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(54) **Control device for antipanic handles**

(57) The control device for antipanic handles comprises a casing in which there is a kinematism for actuating the displacement of the main latch through the displacement of the mobile horizontal bar of the handle, the

kinematism is made up of different control elements which are mobile through hinging means arranged at least partially inside the space defined by the shape of at least one of the control elements.

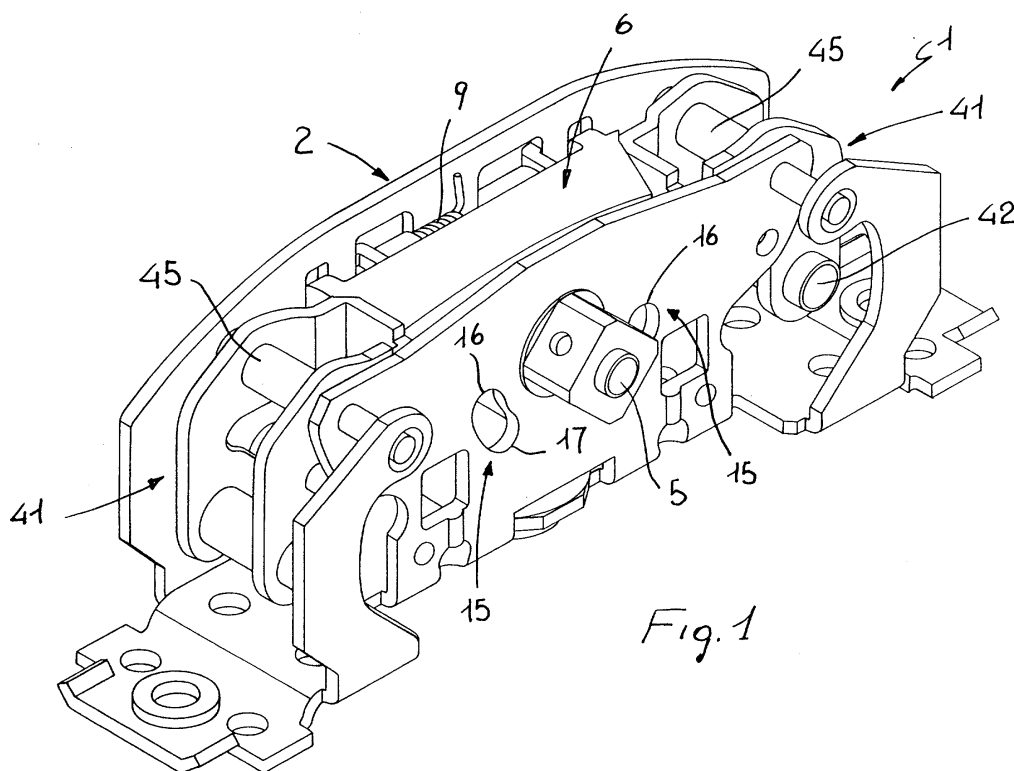


Fig. 1

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Description

[0001] The present finding refers to a control device for antipanic handles.

[0002] As is known, antipanic handles have a horizontal bar the displacement of which determines the actuation of the device for controlling the main latch and, possibly, the secondary ones.

[0003] The control device of a handle must have adequate mechanical strength for the opening force established by the current regulations of the field.

[0004] Therefore, all control devices must be suitable for operating in particular situations, keeping within the mechanical and functional requirements dictated by the current regulations.

[0005] Current control devices, even if they satisfy the functional-mechanical performances which are required of them, do however have numerous drawbacks.

[0006] Amongst the main drawbacks we should count the fact that the kinematism which they have is subject to lots of rubbing between the various elements which make it up.

[0007] This gives the formation of substantial friction and jeopardize both the good operation of the device through time (this fact, moreover, always means excellent lubrication must be maintained) and its service life.

[0008] Moreover, known control devices very often have substantial bulk which limits its use for particular applications, for example on small supports, which could be frames with a narrow upright.

[0009] Besides that which has been stated above, known control devices are not automatically adaptable for both right and left handed use and do not have two stops of the mobile bar for each of the two directions of movement thereof.

[0010] Last but not least, the interchangeability of the mobile bar and of the latch in known control devices is often difficult and the coating guard of the device sometimes has open areas which allow access to the inside of the mechanism, thus not preserving it from possible tampering.

[0011] The task proposed of the present finding is that of eliminating the aforementioned drawbacks of the prior art.

[0012] In this task, an important purpose of the finding is to realise a control device for antipanic handles which is extremely compact and, at the same time, has excellent mechanical and functional performances, thanks to the drastic reduction in friction between the various elements, since rubbing which normally exists between them is substantially avoided.

[0013] Yet another purpose of the finding is to realise a device which has a mechanical strength in relation to the necessary opening forces, according to the current regulations of the field and which, being extremely compact, can also be applied onto metal profiles with a narrow upright and which guarantees maximum safety having two stops of the mobile bar for each of the two di-

rections of displacement thereof.

[0014] Yet another purpose of the finding is to realise a control device which is automatically reversible, that is it can equally be used right or left handed, and which has fast and simple interchangeability of the mobile bar, together with the fact of being able to equally mount a latch with self-locking or without which gives a very substantial productive advantage since it is possible to change the latch with or without the self-locking without for this reason having to touch the main mechanism.

[0015] The last but not least purpose of the finding is to realise a control device in which the covering guard thereof also comprises a part of the control arm or mobile bar, thus avoiding openings which may be subject, as well as to accidents, also to tampering.

[0016] This task, as well as these and other purposes, are achieved by a control device for antipanic handles comprising a casing in which there is a kinematism for actuating the displacement of the main latch through the displacement of the mobile horizontal bar of the handle, characterised in that said kinematism is made up of different control elements which are mobile through hinging means arranged at least partially inside the space defined by the shape of at least one of said control elements.

[0017] Further characteristics and advantages shall become clearer from the detailed description of a control device for antipanic handles according to the finding, illustrated for indicating purposes in the attached drawings in which:

- figure 1 is a perspective rear view of the device according to the finding;
- figure 2 is a plan view of the device represented in figure 1 according to the finding;
- figure 3 is a perspective plan view of the device according to the finding;
- figure 4 is a perspective view from below of the device according to the finding;
- figure 5 shows the cam and the forked member actuated by the cam according to the finding;
- figure 6 shows the type of connection between the forked element and the support elements of the shafts for returning the movement to the secondary latches;
- figure 7 is a side view partially in view of the control device according to the finding;
- figures 8, 9 and 10 respectively show in perspective a support element, the main latch and the forked element;
- figures 11, 12 and 13 are side views of a support element for the latch and for the forked element, respectively; and
- figures 14, 15 and 15 show the coating guard of the mechanism seen from the side and from the front to the left and to the right.

[0018] With particular reference to the figures de-

scribed above, the control device for antipanic handles, generically indicated with reference numeral 1, comprises a casing 2 inside of which there is a kinematism for actuating the displacement of the main latch through the displacement of the mobile horizontal bar, not represented in the drawings, of the handle.

[0019] The kinematism is made up of numerous control elements which are mobile through hinging means and in particular by a first and a second main pin 4 and 5.

[0020] Advantageously, the first and second main pin 4 and 5 are arranged at least partially inside the space defined by the shape of at least one of the control elements and in particular, as shall be better specified, of a forked member 6.

[0021] Thanks to this solution which, as shall be seen, allows the entire control device to be substantially compacted whilst still maintaining its very substantial mechanical-functional characteristics, the control elements interact with each other through contact zones which are substantially without rubbing, with the result of avoiding friction and early wear of the various elements.

[0022] In particular, the control elements comprise a first cam 7, which is made to rotate by the horizontal bar (not represented) of the antipanic handle.

[0023] The rotation of the first cam 7 about the pin 5 allows the forked member 6 to be actuated which can thus rotate about the pin 4.

[0024] The movement of the forked member 6 determines the actuation of the main latch 3 which is thus kept in a position outside of the casing 2 through a spring 9 or it can be pulled by the forked element 6 inside the casing 2 when one wishes to open the frame on which the handle is positioned.

[0025] The control device is also equipped with a lever 10 which is made to rotate by the grip, not represented, arranged on the frame on the side opposite the handle.

[0026] The grip engages in the appropriate seat 11 which makes the lever 10 rotate, which is suitable for controlling the displacement of the forked member 6 acting upon one of the legs 12 of the forked element.

[0027] In this way, by simply adjusting the positioning of the lever 10, so as to make it act on one or the other of the two legs 12, it is possible to have reversibility of the device according to the orientation of the grip and irrespective whether or not the first cam 7 is made to rotate by the actuation of the mobile bar.

[0028] Advantageously, both the first cam 7 and the forked member 6 are mirror-like with respect to their axis of symmetry, so as to allow, as explained later on, the total reversibility of the control device for right or left hand operation of the handle and for frames with hinging on the right or left.

[0029] In particular, left-handed or right-handed use of the control device is obtained thanks to automatic reversibility means defined by a spring loaded pole 14 present on the cam 7 suitable for engaging alternatively, according to requirements, in one of the two slots 15 realised on the casing 2 of the device.

[0030] Advantageously, the two slots 15 allow a partial rotation of the cam 7 and define with their two ends 16 and 17 the two stops of the first stop means for each of the displacements of the mobile bar in the two directions of movement.

[0031] The second stop means for each of the displacements of the mobile bar in the two directions is defined by two abutments 50 and 51 present directly on the guard 60 covering the control device.

[0032] The cam 7 has a substantially anchor-shaped configuration with the two ends 18 and 19 acting respectively on the connection cross-member 20 of the respective legs 12 of the forked element 6.

[0033] The forked member 6 has in the cross-member 20 a housing seat 21 for the main latch 3.

[0034] The seat 21 is configured in a suitable manner to receive the hook-shaped ends 22 of the main latch 3 such, as stated, as to allow the free rotation along a direction of the latch with respect to the forked element (latch positioned outside of the casing 2 - closed position) and the pulling of the latch with the forked element during the rotation thereof (latch inside the casing - open position of the frame).

[0035] Advantageously, as can be seen in the drawings, the first cam has the hinging axis 5 which is extremely close to, perpendicular to and arranged below the first main axis of rotation 4 of the forked element 6 which is also a hinging element of the latch 3 and a support element for the spring 9.

[0036] The main latch 3 suitably exhibits a self-locking mechanism which is totally contained inside its shape.

[0037] In particular, the self-locking mechanism of the latch prevents the re-entry of the latch with the door closed and when the latch is in engagement with the opening on the sliding wall thereof.

[0038] The forked element comprises a shaft 23, situated between the legs 12, which is suitable for engaging with the self-locking mechanism to accomplish its disengagement.

[0039] In particular, the shaft 23 acts upon the tooth 24, hinged inside the latch 3, which is suitable for engaging with a serration 26 integral with the counterlatch 25 for its displacement.

[0040] In this way, therefore, the rotation of the forked element allows the engagement of the shaft 23 with the tooth 24 which thus allows the re-entry of the latch and the disengagement of the self-locking system.

[0041] The forked element also has suitably configured walls 40 in which engage the support elements 41 for the shafts for returning the movement to the auxiliary latches.

[0042] Each support element 41 comprises automatic connection means for engaging each of said shafts (not represented) which has its end squashed.

[0043] In particular, the automatic connection means is defined by a pin 42 which can slide against and with the action of a spring 43 transversally inside each support element 41.

[0044] The sliding of the pin 42 is made possible only when the support element is in a suitable position so that the axis of the pin is coaxial to a respective opening 44 present on the casing of the device.

[0045] Each support element 41 is also rotatably associated with the casing through a pin 45 and is made to rotate against and with the action of the spring 46.

[0046] Of course, it should remain understood that in a handle the mechanism described above is also arranged at the opposite end of the mobile bar (fig. 16) and in this case shall only have the casing and the automatic reversibility elements and the first and second stop means.

[0047] In practice, it has been noted how the device according to the finding is particularly advantageous for having excellent mechanical and functional performance thanks to the drastic reduction in friction between the various elements since rubbing between them is avoided, whilst still advantageously being extremely compact in size above all in the transversal direction.

[0048] The finding thus conceived is susceptible to numerous modifications and variants, all covered by the inventive concept. Moreover, all of the details can be replaced by technically equivalent elements.

[0049] In practice, the materials used, as well as the sizes, can be whatever according to the requirements and the state of the art.

Claims

1. Control device for antipanic handles comprising a casing in which there is a kinematism for actuating the displacement of the main latch through the displacement of the mobile horizontal bar of the handle, **characterised in that** said kinematism is made up of different control elements which are mobile through hinging means arranged at least partially inside the space defined by the shape of at least one of said control elements.
2. Control device for antipanic handles according to claim 1, **characterised in that** said control elements interact with each other through contact zones substantially without rubbing.
3. Control device for antipanic handles according to one or more of the previous claims, **characterised in that** said control elements comprise a first cam made to rotate by said horizontal bar, at least one forked member actuated by said cam and at least one main latch actuated by said forked member.
4. Control device for antipanic handles according to one or more of the previous claims, **characterised in that** it comprises at least one lever made to rotate by the grip arranged on the frame on the opposite side to said handle, said lever being suitable for

controlling the displacement of said forked member.

5. Control device for antipanic handles according to one or more of the previous claims, **characterised in that** said first cam and said forked member are mirror-like with respect to their axis of symmetry.
6. Control device for antipanic handles according to one or more of the previous claims, **characterised in that** it comprises automatic reversibility means for right and left handed use.
7. Control device for antipanic handles according to one or more of the previous claims, **characterised in that** it comprises first and second stop means for each of the displacements of the mobile bar in the two directions.
8. Control device for antipanic handles according to one or more of the previous claims, **characterised in that** said main latch has a self-locking mechanism totally contained inside its shape.
9. Control device for antipanic handles according to one or more of the previous claims, **characterised in that** it comprises support elements for the control shafts of the high and low latches each directly controlled by a second cam present on said forked element.
10. Control device for antipanic handles according to one or more of the previous claims, **characterised in that** each support element comprises automatic connection means for engaging each of said shafts.
11. Control device for antipanic handles according to one or more of the previous claims, **characterised in that** said cam has a perpendicular hinging axis arranged below that of said forked element and said main latch.
12. Control device for antipanic handles according to one or more of the previous claims, **characterised in that** said cam has a substantially anchor-shaped configuration with the two ends acting respectively upon the connection cross-member of the respective legs of said forked element.
13. Control device for antipanic handles according to one or more of the previous claims, **characterised in that** said forked member has in said cross-member a housing seat for said latch suitable for allowing the free rotation along a first direction of said latch with respect to said forked element and the pulling of said latch with said forked element during the rotation thereof.
14. Control device for antipanic handles according to

one or more of the previous claims, **characterised in that** said lever acts alternatively upon said legs of said forked element for the displacement thereof irrespective of the control of said first cam.

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15. Control device for antipanic handles according to one or more of the previous claims, **characterised in that** said forked element comprises a shaft situated between said legs suitable for engaging with said self-locking mechanism for the disengagement thereof.

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16. Control device for antipanic handles according to one or more of the previous claims, **characterised in that** said automatic reversibility means comprises two slots arranged on said casing on opposite sides with respect to said hinging axis of said first cam and a respective pin mobile against and with the action of elastic means which can be inserted alternatively in one of said slots.

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17. Control device for antipanic handles according to one or more of the previous claims, **characterised in that** said first and second stop means are respectively defined by said slots and by abutment members realised on the covering guard of said casing and are both suitable for acting as end stops in the two directions of movement of said horizontal bar.

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18. Control device for antipanic handles according to one or more of the previous claims, **characterised in that** said self-locking mechanism of said latch comprises a tooth hinged inside said latch upon which said shaft acts, said tooth being suitable for engaging with a serration of the counterlatch for the disengagement displacement thereof.

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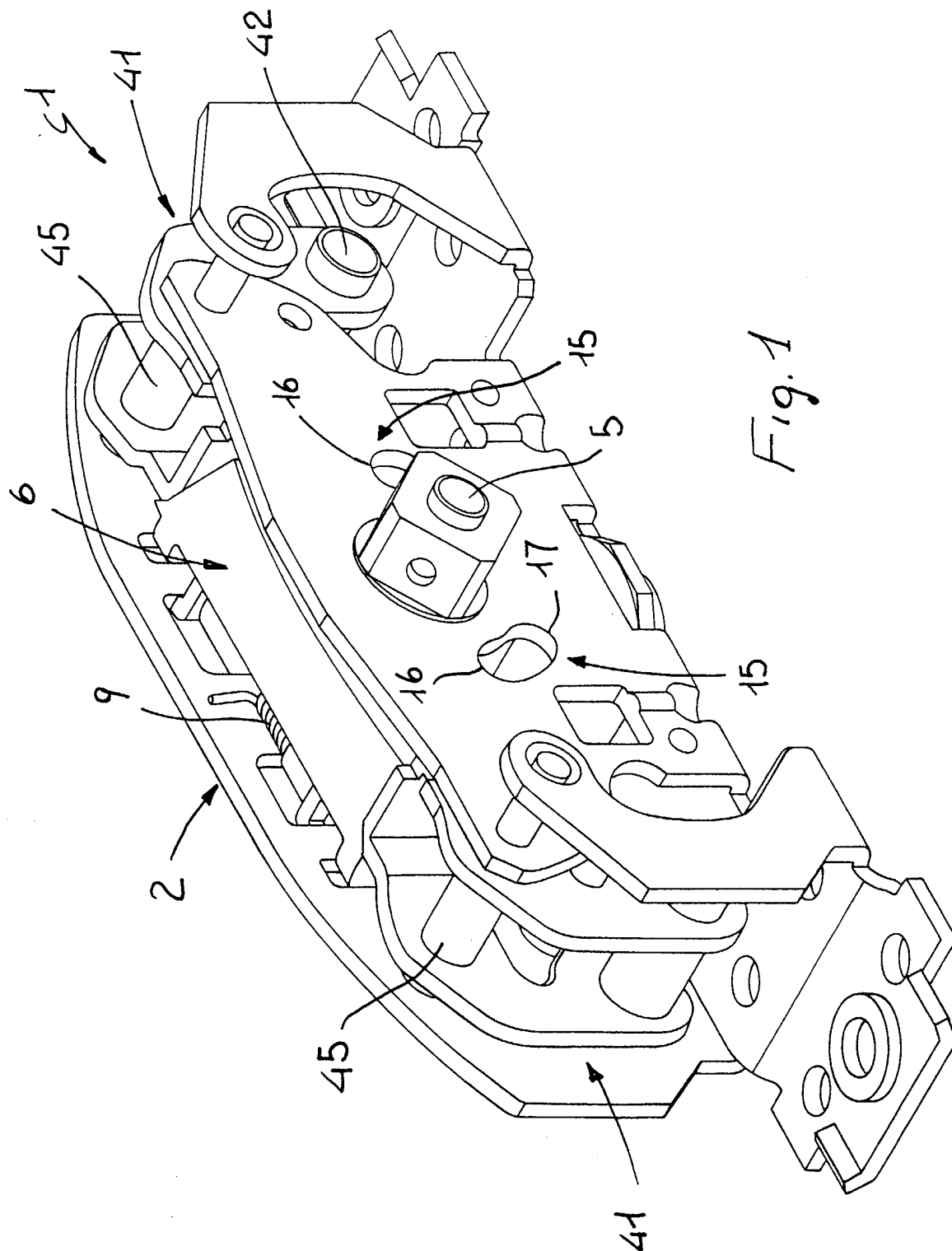
19. Control device for antipanic handles according to one or more of the previous claims, **characterised in that** said automatic connection means of said shafts comprises a pin which can slide against and with the action of a spring transversally inside each of said support elements when arranged coaxially to a respective opening realised on said casing.

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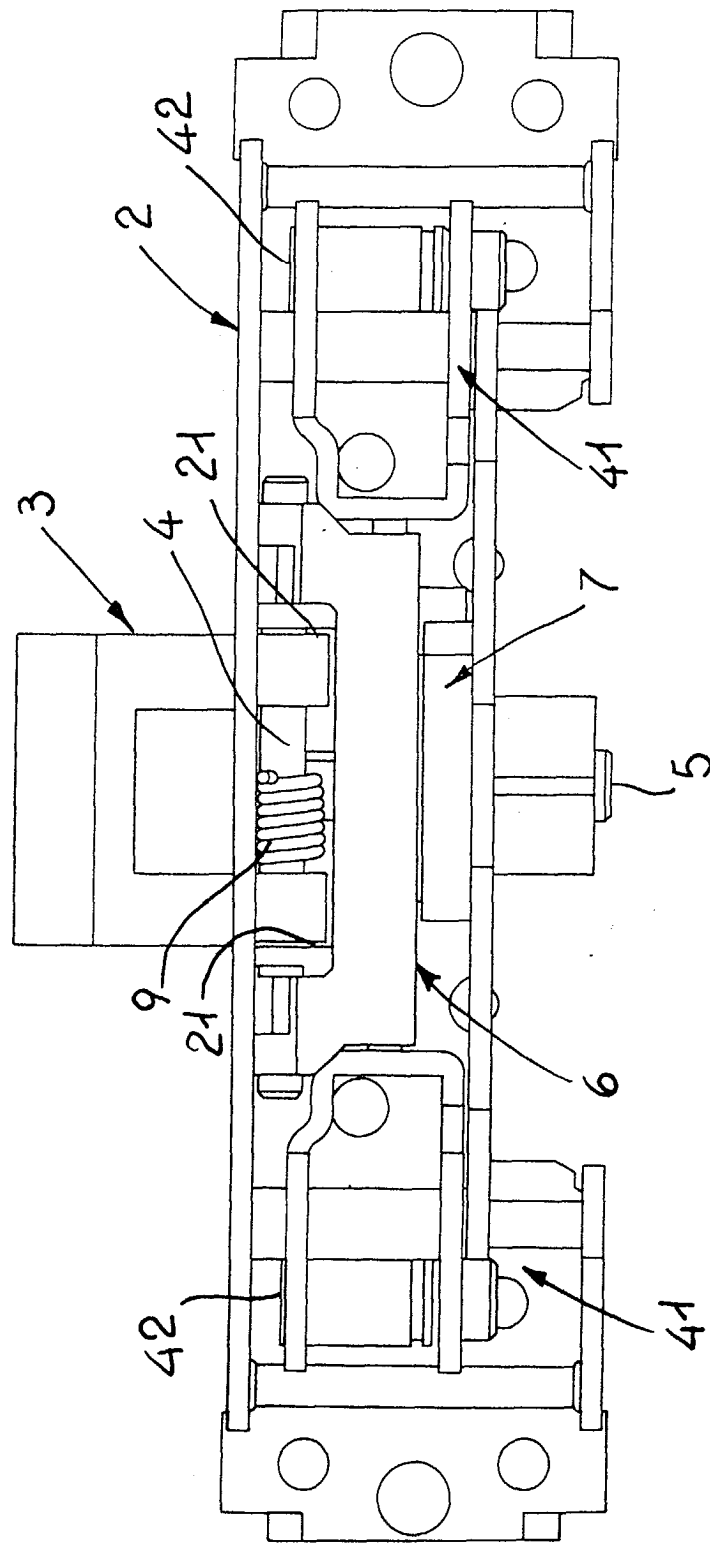


Fig. 2

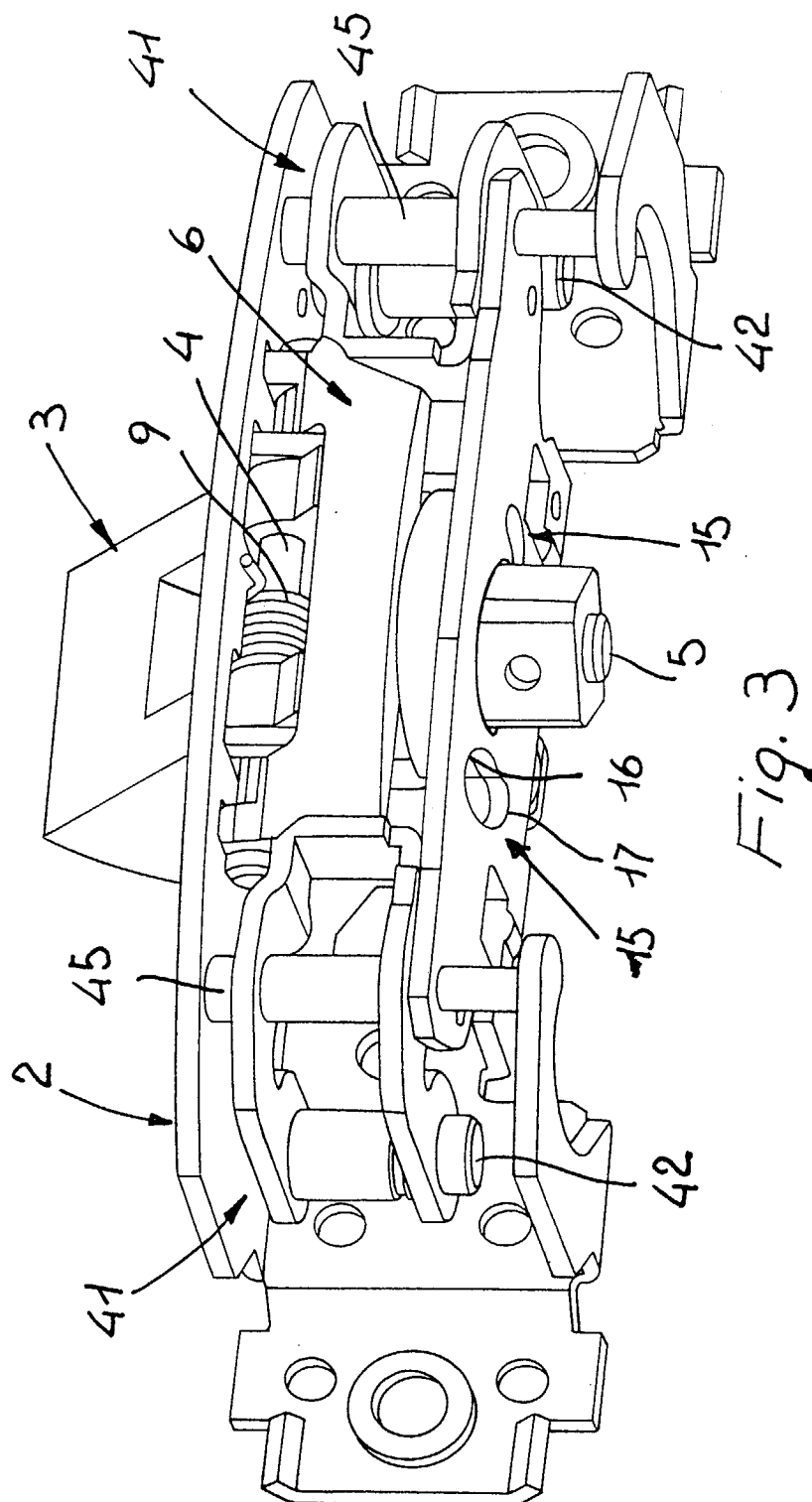


Fig. 3

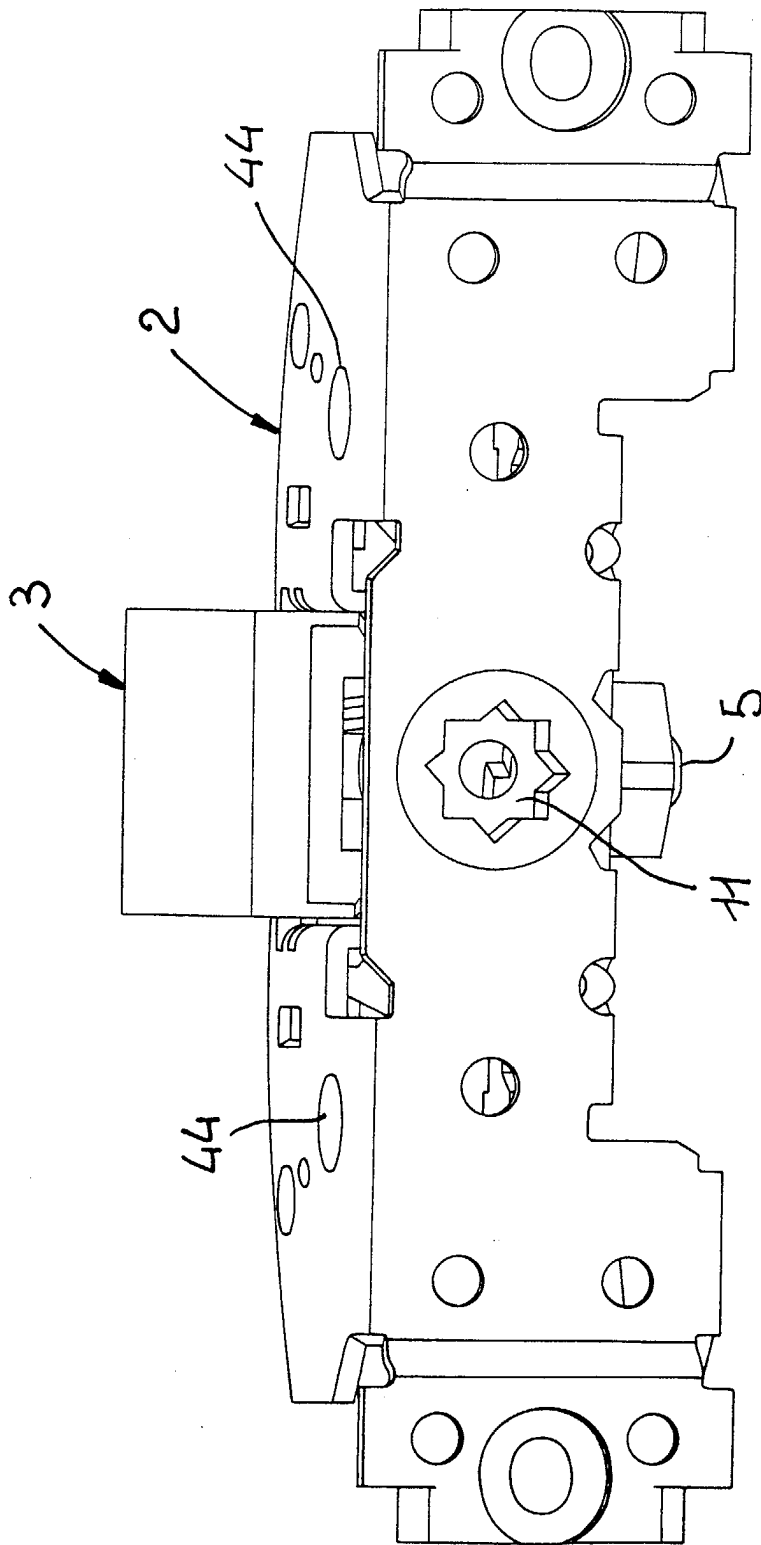
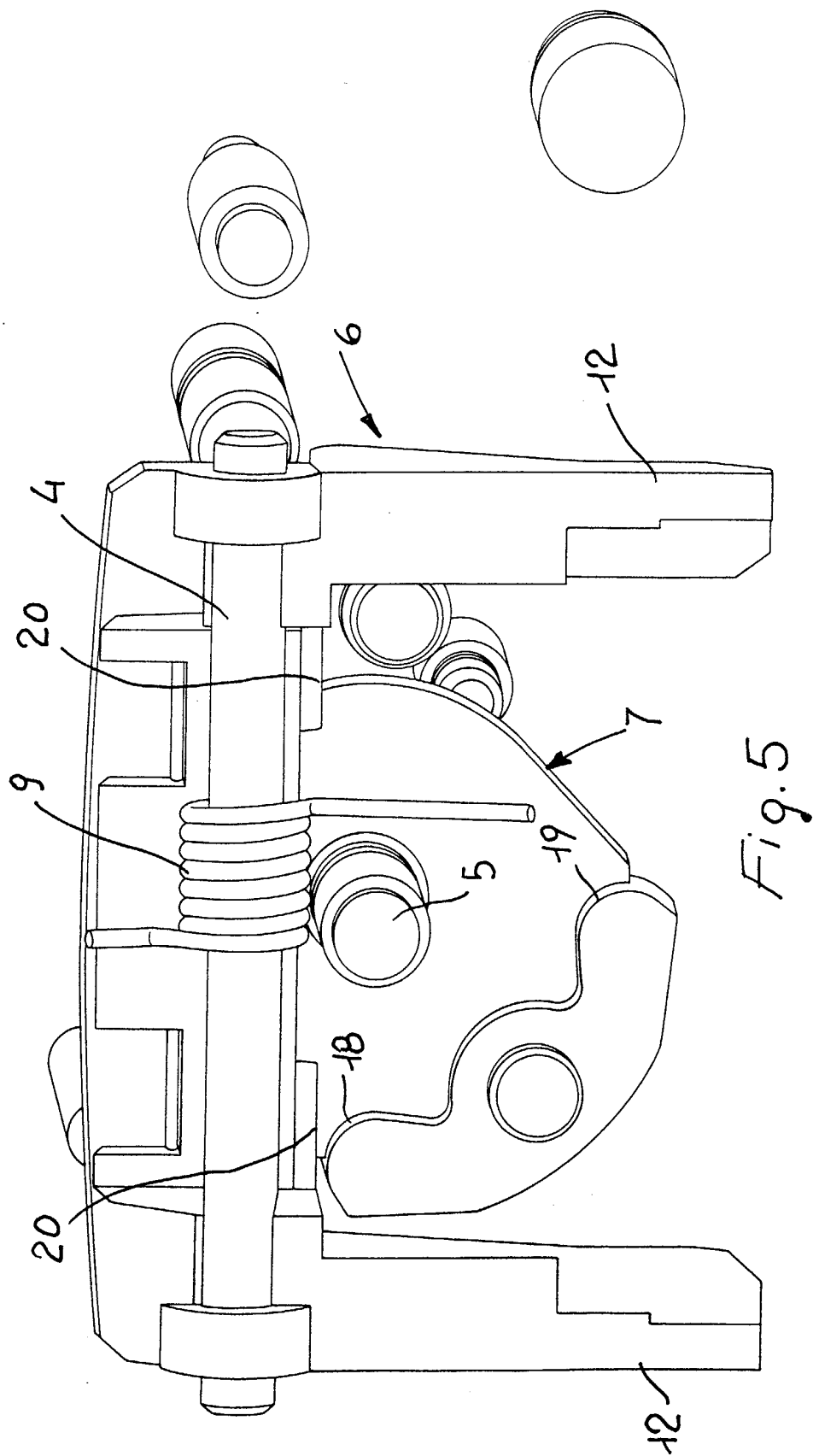
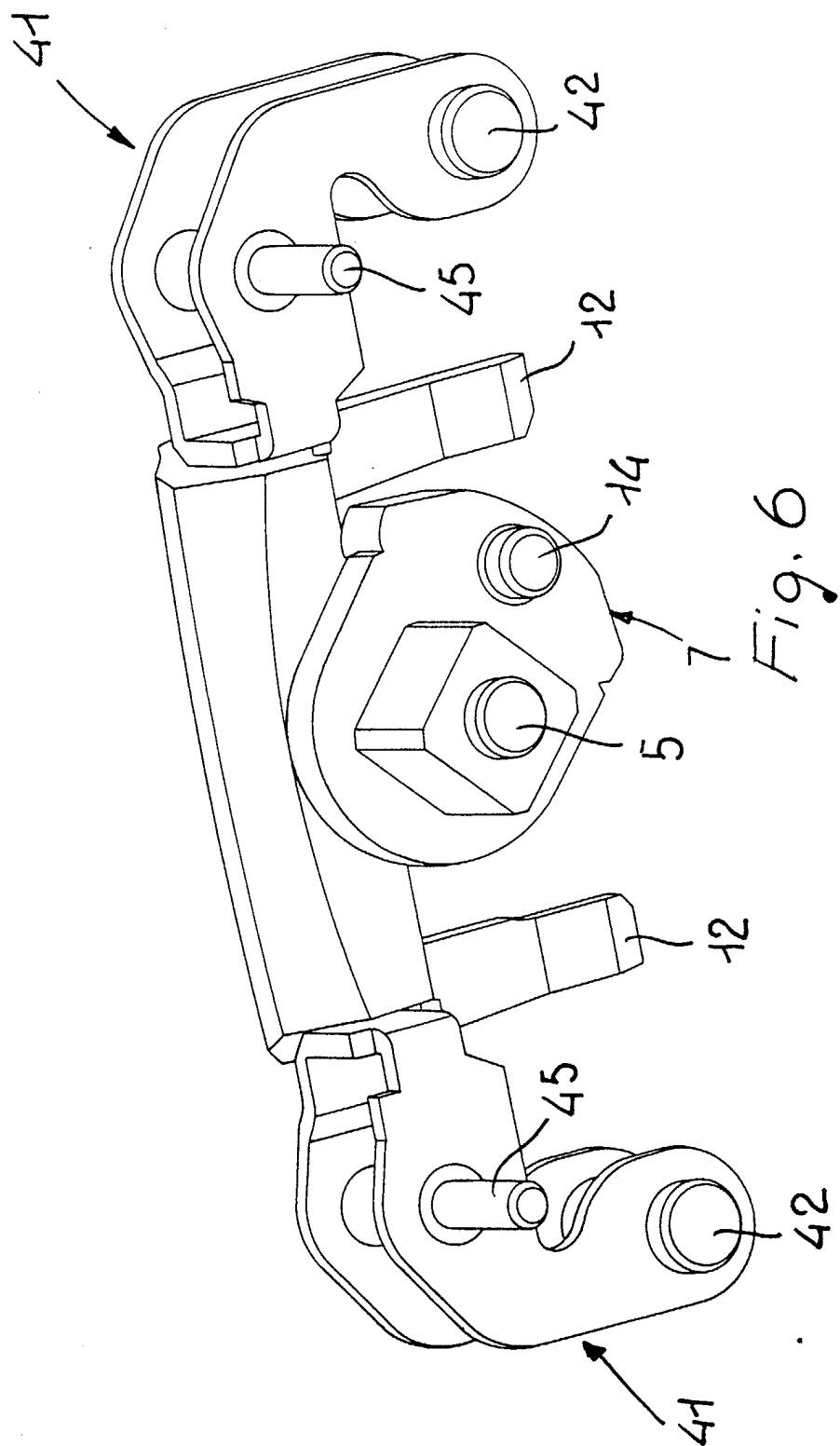


Fig. 4





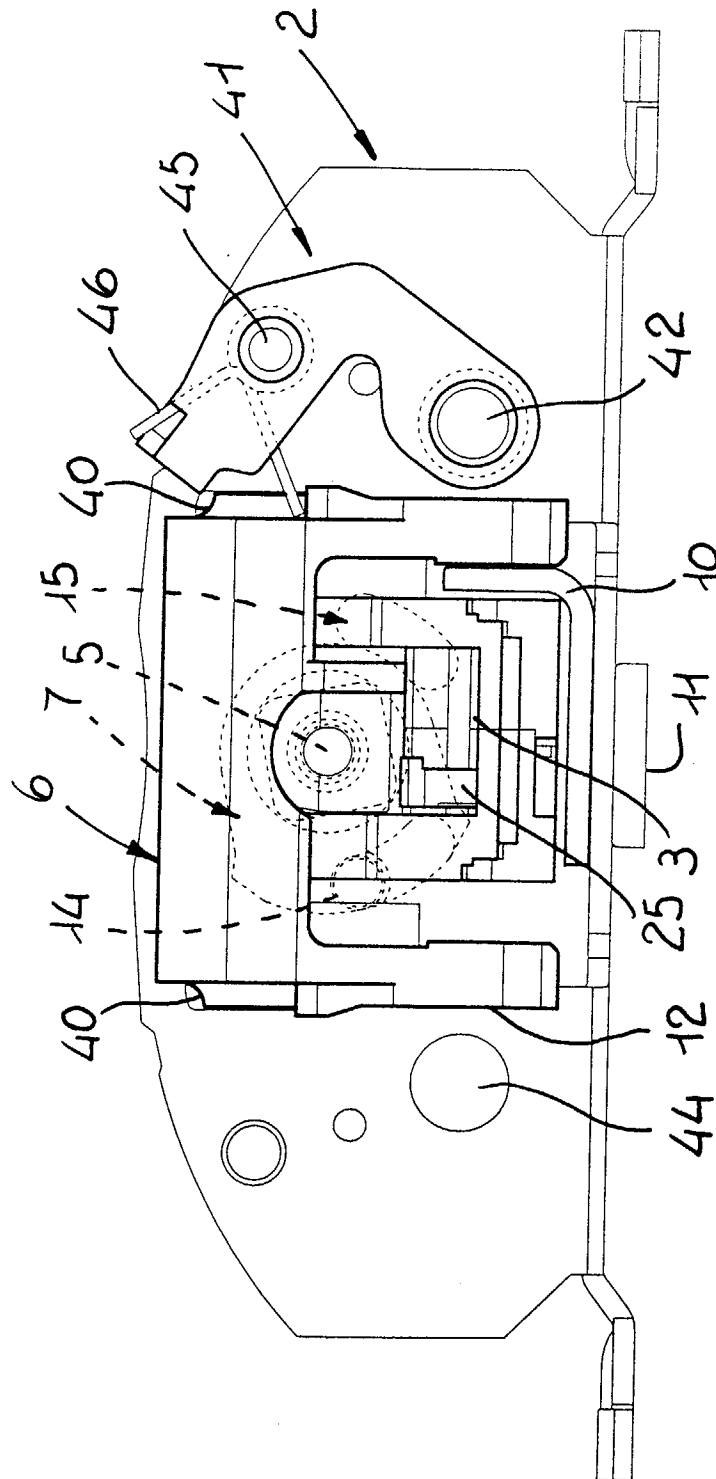


Fig 7

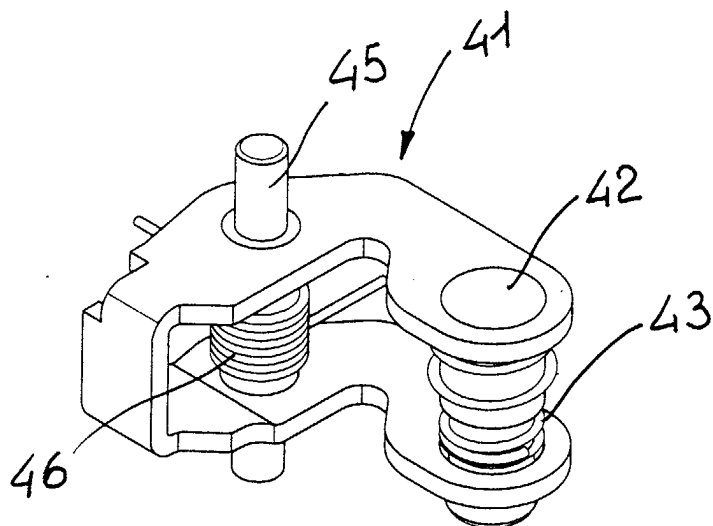


Fig. 8

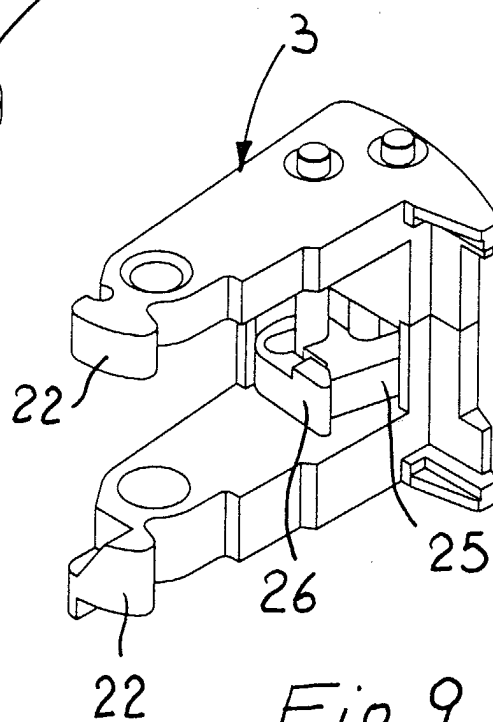


Fig. 9

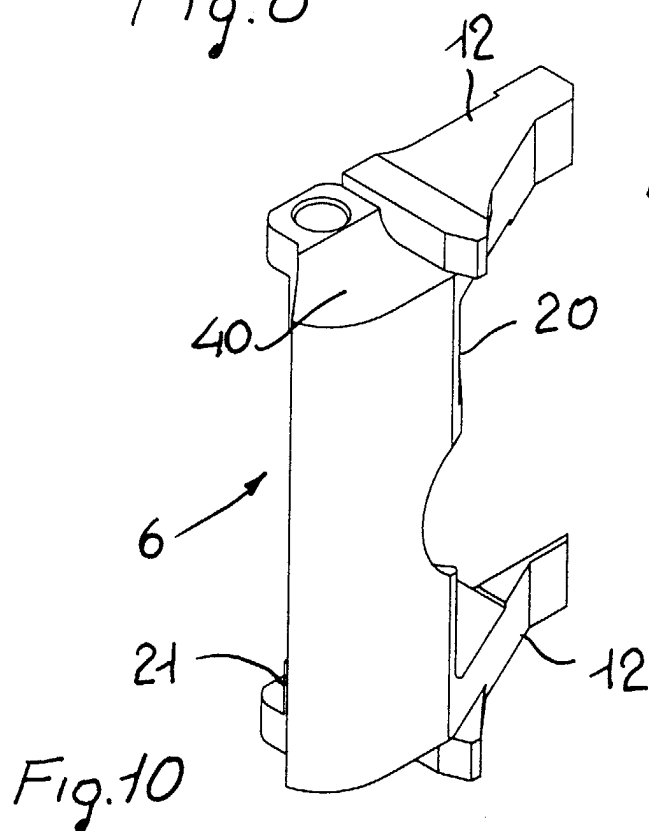


Fig. 10

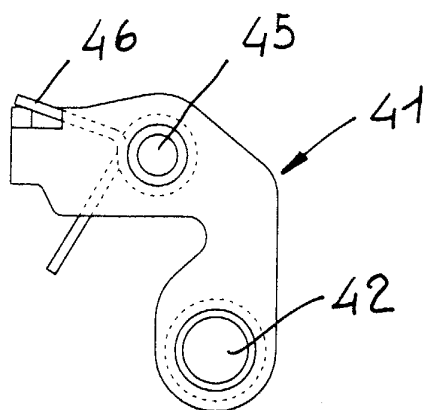


Fig. 11

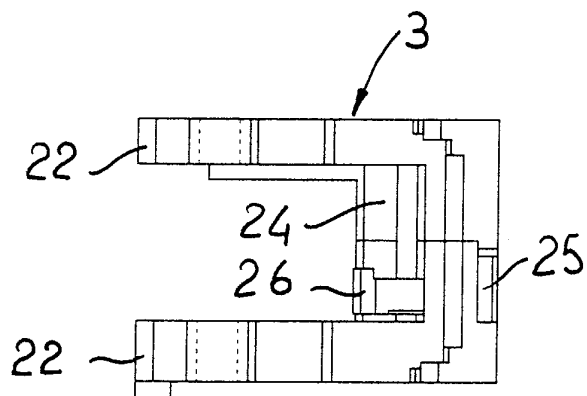


Fig. 12

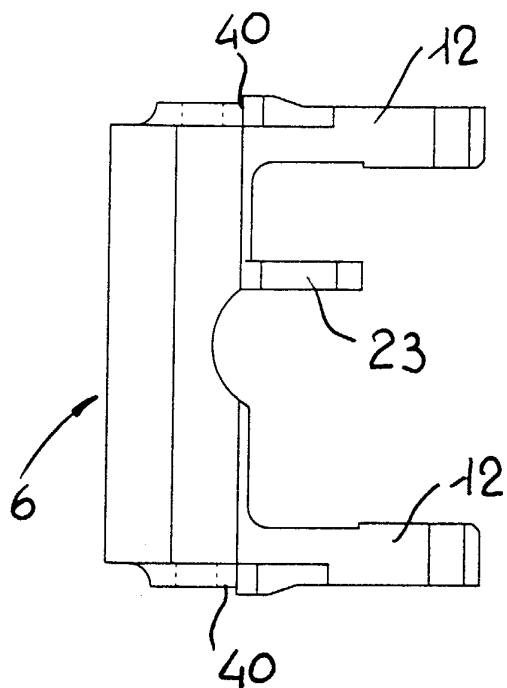


Fig. 13

