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(54) **A lock for showcases and similar furniture and a device for supporting glass panels of a showcase in a substantially perpendicular position to each other including such a lock**

(57) The present invention relates to a lock (1) for furniture, in particular showcases and the like, comprising a first portion (2) intended to be associated with a first part of said furniture and a second portion (3) intended to be associated with a second part of said furniture, **characterised in that** said first portion (2) comprises a block (5) provided with a pin (9) and said second portion (3) comprises a body (24) having a tapered chamber (30) provided with an aperture (27) for the insertion of said pin (9), and a member (36) in a magnetic and/or magnetisable material positioned in said chamber (30) and provided with a plurality of locking members (41), said locking members (41) being able, in the use of the lock in the position of locking, to restrain firmly one in relation to the other said pin (9) inserted in said chamber (30) in cooperation with an internal shoulder (43) of said body (24), said member (36) in magnetic and/or magnetisable material being movable in response to the application of an external magnetic field of attraction against elastic means (42) towards a position wherein said locking members (41) are able to release said pin (9). The present invention likewise relates to a device (50) for the resting and the support of glass panels in a substantially perpendicular position one in relation to the other comprising a lock of the abovementioned type.

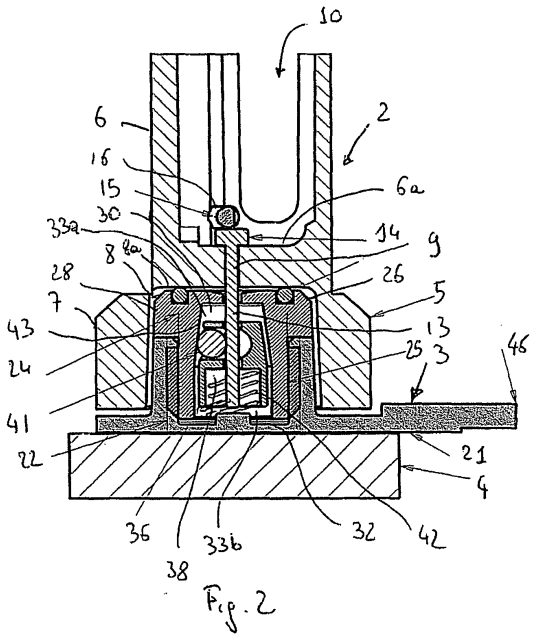

Fig. 2

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Description

Field of application

[0001] In its more general aspect, the present invention relates to the technical sector of furniture with particular reference to the manufacture of furniture with frame made up of glass panels, such as showcases and the like.

[0002] More particularly, but not exclusively, the present invention relates to a lock for showcases and similar furniture having a frame made up of glass panels connected one to the other and at least one movable glass panel (wing) which can be actuated to open and close from and against a side of said frame.

[0003] The present invention likewise relates to a connection device for the resting and the support of glass panels in a substantially perpendicular position one in relation to the other, the device comprising a lock of the abovementioned type.

Background art

[0004] It is well known that the manufacture of furniture with frame in glass, such as showcases and the like, entails the connection of glass panels, preformed to the required size, in a perpendicular position one in relation to the other, so as to obtain said frame.

[0005] This is achieved by means of devices that join glass panels arranged perpendicularly one to the other in zones forming the corners of the frame. Said devices are designed and made so as to allow the resting or the contact between panels arranged perpendicularly and adequate support so as to maintain said panels in a perpendicular position one in relation to the other.

[0006] It is likewise known that showcases made in this way are often fitted with a lock comprising two structurally separate parts which can be engaged one with the other, whereof one part is associated with the fixed frame of the showcase and the other part is associated with a movable panel (for example a wing) of the showcase. The movable panel can be actuated to open and close from and against a side of said frame with relative disengaging or engaging of the parts of the lock performed by an operator, for example by means of a key.

[0007] Although various types of locks for showcases and the like are known which also use operating principles that differ widely one from the other, for example with coupling between mechanical or magnetic members, they have various disadvantages, including that of a certain complexity of manufacture and/or assembly, the latter requiring at times drilling of the glass, an operation not lacking in difficulties and which usually requires highly specialised staff, and/or that of possibly being tampered with relative ease.

[0008] More particularly, as regards the possibility of tampering with the lock, it has to be said that this disadvantage is particularly felt in the area of mass retailing (supermarkets, hypermarkets, etc.) where there is usually massive use of showcases for displaying products on sale and there is the need to protect the products contained in the showcases from theft and/or from possible damage arising from vandalism.

[0009] The technical problem at the basis of the present invention is that of making available a lock for furniture, particularly for showcases and the like, which is simple to manufacture and install and which has high and efficient properties of anti-tampering, in such a way as to overcome the previously mentioned disadvantages with reference to the background art mentioned above.

Summary of the invention

[0010] This problem is solved by a lock for furniture, more particularly showcases and the like, comprising a first portion intended to be associated with a first part of said furniture and a second portion intended to be associated with a second part of said furniture, **characterised in that** said first portion comprises a block provided with a pin and said second portion comprises a body having a tapered chamber provided with an aperture for the insertion of said pin, and a member in a magnetic and/or magnetisable material positioned in said chamber and provided with a plurality of locking members, said locking members, during use of the lock in the locking position, being able to restrain firmly between them said pin inserted in said chamber in co-operation with an internal shoulder of said body, said member in magnetic and/or magnetisable material being movable in response to the application of an external magnetic field against elastic means towards a position wherein said locking members are able to release said pin.

[0011] In accordance with one aspect of the lock according to the invention, the first portion comprises a block having a turret intended to be associated with said first part of the furniture and ending at the front end with a plate, said plate being provided with an open seat for housing said pin.

[0012] In accordance with another aspect of the lock according to the invention, the second portion is an assembly comprising a plate-shaped member intended to be associated with said second part of the furniture and having a bush, and said body engaged removably with said bush for coverage thereof, said body with said bush having a profile substantially complementary with that of the seat of said plate so as to be able to be inserted in said seat and create, in the position of locking of the lock, substantially a shape coupling with said seat.

[0013] The abovementioned body preferably comprises a head provided with said aperture for the passage of said pin and a portion of larger dimensions than said head engaged removably with said bush.

[0014] Said chamber preferably has a tapered portion having a substantially truncated cone configuration with tapering turned towards the aperture of the head, the tapered portion being followed by a non-tapered portion ending in said bush.

[0015] In accordance with another aspect of the lock according to the invention, the abovementioned movable member comprises a cage tapered towards said opening of the head with tapering substantially equivalent to that of the tapered portion of the chamber, and a substantially cylindrical cavity open towards said bush, said cage containing said members for locking said pin.

[0016] The cage is preferably provided with opposite upper and lower apertures for inserting the pin inside thereof and possibly inside the cavity, said upper and lower apertures being coaxial with the aperture of the head, and it is also provided with a plurality of lateral apertures, one for each locking member.

[0017] The abovementioned locking members are preferably made up of spheres arranged and movable radially in said cage, said spheres being able to project slightly from the respective radial apertures of said cage.

[0018] Said elastic means mentioned above, more particularly a helical spring, are preferably positioned in said cavity of the movable member and are able to exert a thrust force on said movable member towards said internal shoulder of said body.

[0019] The abovementioned body is preferably made in a non-magnetic material while the movable member is made in a magnetic and/or magnetisable material.

[0020] The abovementioned head is preferably provided with an annular groove wherein a ring in a shock absorption material is inserted, preferably in rubber, and said plate-shaped member has a handle formed in one piece with it and projecting from said second part of said furniture.

[0021] The abovementioned technical problem is also solved by a device for the resting and support of glass panels of a showcase in a substantially perpendicular position one in relation to the other, comprising a lock of the abovementioned type and a pair of squared and structurally independent members having a plate intended to be glued to a respective panel, and means for the adjustable and independent attachment of said squared members on said block of said lock.

[0022] The plates of said squared members are preferably placed in a substantially perpendicular position one in relation to the other and in relation to the plate of the block of said lock.

[0023] Further features and advantages of the lock and of the device for the resting and support of glass panels according to the invention will be made clearer by the description given herein below of one of their preferred embodiments, said description being given by way of a non-limiting example with reference to the accompanying drawings.

Brief description of the drawings

[0024] In the accompanying drawings:

- Fig. 1 shows a rear view of a lock for showcases and the like according to the invention;
- Fig. 2 shows a sectioned view of the lock of Fig. 1 along dotted line A-A;
- Fig. 3 shows a perspective view with detached parts of a portion of the lock of Fig. 1 associated with a movable panel of a showcase;
- Fig. 4 shows a perspective view and with detached parts of a device for the resting and support of glass panels according to the present invention with a portion of the lock of Figs. 1-3;
- Fig. 5 shows a perspective view and with detached parts of a detail of the device of Fig. 4;
- Figs. 6-9 each show portions of the device for resting and support and/or of the lock according to the invention in respective phases of fitting to a respective portion of a showcase;
- Fig. 10 shows a perspective view of a portion of a showcase comprising a device for resting and support and a lock according to the invention.

Detailed description

[0025] Referring to Figs. 1-3, a lock for showcases and the like according to the invention is denoted overall by 1.

[0026] The lock 1 comprises a first portion, denoted overall by 2, intended to be associated with a fixed part of a showcase, and a second portion, denoted overall by 3, intended to be associated with a movable part of said showcase, said second portion 3 can also be associated removably with said first portion 2 in order to move said movable part from and towards said fixed part during opening and closure of the showcase according to needs.

[0027] The term "associated" is used to indicate above that the first portion 2 and the second portion 3 can be joined to the fixed part and to the movable part of a showcase respectively, directly or indirectly and removably or non-removably.

[0028] In the present non-limiting example, the fixed part is made up of the frame (not shown in Figs. 1-3) of a showcase comprising glass panels positioned substantially at right angles one in relation to the other while the movable part is made up of a glass panel (wing) 4 movable from and against the frame of the showcase in order to open and close it according to needs.

[0029] The first portion 2 of the lock 1 comprises a retaining block 5 in a metal material having a turret 6 ending at the front end with a plate 7 provided with a seat 8 open for the housing of a pin 9. In the turret 6 a slot 10 is formed, open at the rear, that is to say on the side opposite the plate 7, and laterally on two sides orthogonal one in relation to the other, via apertures 11 with a longitudinal extension.

[0030] The turret 6 is also provided internally with an aperture for placing the slot 10 in communication with

the seat 8 of the plate 7 and by which the pin 9, previously inserted from the rear of the turret 6 in the slot 5, is inserted in the appropriate housing seat 8. Advantageously, the pin 9 has a shank 13 passing through the aperture of the turret 6 and a head portion 14 having a larger diameter compared to that of the shank 13 and of the aperture of the turret 6. This head portion 14 acts substantially as end of stroke for the insertion of the pin 9 in the aperture of the turret 6 and therefore in the appropriate housing seat 8, abutting against a wall 6a of the turret 6 inside the slot 10. A peg 15 is also provided, interacting with the head portion 14 in order to attach transversely the pin 9 in such a way that, once inserted in the appropriate seat 8, it can no longer move backwards and/or withdraw.

[0031] Advantageously, this peg 15 is inserted in a hole 16 formed on a corner of the turret 6 inside the slot 5, said hole 16 forming a predetermined angle (preferably around 45°) in relation to the longitudinal and/or transversal axis of the turret 6.

[0032] In accordance with the present invention, the block of the first portion 2 of the lock 1 is made in a metal material, more particularly stainless steel, or materials that are easily formed, such as zamac, aluminium and the like, preferably zamac.

[0033] The second portion 3 of the lock 1 is an assembly of different components as shown in particular in Figs. 2 and 3. This assembly comprises a plate-shaped member 21 intended to be glued by methods per se conventional to the abovementioned movable glass panel 4 of a showcase. The plate-shaped member 21 has a substantially cylindrical bush 22 formed in one piece with the plate-shaped member 21 and provided with internal threading 23, the bush 22 projecting therefrom at the surface opposite that of attachment of the plate-shaped member 21 to the glass panel 4.

[0034] The plate-shaped member 21 and the bush 22 are made in a metal material, more particularly stainless steel, or materials that are easily formed, such as zamac, aluminium and the like, preferably zamac.

[0035] The assembly 3 comprises moreover a substantially cylindrical body 24 shaped to make up a cover or a plug for the bush 22. The body 24 is in fact provided with an external threading 25 which can be engaged with the internal threading 23 of the bush 22 according to a threaded coupling so as to allow screwing and unscrewing of the body 24 on the bush 22.

[0036] More particularly the body 24 comprises a head 26 provided with an aperture 27 for the passage of the pin 9 (specifically of the end portion of its shank 13 housed in the seat 8) in the use of the lock 1 to close the showcase as will be explained in greater detail herein below, a portion 28 of greater diameter joined to the head 26 and an end portion 29 provided externally with said threading 25.

[0037] Inside the plug body 24 a tapered cavity or chamber 30 is defined which communicates at one end with the aperture 27 of the head 26 and is extended laterally along substantially the entire longitudinal extension of the body 24. This chamber 30 is closed at the end opposite to that communicating with the aperture 27 of the head 26 by a base wall 32 of the bush 22 when the body 24 is engaged in the bush 22 by means of the threaded coupling illustrated above.

[0038] More particularly the chamber or cavity 30 has a tapered portion 33a having a substantially truncated cone configuration with tapering turned towards the aperture 27 of the head 26 (or in other words in the direction of disengaging of the pin 9 from the body 4 as will be explained in greater detail herein below) and a non-tapered portion 33b (that is to say having a substantially constant diameter) ending at the base 32 of the bush 22 when the retaining body 24 is screwed in the bush 22.

[0039] The body 24 of the assembly 3 is made in a non-magnetic material, preferably stainless steel.

[0040] The assembly 3 of the lock 1 comprises moreover a movable (or floating) member 36 shaped substantially like a small barrel and inserted in the tapered chamber 30, the movable member 36 comprising a cage 37 tapering towards said aperture 27 of the head 26 (or in other words in the direction of disengaging of the pin 9 from the body 24) with tapering substantially equivalent to that of the tapered portion 33a of the chamber 30, and a substantially cylindrical cavity 38 open towards the base 32 of the bush 22.

[0041] The movable member 36 is made in a magnetic and/or magnetisable material, in particular iron, so as to be able to be attracted by a magnet of adequate power placed in proximity of the lock 1 as will be explained in greater detail herein below in the description.

[0042] The cage 37 is provided with opposite upper and lower apertures 39 for the insertion of the pin 9 inside thereof and possibly inside the cavity 38, the upper and lower apertures 39 being coaxial along the longitudinal axis X of the assembly 3 with the aperture 27 of the head 26.

[0043] The cage 37 is also provided with a plurality of lateral apertures 40 positioned radially and contains internally a plurality of spheres 41, one for each radial aperture 40, the spheres 41 being able to project slightly from the respective radial apertures 40 and being movable only radially.

[0044] In the present non-limiting embodiment, the cage 37 has three apertures 40 arranged radially at 120° one in relation to the other. The spheres 41 are in a magnetic and/or magnetisable material, in particular iron.

[0045] The assembly 3 of the lock 1 comprises moreover a helical spring 42 inserted in the cavity 38 of the movable member 36 and supported by the base 32 of the bush 22. This spring 42 exerts a force which tends to push the movable member 36 with the respective spheres 41 towards the body 24, in particular against the wall or internal conical shoulder 43 of the body 24 in the tapered portion 33a of the chamber 30.

[0046] As regards the functioning of the lock 1, it has to be said that in the situation wherein the movable wall 4 is distanced from the fixed part of the showcase (show-

case open), the first portion 2 and the second portion 3 are completely disengaged one in relation to the other. In this position, the movable member 36, with the respective spheres 41, is maintained in pressure contact, by means of the spring 42, against the internal conical wall 43 of the retaining body 24. Due to the effect of this contact, the spheres 41 are pushed radially towards the interior of the cage 37, in a position wherein the free space between them in the radial direction is smaller than the diameter of the pin 9.

[0047] In order to bring the lock 1 into the operative position of locking to which closure of the showcase corresponds, it is sufficient to bring the second portion 3 associated with the movable glass panel 4 towards the first portion 2 associated with the frame of the showcase in such a way as to insert the body 24 and the bush 22 in the seat 8 of the plate 7 with simultaneous insertion of the pin 9 in the aperture 27 of the body 24 and therefore in the movable member 36 by means of the respective apertures 39 until it is locked between the spheres 41. Given that the space between the spheres 41 is not sufficient for allowing the passage of the pin 9 between them, the insertion of the pin 9 has the effect of pushing the movable member 36 with the respective spheres 41 in the direction opposite that of the thrust exerted by the spring 42 (that is to say in the direction of insertion of the pin 9) until reaching a position wherein the conicity of the internal shoulder 43 of the body 24 allows a movement of the spheres 41 towards the exterior such as to create a sufficient space for passage of the pin 9 between the spheres 41.

[0048] At this point the thrust action of the spring 42 on the movable member 36 prevails so that the movable member 36 is pushed in the direction of disengaging of the pin 9 until reaching a new position wherein the spheres 41 are in pressure contact with the internal conical wall 43 of the body 24 and pushed towards the interior by this wall, thus compressing the pin 9 between them.

[0049] Thanks to the conicity of the internal wall 43 of the body 24, every attempt to remove the pin 9 from the retaining body 24 only increases the pressure exerted by the spheres 41 on the pin 9, effectively making extraction thereof impossible.

[0050] Therefore the lock 1 according to the invention constitutes an effective anti-tampering system for the showcase whereto it is attached.

[0051] It should be noted that, advantageously, in the position of locking of the lock 1, the body 24 and the bush 22 are inserted substantially wholly in the seat 8 of the plate 7. This is obtained by configuring the seat 8 on one side and the body 24 and the bush 22 on the other with substantially complementary profiles so as to create, in the position of locking of the lock 1, substantially a shape coupling.

[0052] In this way a considerable reduction in overall dimensions is advantageously obtained, at the same time achieving a pleasing aesthetic effect.

[0053] Moreover, advantageously, the head 26 of the body 24 is slightly conical to improve centring of the body 24 with the bush 22 in the seat 8 of the plate 7.

[0054] Moreover the head 26 is provided with an annular groove 44 wherein a ring 45 in rubber or similar material is inserted, which has the function of absorbing shocks caused by the possible striking of the rear wall 8a of the seat 8 against the head 26 of the body 24 at the end of insertion of the body 24 in the seat 8 to bring the lock 1 into the locking position.

[0055] In order to bring the lock 1 into the operative position of unlocking or disengaging of the pin 9 from the body 24 (opening of the showcase), it is necessary to apply an external magnetic field of appropriate power in proximity of the lock 1, for example by means of a cylinder in magnetic material (a sort of magnetic key), which can be supplied to staff authorised to access the content of the showcase.

[0056] Given that the movable member 36 is made in a magnetic and/or magnetisable material, the bringing of a magnet (not shown) of adequate power in the proximity of the lock 1 again entails the forward movement, through magnetic attraction, of the movable member 36 with the respective spheres 41 in the direction of insertion of the pin 9, in opposition to the thrust exerted by the spring 42, until reaching a position wherein the conicity of the internal shoulder 43 of the body 24 allows a movement of the spheres 41 outwards such that they no longer exert pressure on the pin 9.

[0057] At this point, again in the presence of said magnet, the second portion 3 of the lock 1 associated with the movable glass panel 4 can be moved away from the first portion 2 associated with the fixed part of the showcase thereby allowing the disengaging of the pin 9 from the body 24 and the opening of the showcase.

[0058] Advantageously, the moving away of the second portion 3 from the first portion 2 of the lock 1 and hence of the movable wall 4 from the fixed part of the showcase is facilitated by the presence of a handle 46 formed in one piece with the plate-shaped member 21 and projecting from the movable glass wall 4.

[0059] In accordance with another aspect of the present invention, the first portion 2 of the lock 1 can be associated with and/or form part of a device for supporting the glass panels of the frame of the showcase in a substantially perpendicular position one in relation to the other (or in other words at right angles one in relation to the other).

[0060] A device for the support of the glass panels of the frame of a showcase in a substantially perpendicular position one in relation to the other comprising a lock according to the invention is shown in Figs. 4 and 5.

[0061] This device, denoted overall by 50, comprises the lock 1 described above and a pair of squared members 52, structurally independent one from the other and in relation to the first portion 2 of the lock 1, each having a plate 53 provided with an appendage 54 orthogonal thereto. Each appendage 54 has an elongated slit 55 by which an attachment screw 56 passes with its shank 57.

This attachment screw 56 co-operates with a corresponding nut 58 sliding along longitudinal guides 59 formed in the slot 10 under a lateral aperture 11 for attachment of the respective squared member 52 to the turret 6 of the block 5.

[0062] In this way, in the assembled configuration of the device 50, as can be seen for example in Fig. 7, the squared members 52 are retained with their appendages 54 on respective sides of the turret 6 provided with an aperture 11, while the plates 53 of said squared members 52 extend along respective sides of the turret 6 without apertures in a substantially orthogonal position one in relation to the other and with the plate 7 of the block 5.

[0063] The block 5 and the squared members 52 are preferably in a metal material, in particular stainless steel, or materials that are easily formed, such as zamac, aluminium and the like.

[0064] In accordance with one aspect of the present invention, the position of attachment of each squared member 52 on the block 5 can be advantageously adjusted in two substantially perpendicular directions (longitudinal and transversal directions with reference to the longitudinal extension of the turret 6) by loosening the attachment screws 56 so as to slide the appendages 54 in the direction of sliding of the nuts 58 in the longitudinal guides 59 in the turret 6 and/or slide the appendages 54 along the extension of the slit 55, then again tightening the attachment screws 56 until the shank 57 abuts against a wall of the block 6 inside the slot 10.

[0065] The device for resting and support 50 comprises moreover a removable covering member 60 for the turret 6, preferably in a plastic material, to hide from sight the appendages 54 of the squared members 52 and the rear side of the turret 6. In particular said covering member 60 comprises walls 61 substantially orthogonal one in relation to the other and a pair of dowels 62 formed in one piece on one of said walls 61 which engage removably in corresponding holes 63 formed on the rear side of the turret 6.

[0066] As regards the installation of the support device 50 with the lock 1 according to the invention, the squared members 52 are glued with the plates 53 against the respective glass panels of the frame of a showcase, in the example a lateral panel 64 (side or shoulder) and a lower (or upper) panel 65 respectively, in proximity of the front ends intended to form an angle (corner) between said panels.

[0067] The attachment is made by applying an adhesive on the plate 53, then applying the squared member 52 with the plate 53 in pressure contact against a predefined front end zone of the respective panel and finally hardening the adhesive by means of irradiation with ultraviolet rays coming for example from a UV lamp.

[0068] At this point (Fig. 6) the glass panels 64 and 65 are rested one at a time, and perpendicularly one in relation to the other, aligning and inserting the nuts 58 with the respective screws 56 (appropriately mounted previously and inserted in the slits 55) in the lateral apertures 11 of the slot 10 of the block 5. Tightening of the screws 56 finally allows attachment of the squared members 52 to the block 5 and therefore maintaining of the panels 64 and 65 in a substantially perpendicular position one in relation to the other (Fig. 7).

[0069] Advantageously, in the case of inaccuracies of gluing of the squared members 52, or in the case of assembly inaccuracies, it is possible to remedy these inaccuracies at least partially by loosening the attachment screws 56, then sliding the appendages 54 in the direction of sliding of the nuts 58 in the longitudinal guides 11 in the turret 6 and/or sliding the appendages 54 along the extension of the slit 55, until reaching the required reciprocal position of the panels, then again tightening the attachment screws 56.

[0070] At this point provision is made to cover the turret 6 with the cover 60, inserting the dowels 62 of the cover 60 in the holes 63 formed on the rear side of the turret 6. In this way, as shown in particular in Fig. 8, the first portion 2 of the lock 1 according to the invention is associated with a portion of the frame of the showcase (angular end portion of the upper wall 65 and of the lateral wall 64) by means of the device 50 whereof it is an integral part.

[0071] The plate-shaped member 21 of the second portion 3 of the lock 1 (previously assembled with its components) is also glued, separately, in the manner described above, to the internal surface of the movable glass panel 4 of the showcase in proximity of an appropriate corner of said panel 4 so as to be able to associate one with the other the second portion 3 and the first portion 2 of the lock 1 in the manner described above (Fig. 9). In this attachment care is taken to make the gripping handle 46 project from the movable panel 4 so as to facilitate opening of the showcase as described above.

[0072] In Fig. 10 a portion of a showcase is shown, obtained by joining the lateral panel 64 and the lower panel 65 of the frame of the showcase in a substantially perpendicular position one in relation to the other by means of a device 50 according to the invention and joining the movable panel 4 to the frame of the showcase by means of the lock 1.

[0073] It can be noted that the device 50 according to the invention, in addition to guaranteeing the necessary rest and support for the panels of the frame of the showcase and the opening or closure of the showcase, has advantageously reduced overall dimensions and pleasing aesthetic impact thanks also to the presence of the covering member 60 which conceals from sight the underlying attachment members.

[0074] One main advantage of the lock according to the invention lies in its high properties of resistance to tampering given that it can only be opened using a magnet of appropriate power which can possibly be adjusted according to needs.

[0075] Possible forcing of the lock according to the invention with a metal tool, such as for example a screwdriver, is very difficult and, in the case of application of

the lock to a showcase and similar furniture, this necessarily entails forcing on the glass such as to cause breakage or splintering thereof with consequent evidence of tampering.

[0076] It should be noted moreover that the magnets necessary for opening the lock according to the invention must have a high power and therefore they are special products made by specialized firms and very difficult for the public to find.

[0077] Even if they were available in some way, they usually have considerable dimensions to ensure the power necessary for opening the lock (for example a cylindrical magnet can have dimensions of 50 mm in diameter and 30 mm in height) and therefore are difficult to conceal, thereby making it difficult to perform any fraudulent actions.

[0078] Further advantages of the lock according to the invention lie in its simple and economical production and in the ease of assembly which advantageously does not require any type of work on the glass such as cutting, drilling, etc.

[0079] Another main advantage lies in the possibility of integrating the lock 1 in a device for the resting and the support of glass panels in a perpendicular position one in relation to the other.

[0080] In the case of a device for the resting and support of glass panels in a perpendicular position one in relation to the other such as that of the invention and described above, the further advantage is obtained of being able to remedy possible inaccuracies of gluing of the block or of the squared members to the respective panels and/or inaccuracies of assembly by means of a simple adjustment of the attachment of the squared members in relation to the block.

[0081] It should be noted advantageously that this adjustment is possible in the device according to the invention for each squared member in two substantially orthogonal directions.

[0082] Another advantage of the device according to the invention lies in its efficacy in supporting glass panels also of considerable thickness (for example 6-8 mm).

[0083] Another advantage of the device according to the invention lies in its reduced overall dimensions and in the versatility of use with panels responding to even very different needs and functions. Moreover its final appearance (cube shape) without projecting parts allows the device according to the invention to achieve a quality aesthetic appearance.

[0084] Finally, a last advantage of the device according to the invention, no less important than the previous ones, lies in the ease of manufacture, which allows the possibility of production on a large scale and with low costs.

[0085] The person skilled in the art may make numerous changes and variants to the lock and to the device according to the invention described above, moreover all coming within the sphere of protection of the following claims.

Claims

1. Lock (1) for furniture, in particular showcases and the like, comprising a first portion (2) intended to be associated with a first part of said furniture and a second portion (3) intended to be associated with a second part of said furniture, **characterised in that** said first portion (2) comprises a block (5) provided with a pin (9) and said second portion (3) comprises a body (24) having a tapered chamber (30) provided with an aperture (27) for the insertion of said pin (9), and a member (36) in a magnetic and/or magnetisable material positioned in said chamber (30) and provided with a plurality of locking members (41), said locking members (41) being able, in the use of the lock in the locking position, to restrain firmly one in relation to the other said pin (9) inserted in said chamber (30) in co-operation with an internal shoulder (43) of said body (24), said member (36) in magnetic and/or magnetisable material being movable in response to the application of an external magnetic field of attraction against elastic means (42) towards a position wherein said locking members (41) are able to release said pin (9).

2. Lock (1) according to claim 1, wherein said first portion (2) comprises a block (5) having a turret (6) intended to be associated with said first part of the furniture and ending at the front end with a plate (7), said plate (7) being provided with a seat (8) open for the housing of said pin (9).

3. Lock (1) according to claim 1 or 2, wherein said second portion (3) is an assembly comprising a plate-shaped member (21) intended to be associated with said second part of the furniture and having a bush (22) and said body (24) engaged removably with said bush (22) for coverage thereof, said body (24) with said bush (22) having a profile substantially complementary with that of the seat (8) of said plate (7) so as to be able to be inserted in said seat (8) and create, in the position of locking of the lock, substantially a shape coupling with said seat (8).

4. Lock (1) according to claim 3, wherein said body (24) comprises a head (26) provided with said aperture (27) for the passage of said pin (9) and a portion (29) of greater dimensions than said head engaged removably with said bush (22).

5. Lock (1) according to any one of the previous claims, wherein said chamber (30) has a tapered portion (33a) having a substantially truncated cone configuration with tapering turned towards the aperture (27) of the head (26) which is followed by a non-tapered portion (33b) ending in said bush (22).

6. Lock (1) according to claim 5, wherein said movable

member (36) comprises a cage (37) tapered towards said aperture (27) of the head (26) with substantially equivalent tapering to that of the tapered portion (33a) of the chamber (30), and a substantially cylindrical cavity (38) open towards said bush (22), said cage containing said members (41) for locking of said pin (9).

7. Lock (1) according to claim 6, wherein said cage (37) is provided with opposite upper and lower apertures (39) for the insertion of the pin (9) inside thereof and possibly inside the cavity (38), said upper and lower apertures (39) being coaxial with the aperture (27) of the head (26), and is moreover provided with a plurality of lateral apertures (40), one for each locking member (41).

8. Lock (1) according to claim 7, wherein said locking members are made up of spheres (41) arranged and movable radially in said cage (37), said spheres (41) being able to project slightly from the respective radial apertures (40) of said cage (37).

9. Lock according to any one of claims 6 to 8, wherein said elastic means (42), preferably a helical spring, are positioned in said cavity (38) of the movable member (36) and are able to exert a thrust force on said movable member (36) towards said internal shoulder (43) of said body (24).

10. Lock (1) according to claim 9, wherein said internal shoulder (43) of the body (24) is situated in the tapered portion (33a) of said chamber (30).

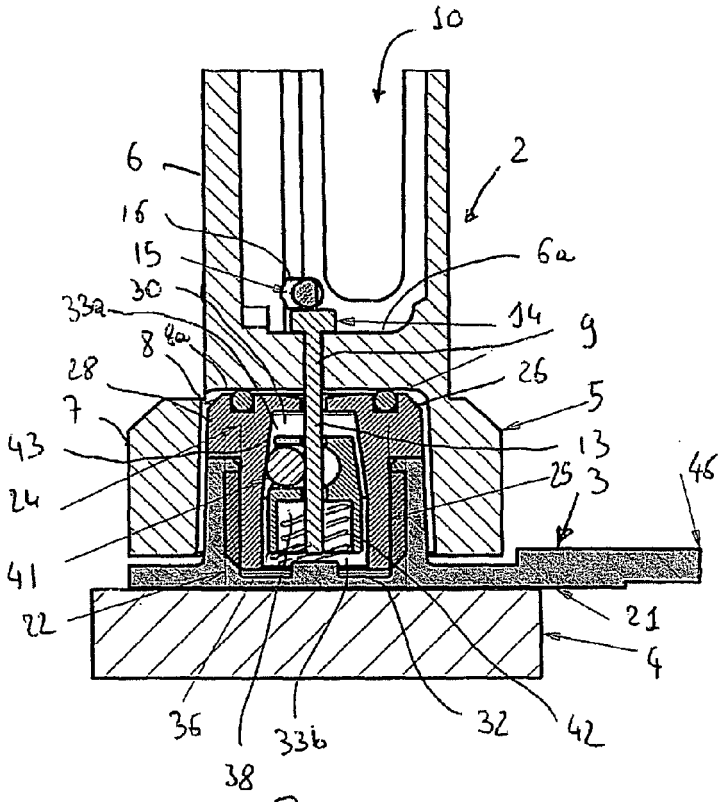
11. Lock (1) according to any one of the previous claims, wherein said body (24) is made in a non-magnetic material and said movable member (36) is made in a magnetic and/or magnetisable material.

12. Lock (1) according to any one of the previous claims 4 to 11, wherein said head (26) is provided with an annular groove (44) wherein a ring (45) in a shock absorption material, preferably rubber, is inserted and wherein said plate-shaped member (21) has a handle (46) formed in one piece and projecting from said second part of said furniture.

13. Lock (1) according to any one of the previous claims, wherein said first part of the furniture is made up of a fixed frame of a showcase comprising glass panels (64,65) positioned substantially at right angles one in relation to the other whereas said movable part is made up of a panel (4) in glass movable from and against the frame of the showcase.

14. Device (50) for the resting and the support of glass panels (64,65) of a showcase in a substantially perpendicular position one in relation to the other comprising a lock according to any one of the previous claims, a pair of structurally independent squared members (52) having a plate (53) intended to be glued to a respective panel (64,65), and means for the adjustable and independent attachment of said squared members (52) on said block (5) of said lock (1).

15. Device (50) according to claim 14, wherein said plates (53) of said squared members (52) are arranged in a substantially perpendicular position one in relation to the other and in relation to the plate (7) of said block (5).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2
6
16
15
30
33a
6a
14
9
8
28
26
7
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43
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24
25
3
46
41
22
21
4
36
38
33b
32
42

Fig. 2

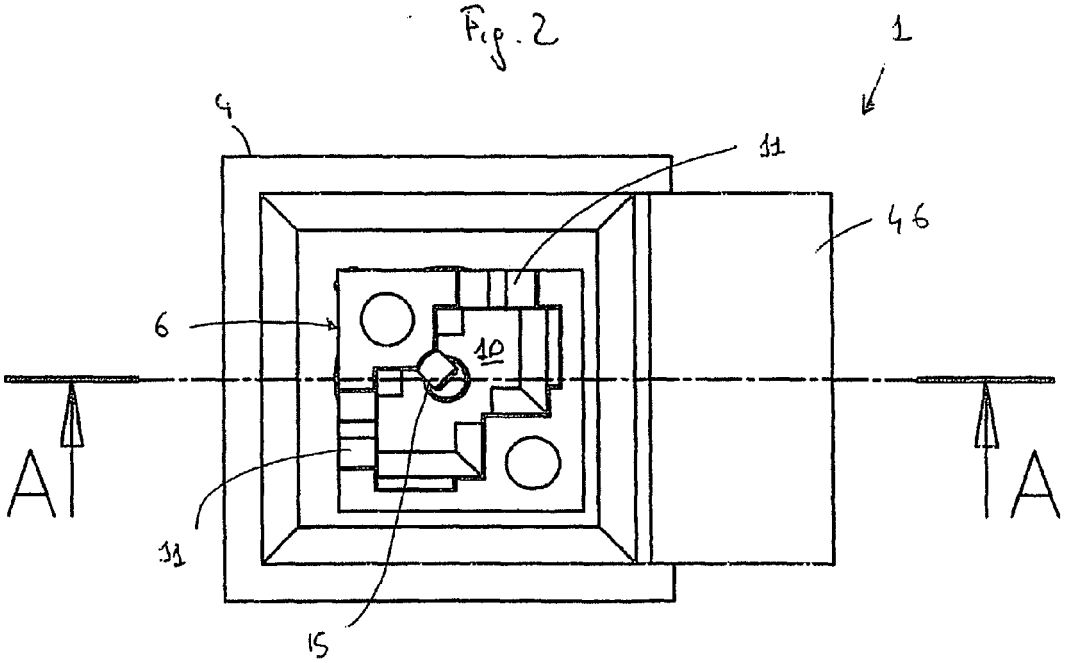
1
9
11
46
6
10
A
A
11
15

Fig. 1

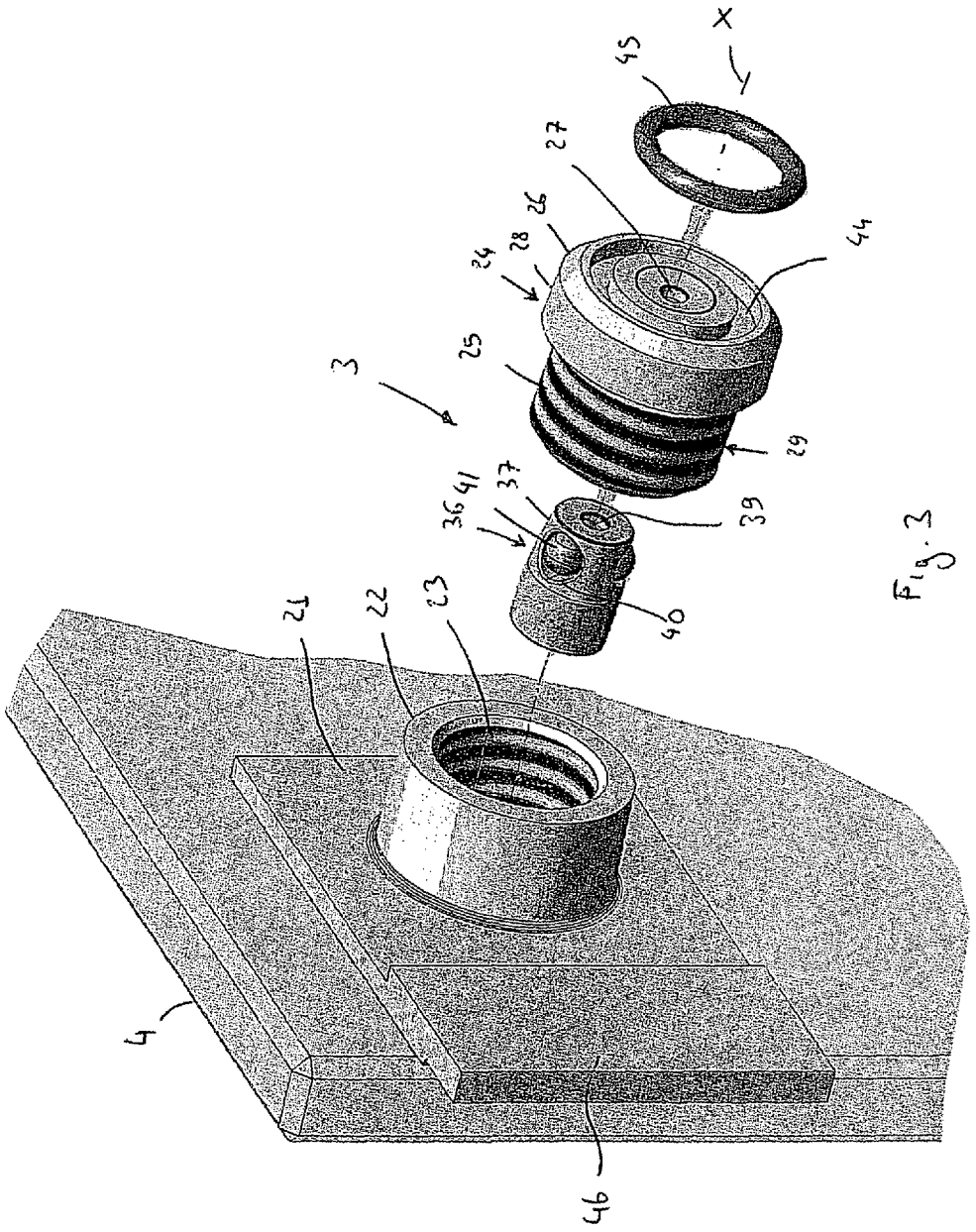

Fig. 3

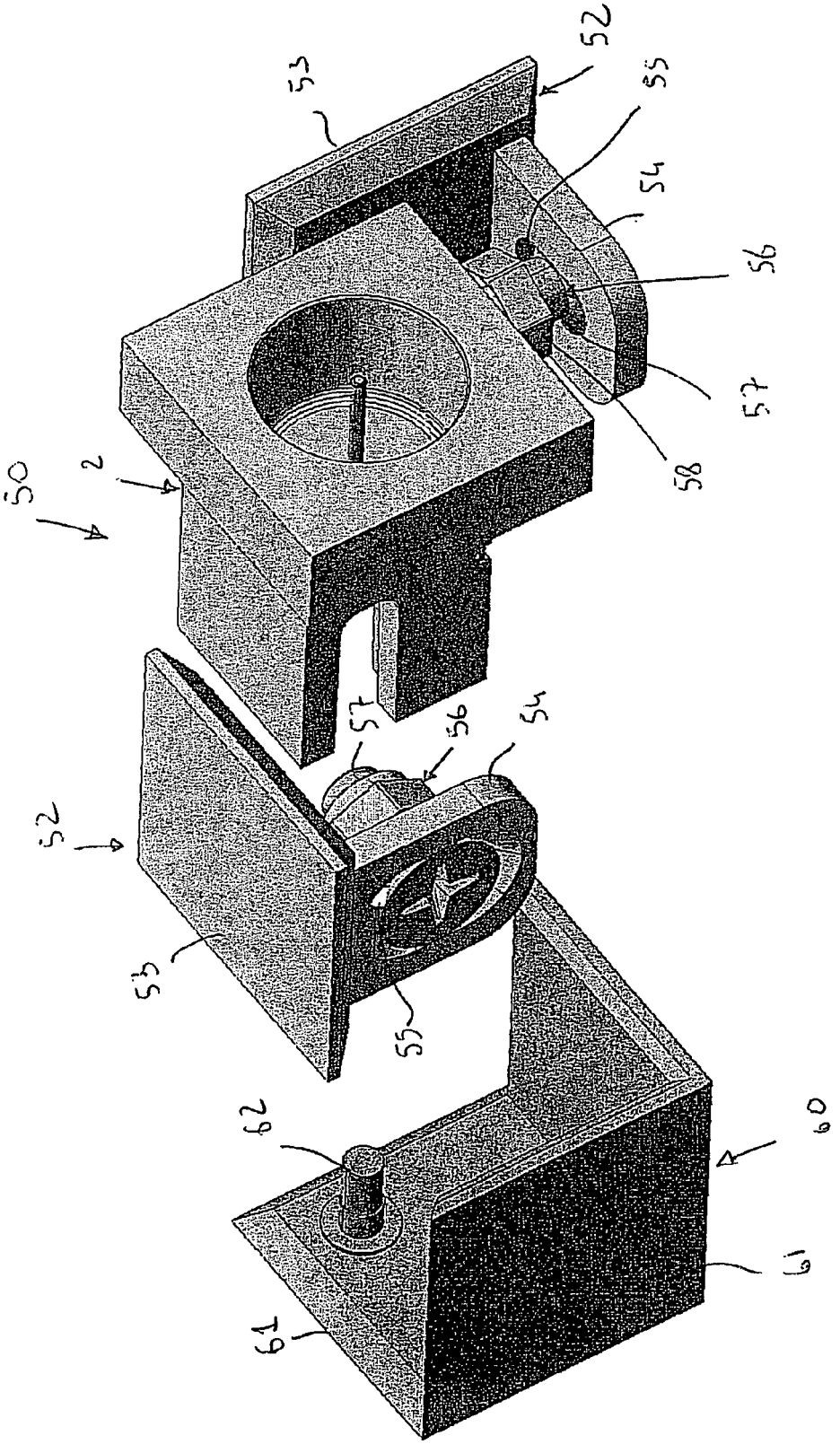

Fig. 4

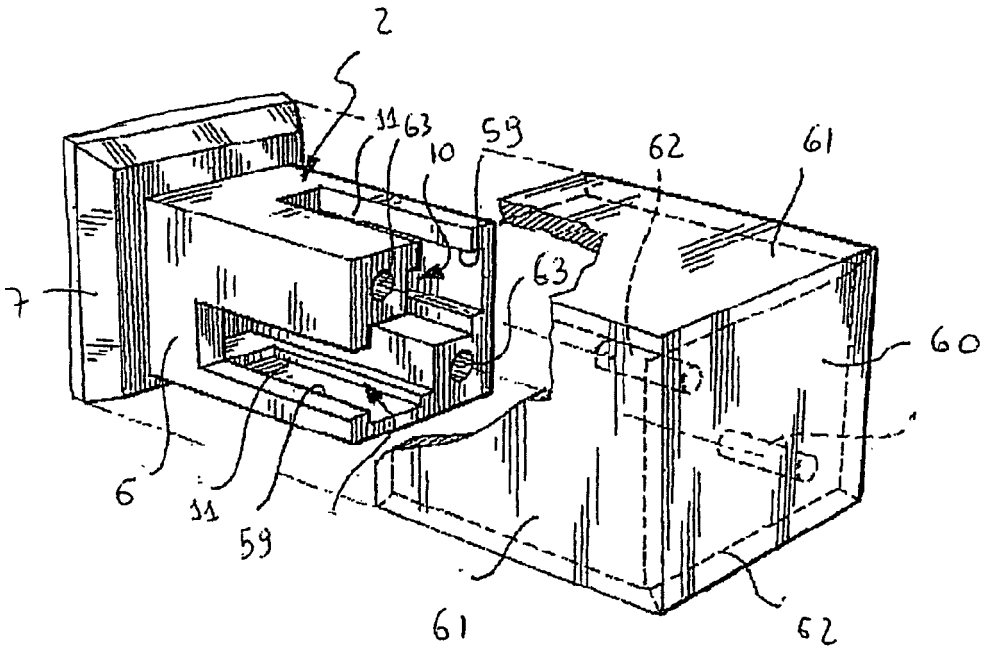

Fig. 5

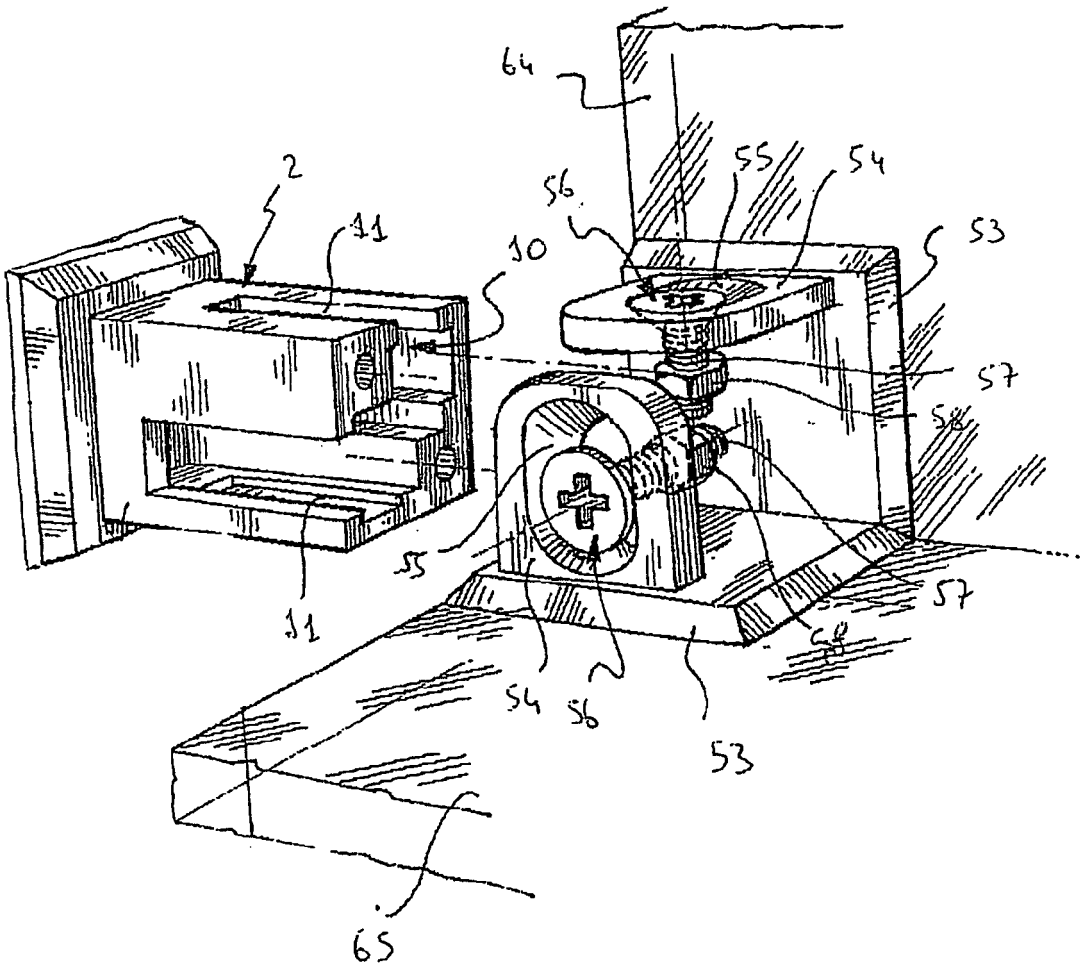

Fig. 6

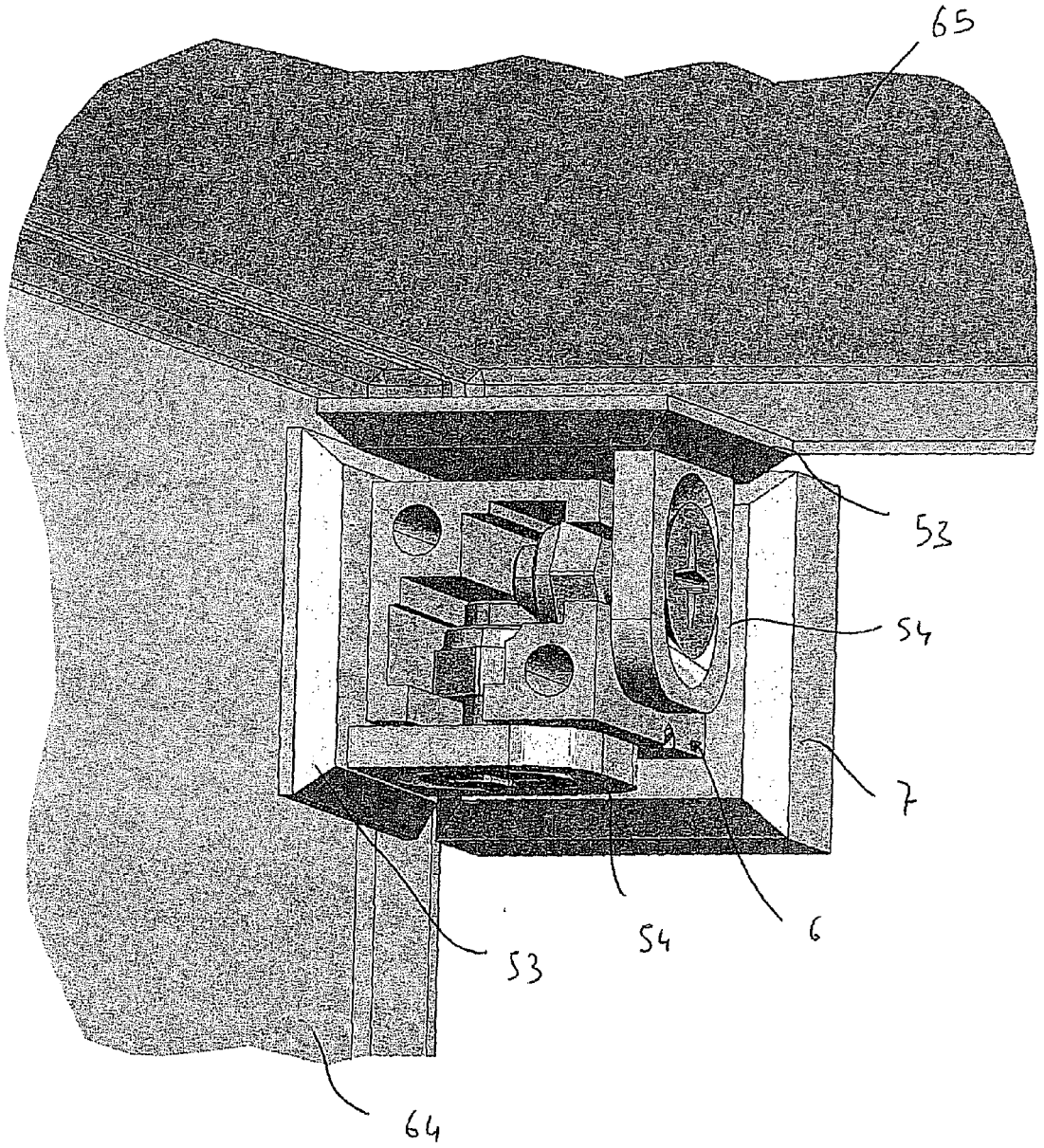

Fig. 7

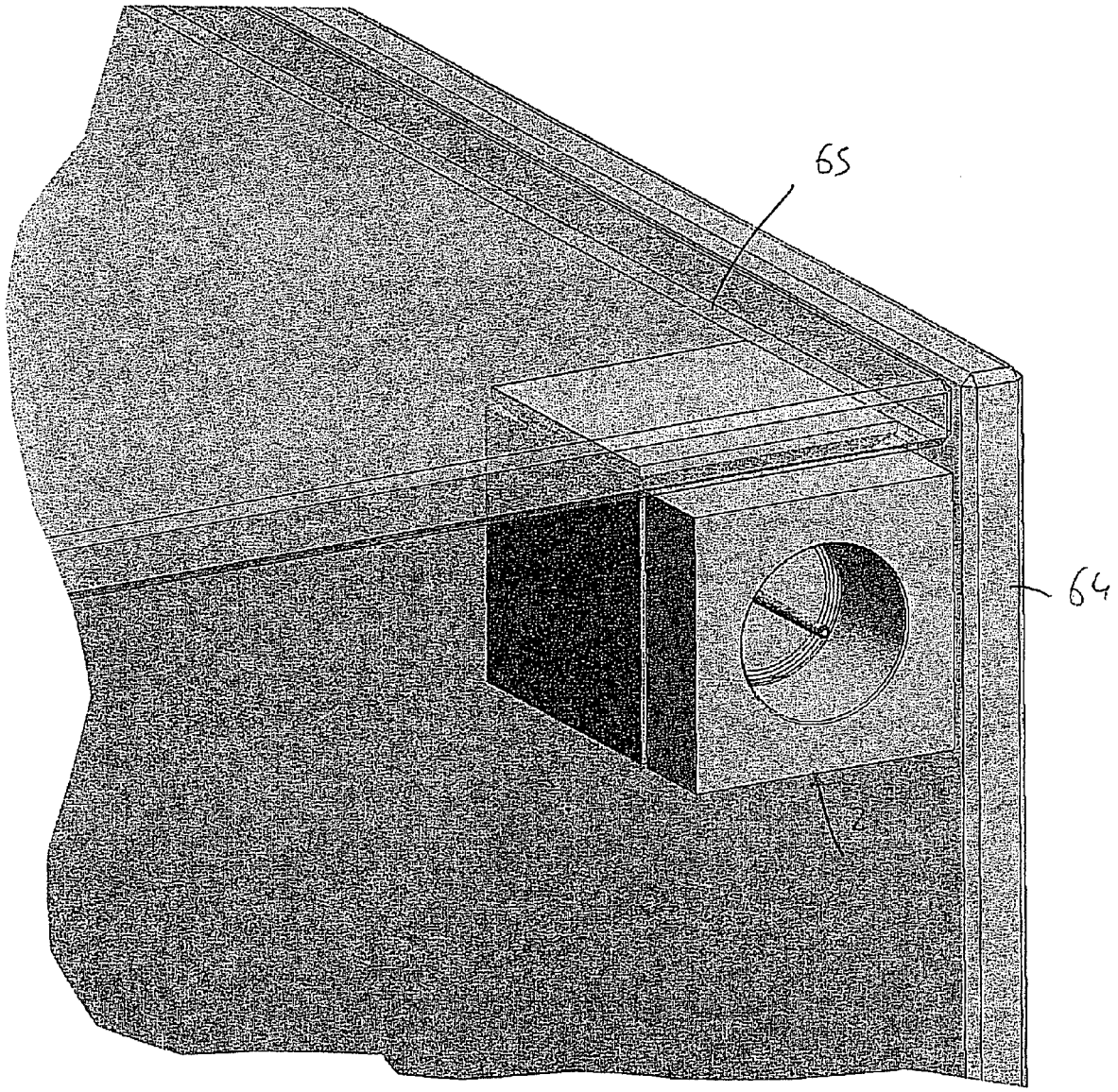

Fig. 8

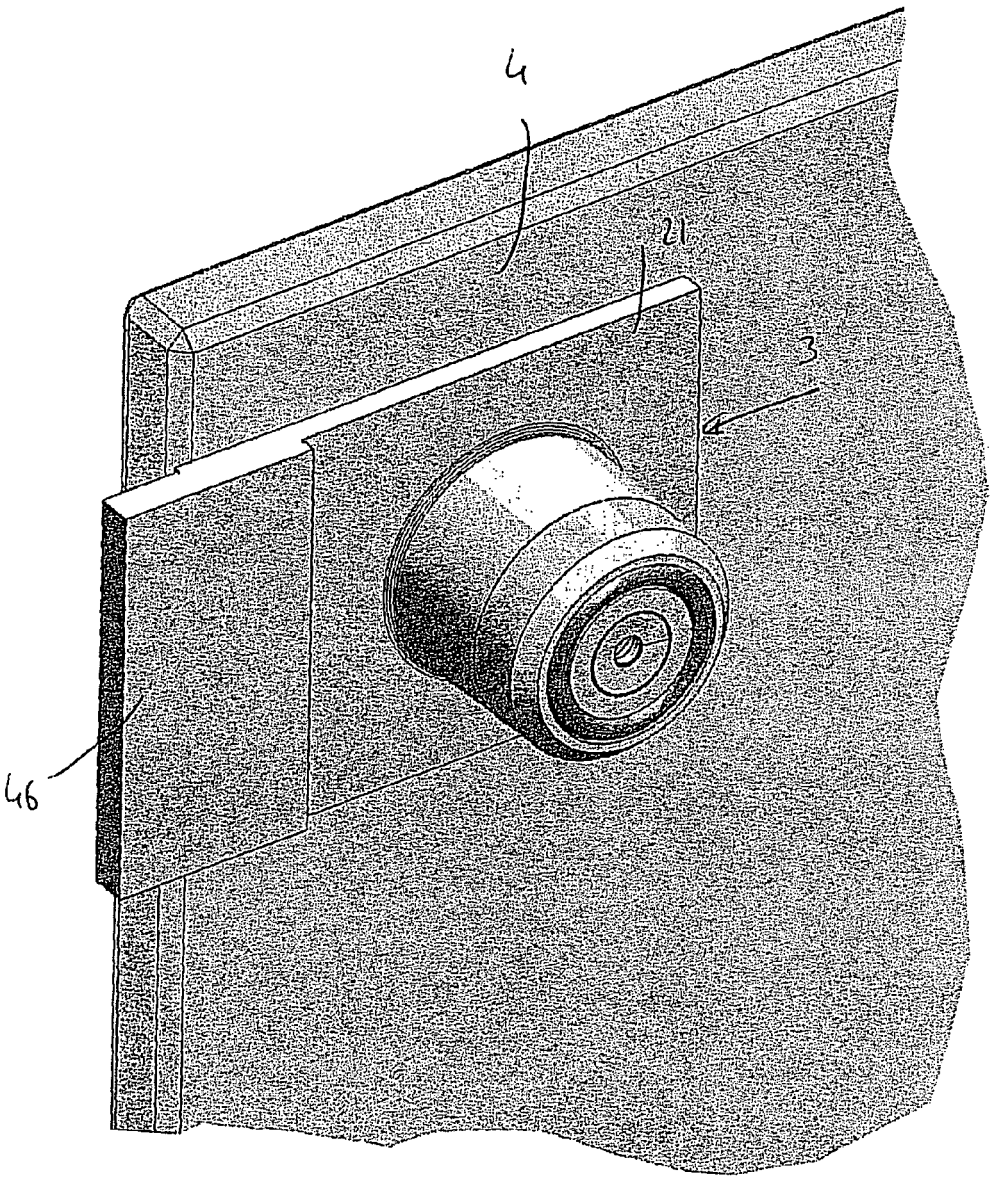

Fig. 9

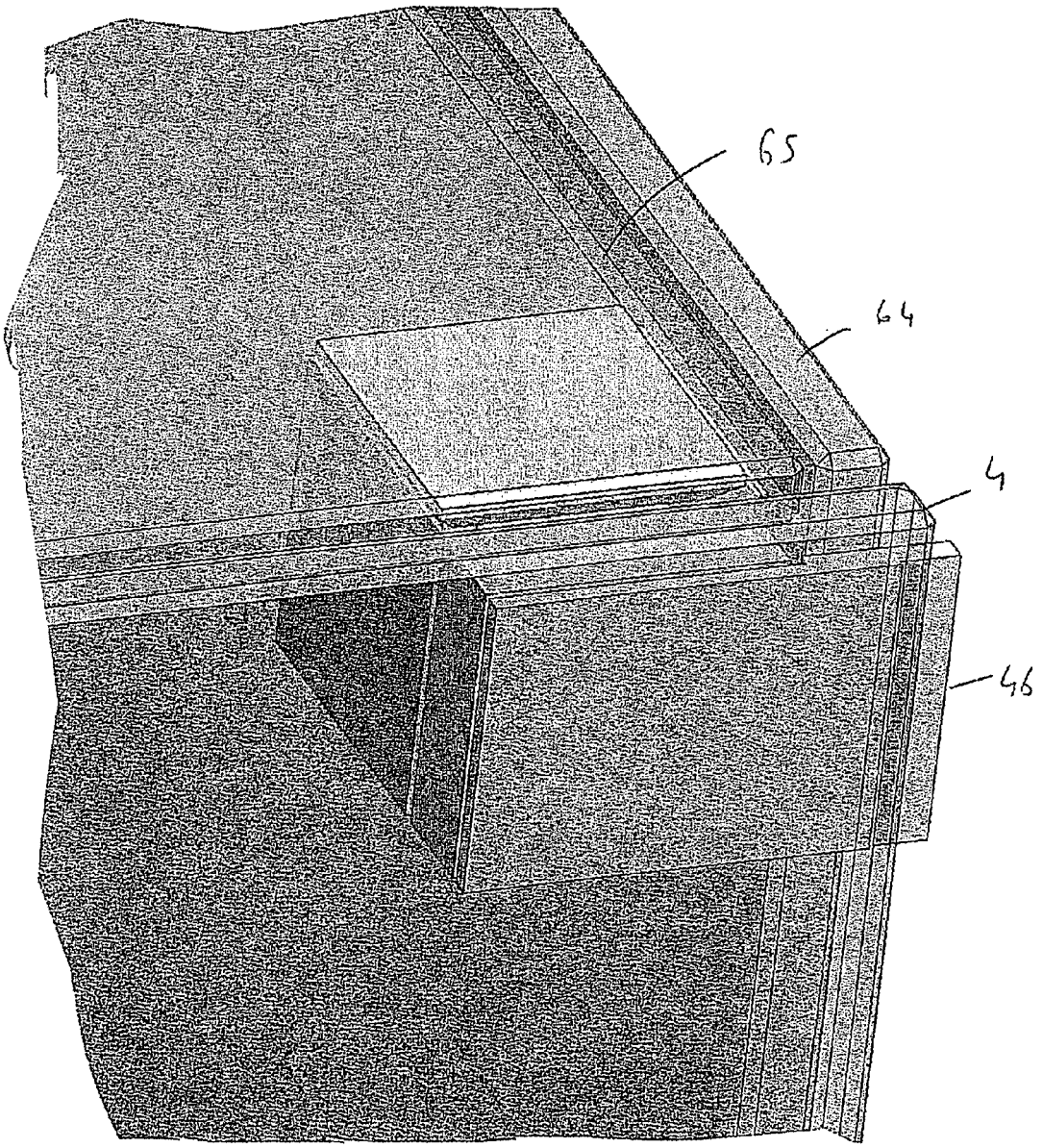

Fig. 10

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EUROPEAN SEARCH REPORT

Application Number
EP 09 42 5184

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	8 October 2009	Henkes, Roeland

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