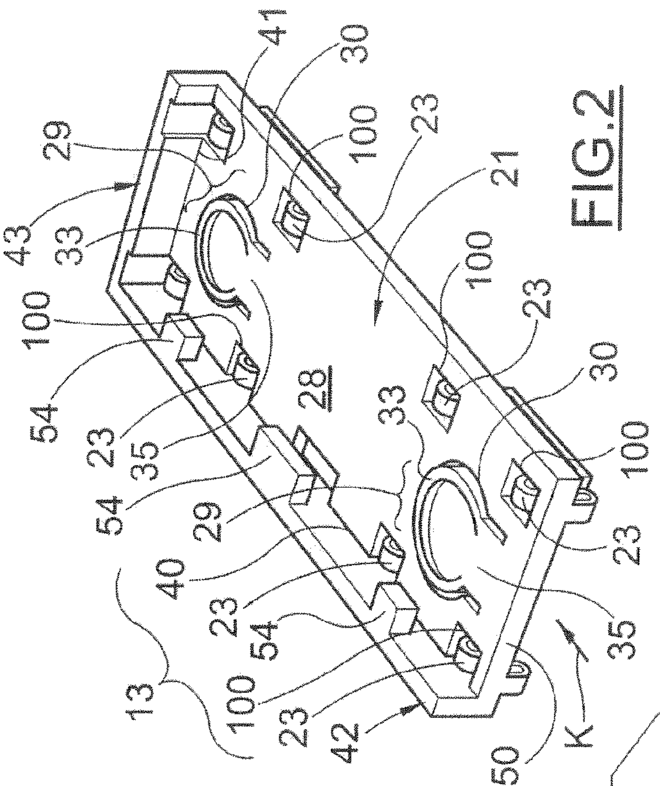
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FIG.2

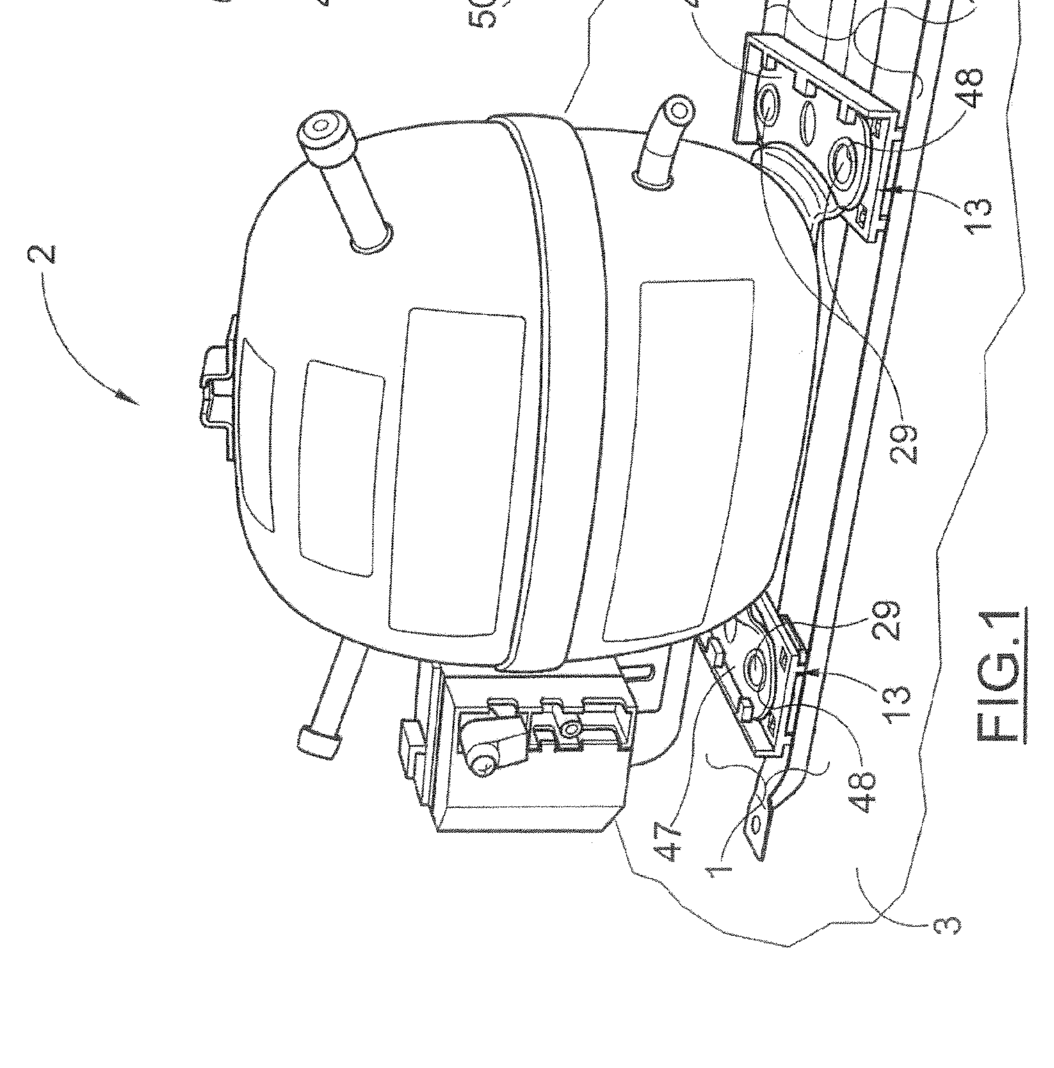
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FIG.1

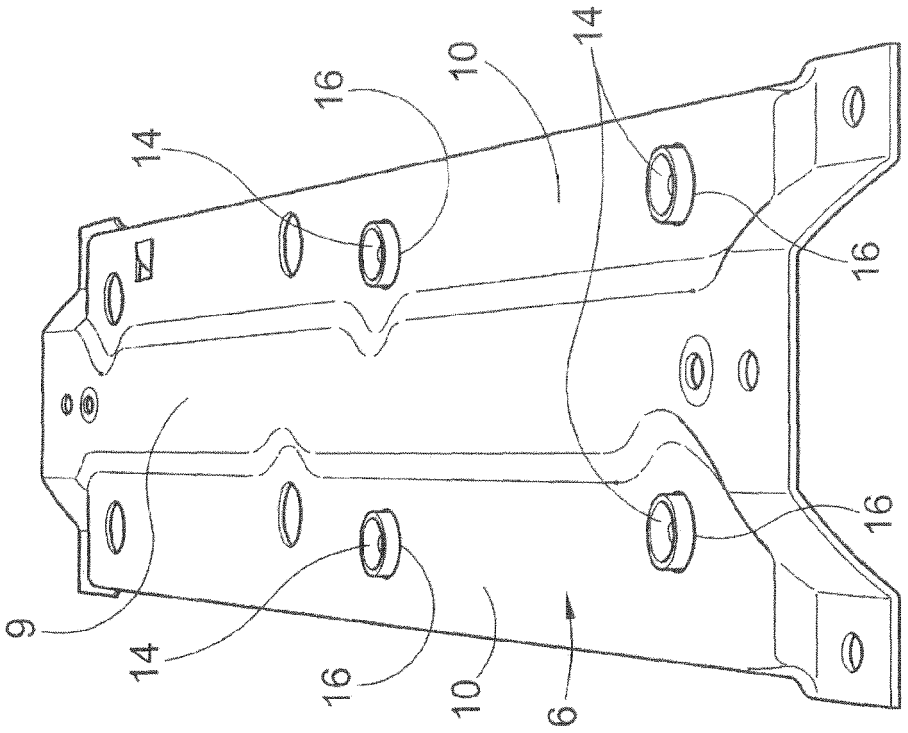
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FIG.4

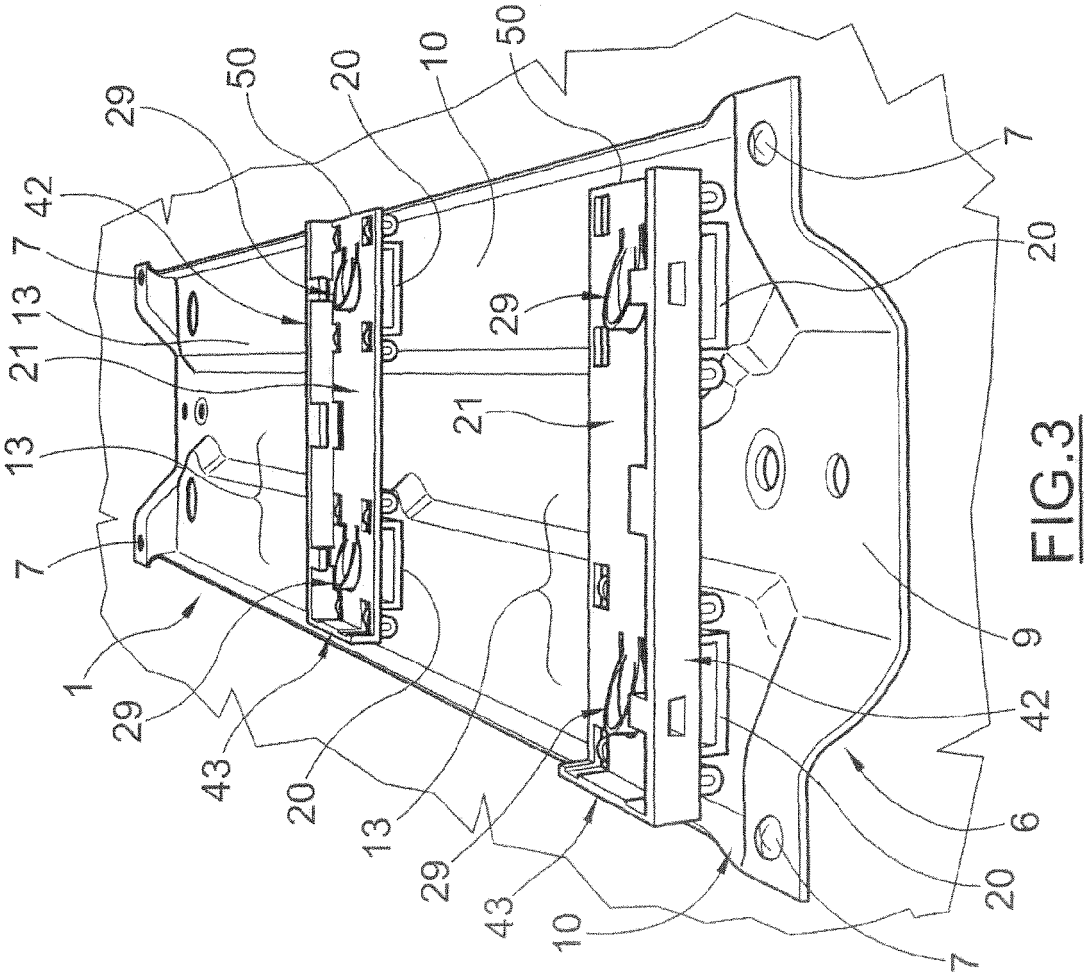
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FIG.3

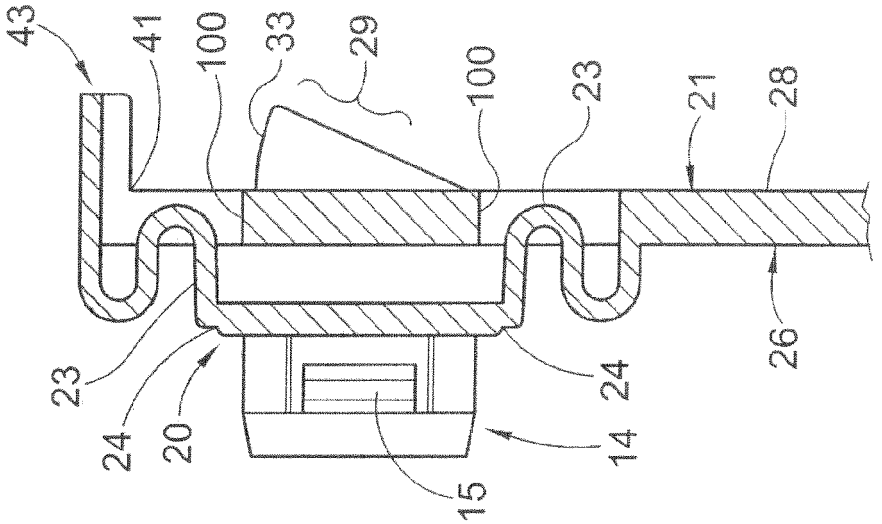

FIG.7

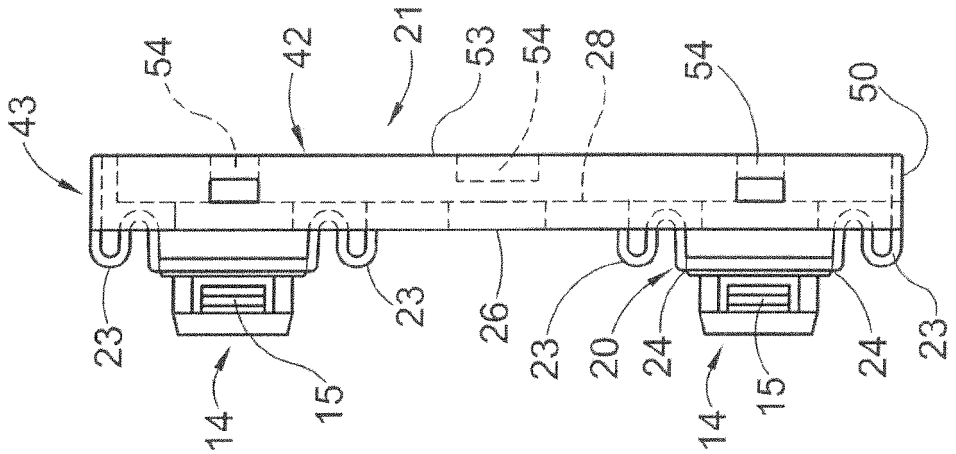

FIG.6

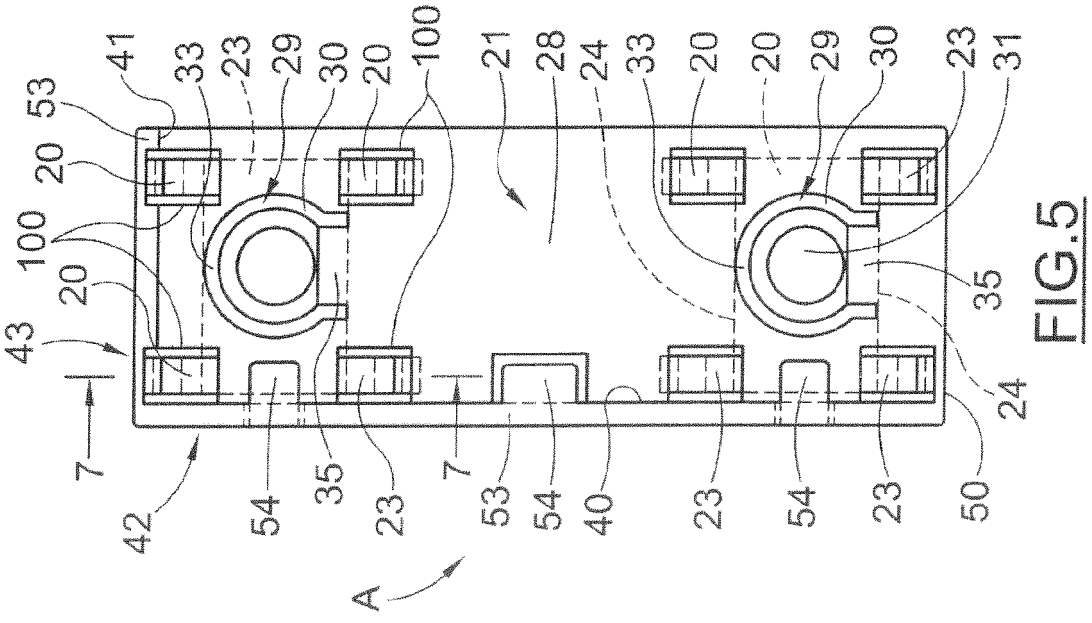

FIG.5