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(54) Covering system for furniture door closure systems with sliding and rotating lock bars

(57) Herein described is a closure system having moveable bars for a lock (12) of the type made to be fixed in a non-removable manner onto the internal surface of a door (14) hinged to a general furniture. The system comprises one or more bars (10) adapted to be connected kinematically, at one of their proximal ends (10a), to the lock (12). Each bar (10) is provided, at one of its distal ends (10b), with at least one engagement element (16) adapted to be engaged with at least one blocking element (18) integrally joined to a fixed wall (20) of the furniture when the lock (12) is operated. The movement of each bar (10) is guided by at least one guide and check element (22, 24) fixed in non-removable manner to the internal surface of the door (14). The system comprises at least one cover casing (26) capable of concealing the bars (10), the guide and check elements (22, 24) and the lock (12) completely, each guide and check element (22, 24) being provided with coupling means (28) which snap-engage with the corresponding coupling means (30) provided on the cover casing (26) for integrally joining it to the guide and check elements (22, 24) and, consequently, to the door (14).

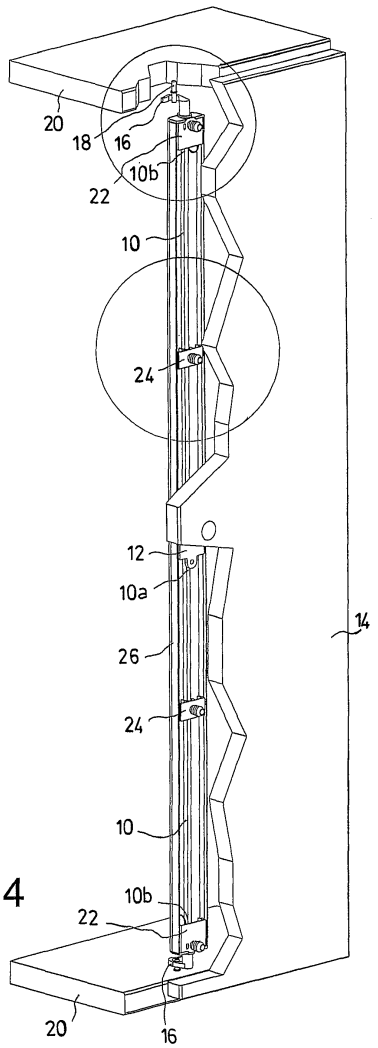

Fig.4

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Description

[0001] The present invention refers to a closure system having moveable bars for locks in general, in particular intended for use but not necessarily in combination with cylinder locks for closing wardrobe doors.

[0002] For the safety catch of wardrobes and furniture doors in general, use of the conventional so-called cylinder or pin locks which are constrained to said doors is known. In such locks, a ratchet or a moveable catch inserted coaxially into a cylinder is capable of turning only when operated by the related key, thus triggering the simultaneous sliding or rotating movement of suitable closure mechanisms.

[0003] Usually, the closure mechanisms are made in form of metal bars having an end fixed onto the lock and the other end configured to engage with a block element integrally joined to a wall of the furniture on which the door is mounted, in such a manner to hold it stably at the closed position when the lock is operated.

[0004] Each metal bar, especially if of a considerable length, is guided in its sliding or rotating movement along the door by a plurality of guide elements fixed by means of pressure or through screws onto the internal wall of the door itself. Therefore both the bars and the guide elements are visible upon opening the door. Furthermore, there is the possibility that dust or dirt find their way between each single bar and the relative guide elements hence leading to jamming of the entire closure system.

[0005] In addition, a closure system thus made requires the application of a plurality of elements which hold and guide the moveable bars with respect to the door, such elements obviously requiring time and expertise for proper mounting onto the door itself on site.

[0006] Therefore, an objective of the present invention is that of providing a closure system having moveable bars, particularly intended for use but not necessarily in combination with locks fixable on furniture doors in general, in which all guide and/or check elements for the doors themselves are concealed, thus enhancing the aesthetic aspect of the doors on which such lock and such closure system are fixed and preventing dust and dirt from settling on the lock and on its related mechanisms, jeopardising their proper operation.

[0007] Another objective of the invention, then, is that of providing a closure system having moveable bars for locks capable of obtaining a substantial reduction of the time required for mounting, due to the presence of fewer components with respect to the to the closure systems of the known type.

[0008] These and other objectives according to the present invention are attained by providing a closure system having moveable bars for locks in general, intended for use in particular but not necessarily in combination with cylinder locks for the closure of wardrobe doors, as described in claim 1.

[0009] Further characteristics of the invention are outlined by the subsequent claims.

[0010] Characteristics and advantages of a closure system having moveable bars for locks according to the present invention shall be clearer from the following exemplifying and non-limiting description with reference to the attached schematic drawings wherein:

Figure 1 is a perspective view, partially cut-away, of a closure system with, moveable bars for locks according to the known art;

Figures 2 and 3 respectively show an exploded view and a perspective view of a guide means for the bars of the known closure system of figure 1;

Figure 4 is a perspective view of a first embodiment of the closure system having moveable bars for locks according to the present invention, applied onto the door of a general furniture;

Figures 5 and 6 are detailed perspective views showing some details of the closure system of figure 4;

Figures 7-9 are detailed perspective views showing the assembly steps of a component of the closure system of figure 4;

Figure 10 is a cross-sectional view showing a further component of the closure system of figure 4;

Figure 11 is a cross-sectional view of two components coupled to each other, of the closure system of figure 4;

Figure 12 is a perspective view of the closure system of figure 4, in a completely assembled configuration;

Figure 13 is a perspective view of a second embodiment of the closure system having moveable bars for locks according to the present invention, applied to the door of a general furniture;

Figures 14 and 15 are detailed perspective views showing some details of the closure system of figure 13; and

Figure 16 is a cross-sectional view of two components, coupled to each other, of the closure system shown in figure 13.

[0011] It should be pointed out that, though in the figures and in the description hereinafter reference is always made to a key lock of the cylinder or pin type, not described in detail in that well known to the prior art, it should be clear that the closure system having moveable bars herein described shall be applied to any type of locks currently available in the market, such as for example handle locks with or without a knob with a sliding or rotating bar.

[0012] In particular, referring to figure 1, shown is a closure system having moveable bars, rotating around its axis in the specific case, according to the known art, applied to a lock 100 of the conventional cylinder type.

[0013] The closure system comprises a pair of metal bars 102 of a substantially round section kinematically connected, at one of their proximal ends and by means of a gear system (not shown), to the lock 100. Instead, the distal end of each bar 102 is provided with a hook

element 104 configured to engage with a respective dowel 106 integrally joined, for example through the insertion by pressure, to the walls 108 of a general furniture.

[0014] On the internal surface of the door 110 constrained on which is the lock 100 integrally joined, through insertion by pressure, are some metal or plastic elements 112 which serve as guide and fastening means for each of the bars 102. Such elements 112 are made up of a first component 114, which guides a related bar 102 during its rotation, and a second component which holds the bar 102 itself in position on the first component 114.

[0015] Referring now to figures 4-12 shown is a first embodiment of the closure system having moveable bars according to the present invention. According to the illustrated embodiment, the system comprises at least one bar 10, preferably made of metal and with a substantially circular section, adapted to be connected kinematically, at one of its proximal ends 10a, to a lock 12 of the so-called cylinder or pin type, for example.

[0016] The lock 12 is made to be fixed in a non-removable manner onto the internal surface of a door 14 hinged to a general furniture. Each door 14 is thus kept at a closed position, when the lock 12 is operated, through the rotation of the bar or of the bars 10 around its own axis and the consequent engagement of a connection element 16, preferably hook-shaped and integrally joined to each bar 10 at one of its distal ends 10b, with a blocking element 18 provided in form of a dowel. Each dowel 18 is thus integrally joined, for example through insertion by pressure, to a fixed wall 20 of the furniture onto which the door 14 is mounted.

[0017] The rotational movement of each bar 10 is guided by at least one guide and check element 22 fixed in a non-removable manner, preferably at the distal end 10b of the bar 10 itself onto which the hook connection element 16 is integrally joined, to the internal surface of the door 14. Provided for each bar 10, especially if the bar 10 is considerably long, are one or more intermediate guide and check elements 24 arranged at the bar 10 itself between the lock 12 and the end guide and check element 22 and also fixed in a non-removable manner onto the internal surface of the door 14.

[0018] In practice, each end guide and check element 22 accommodates, partially concealing it, the hook connection element 16 and adjusts it guaranteeing its rotation around the axis of the related bar 10 during the opening/closing step of the lock 12. Instead, each intermediate guide and check element 24 accommodates the metal bar 10, guiding it during its rotation movement around its own axis when the lock 12 is operated.

[0019] Fixing of the end 22 and intermediate 24 guide and check elements onto the internal surface of the door 14 can be obtained through insertion by pressure or by means of screws (not shown), depending on the requirements of the final user.

[0020] According to the invention, the closure system having moveable bars is provided with a cover casing 26, made of plastic or metal material, capable of concealing all the mechanisms making up the system itself completely, that is the bars 10 and the related end 22 and intermediate 24 guide and check elements, as well as the lock 12, leaving only the hooks 16 projecting partially. Both the end guide and check elements 22 and the intermediate guide and check elements 24, as well as the lock 12 itself, shall be, in turn, provided with coupling means 28 which are snap-engaged with corresponding coupling means 30 provided on the cover case 26 to join it in an integral manner to the guide and check elements 22 and 24 themselves and, consequently, to the door 14 once such cover casing 26 has been mounted in site, as shown for example in figure 11.

[0021] Advantageously, each end guide and check element 22 is made up of two separate components 32 and 34, which are however made in a single piece of moulded plastic (figures 7, 8 and 9). As matter of fact, the two components 32 and 34 are hinged to each other by means of at least one flexible stalk 36 which allows to position suitably and snap-couple the accessory component 34, made in form of a U-bolt, with the main component 32, provided on which are means for fixing the door 14 of the end guide and check element 22.

[0022] The U-bolt 34 is provided with a first shaped abutment wall 38 which serves to prevent the inadvertent detachment of the hook connection element 16 from the distal end 10b of the bar 10, for example in case of an attempt to force the door 14 open with the lock 12 closed. Thus, making the U-bolt 34 hinged onto the main component 32, which instead has the task of guiding the bar 10 during its rotation, represents a noteworthy practical advantage during the step of mounting the closure system. As a matter of fact, an end guide and check element 22 thus made allows a quicker and more accurate mounting of the closure system on site, given that it does not require using and assembling to each other different components capable of serving the purpose of holding the bars 10 against the wall of the door 14, guiding the bars 10 themselves during their movement and prevent the inadvertent detachment of the hook connection elements 16 from the respective bars 10.

[0023] In addition, the U-bolt 34 is provided with a second abutment wall 40 which prevents the casing 26 from sliding along the direction identified by the axis of the bar 10 once the casing 26 itself has been snap-coupled with the guide and check elements 22 and 24 to cover the closure system having moveable bars according to the present invention.

[0024] Referring now to figures 13-16, shown is a second embodiment of the closure system having moveable bars according to the present invention. Such closure system is different from the one illustrated previously due to the fact that the bar or the bars 10 are made with a substantially flat or semi-circular section, solid cross-section, and they are configured to slide, in a per se known manner, along the internal surface of the door 14 instead of rotating around their own axis.

[0025] Thus, the door 14 is held at a closed position

through the sliding of the bar or of the bars 10 along the direction identified by its own axis and the consequent engagement of the connection element 16, made in the form of a shaped push rod, with the related blocking element 18. In this second embodiment each blocking element 18, preferably made of plastic material, can be joined in an integral manner to the fixed wall 20 of the furniture using threaded fixing means or through insertion by pressure.

[0026] The end 22 and intermediate 24 guide and check elements, provided within which are suitable walls 42 capable of guiding the related bar 10 during its sliding movement, are provided also in this case with coupling means 28 which are snap-engaged with corresponding coupling means 30 provided on the cover casing 26. Therefore, also when using sliding bars 10, it is possible to provide the closure system according to the invention with the cover casing 26 in such a manner to conceal all the closure mechanisms (bars, guide elements and lock), leaving only the push rod 16 partially projecting in order to allow its engagement with the corresponding blocking element 18.

[0027] It has thus been observed that the closure system having moveable bars for locks according to the present invention attains the objectives outlined previously. In particular, such a closure system, simultaneously performing both the function of guiding and aesthetic concealing of all the closure mechanisms, as well as the lock to which it is operatingly connected, offers the users the following advantages with respect to the traditional systems:

- considerable reduction of the time required for assembly, in that the number of fixing components of the bar or of the bars to the door was reduced substantially and, at the same time, the same fixing components were made more functional. Furthermore, due to the snap-coupling means with which the bar guide elements and the cover casing are provided, the casing can be fixed onto the door without requiring screws or other fixing means different from the moulded bar guides, provided beneath the casing itself;
- aesthetic advantage due to the presence of a casing for covering the snap-engaged closure mechanism, thus without requiring screws, on the guide and check elements of the bars. The aesthetic perception, with the casing mounted, is that of a single linear element, with a constant geometry and projection, which can be made in the desired colour shades;
- the casing, not allowing direct access to the closure mechanisms, also serves to prevent accidents and lastly protecting the same mechanisms against dust.

[0028] The closure system having moveable bars for locks of the present invention thus conceived is in any case susceptible to various modifications and variants, all falling within the same invention concept; furthermore, all the details can be replaced by technically equivalent elements. In practice, the material used, as well as the shapes and dimensions, may vary depending on the technical requirements.

[0029] Therefore, the scope of protection of the invention is defined by the attached claims.

Claims

1. Closure system having moveable bars for a lock (12) of the type made to be fixed in a non-removable manner onto the internal surface of a door (14) hinged to a general furniture, said system comprising one or more bars (10) adapted to be connected kinematically, at one of their proximal ends (10a), to said lock (12), each of said one or more bars (10) being provided, at one of its distal ends (10b), with at least one connection element (16) adapted to be engaged with at least one blocking element (18) integrally joined to a fixed wall (20) of said furniture when said lock (12) is operated, the movement of each of said bars (10) being guided by at least one guide and check element (22, 24) fixed in a non-removable manner to the internal surface of said door (14), **characterised in that** it comprises at least one cover casing (26) capable of concealing said one or more bars (10), said guide and check elements (22, 24) and said lock (12) completely, each of said guide and check elements (22, 24) being provided with coupling means (28) which snap-engage with the corresponding coupling means (30) provided on said cover casing (26) for integrally joining said cover casing (26) to said guide and check elements (22, 24).

2. Closure system having moveable bars according to claim 1, **characterised in that** each of said guide and check elements (22) are fixed in a non-removable manner to the internal surface of said door (14) at said distal end (10b) of said bar (10).

3. Closure system having moveable bars according to claim 2, **characterised in that** each of said guide and check elements (22) accommodates, partially concealing it, said at least one connection element (16).

4. Closure system having moveable bars according to claim 3, **characterised in that** each of said guide and check elements (22) is made up of two separate components (32, 34) moulded in a single piece and which can be snap-coupled.

5. Closure system having moveable bars according to claim 4, **characterised in that** said two separate components (32, 34) are hinged to each other by means of at least one flexible stalk (36).

6. Closure system having moveable bars according to claim 5, **characterised in that** a first (32) of said two separate components is provided with means for fixing said guide and check element (22) to said door (14).

7. Closure system having moveable bars according to claim 6, **characterised in that** said means for fixing said guide and check element (22) to said door (14) are selected from the group made up of:

- means fixed by pressure;
- threaded fixing means.

8. Closure system having moveable bars according to claim 5, **characterised in that** a second (32) of said two separate components is provided with a shaped abutment wall (38) capable of preventing inadvertent detachment of said connection element (16) from said distal end (10b) of said bar (10).

9. Closure system having moveable bars according to claim 5, **characterised in that** a second (32) of said two separate components is provided with an abutment wall (40) capable of preventing said cover casing (26) from sliding along the direction identified by the axis of said bar (10) once said cover casing (26) has been snap-coupled with said guide and check elements (22, 24).

10. Closure system having moveable bars according to any one of the preceding claims, **characterised in that** said guide and check elements (22, 24) are made of plastic material.

11. Closure system having moveable bars according to claim 1, **characterised in that** said cover casing (26) is made of plastic material.

12. Closure system having moveable bars according to claim 1, **characterised in that** said cover casing (26) is made of metal material.

13. Lock (12) of the type made to be fixed in a non-removable manner onto the internal surface of a door (14) hinged to a general furniture, **characterised in that** it is coupled to a closure system having moveable bars (10) according to any one of the preceding claims.

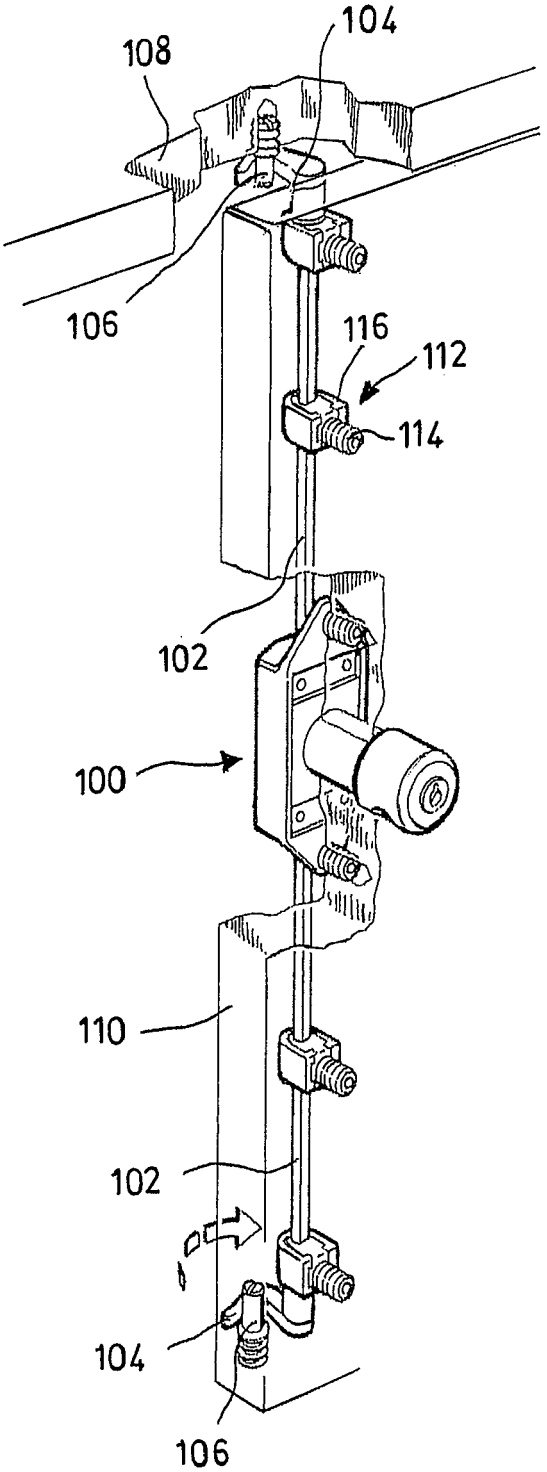
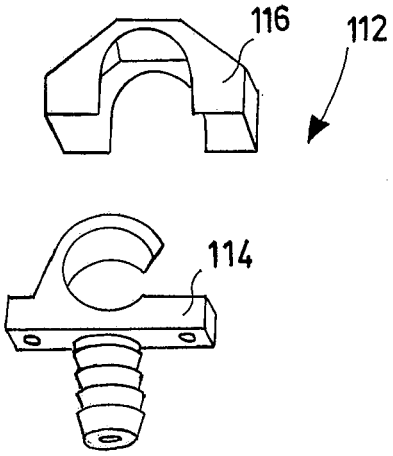


Fig.1

Fig.2



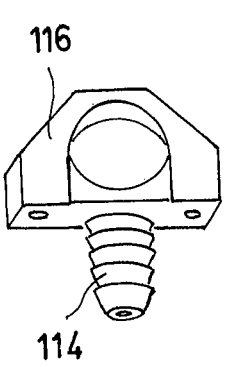


Fig.3

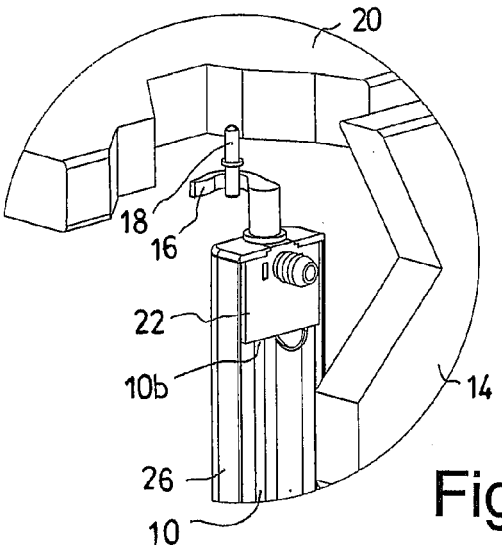


Fig.5

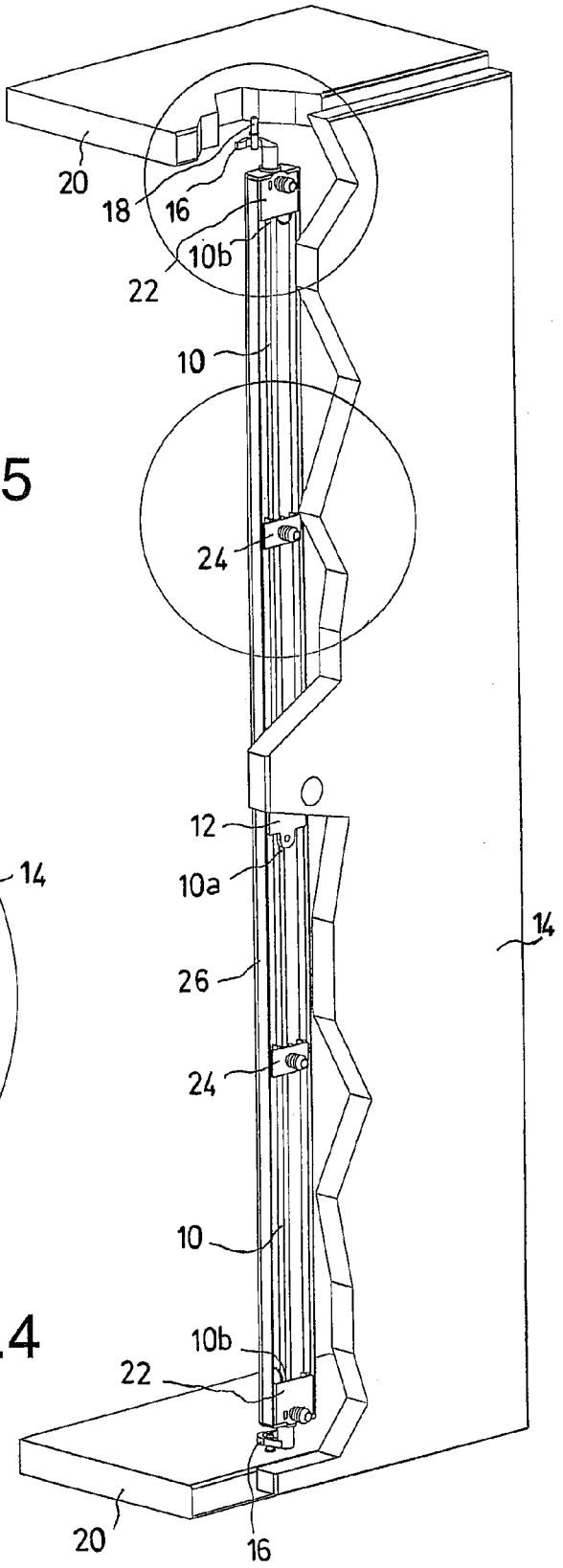


Fig.6

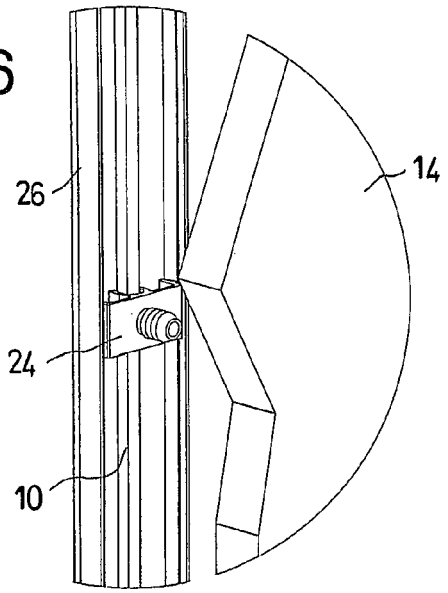


Fig.4

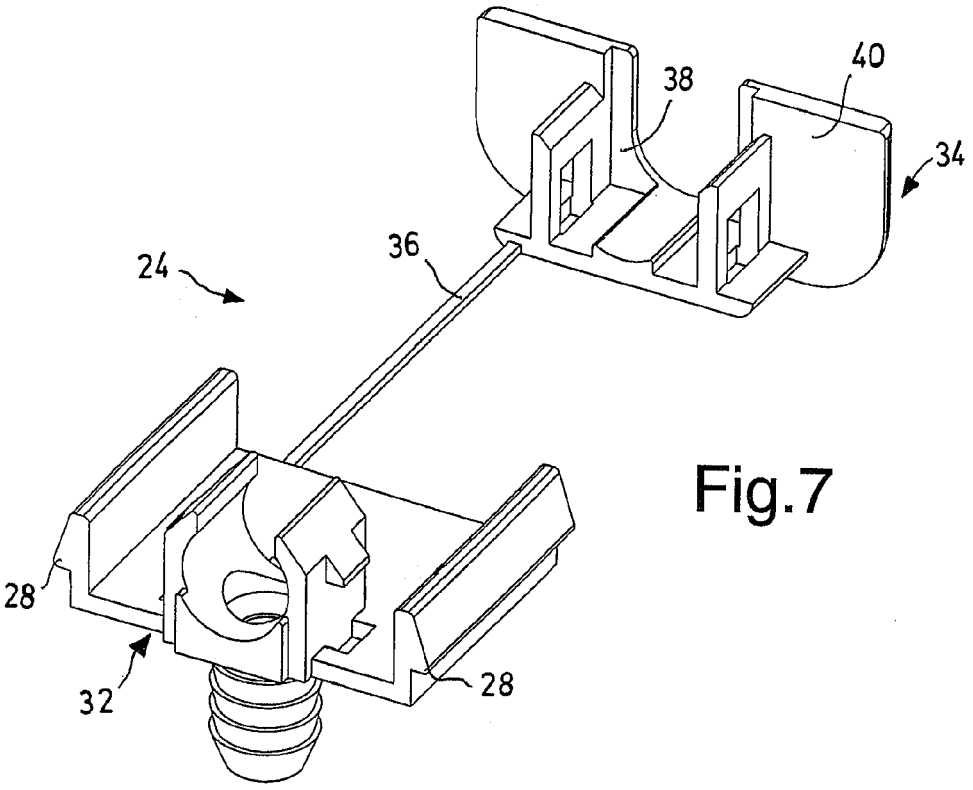


Fig.7

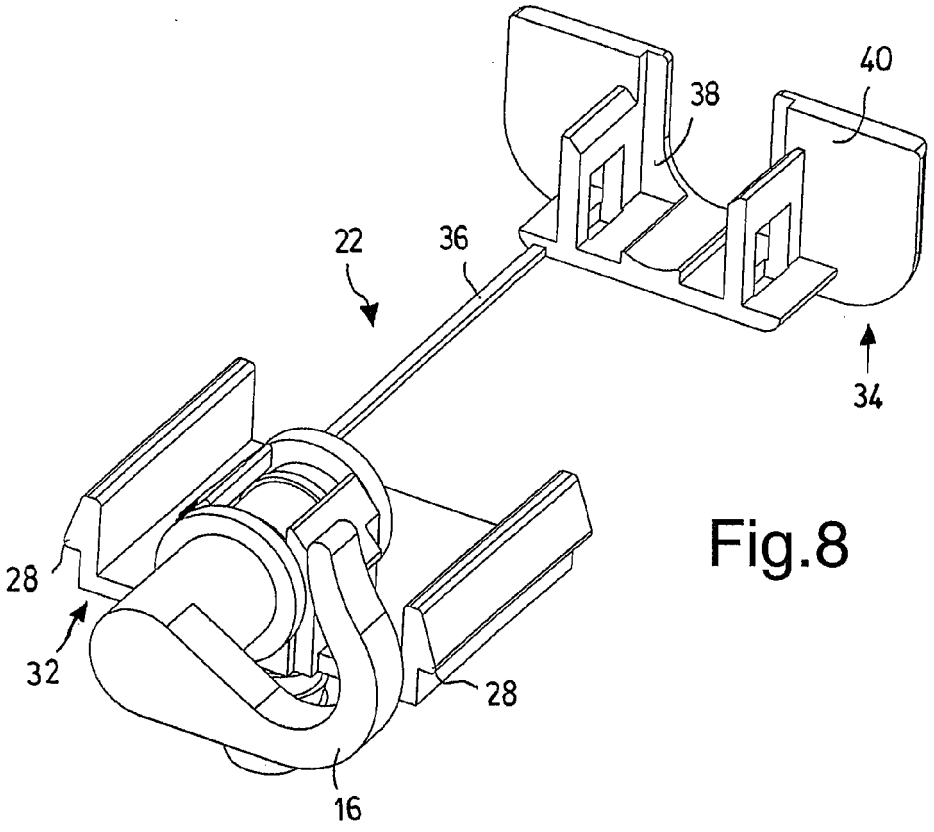


Fig.8

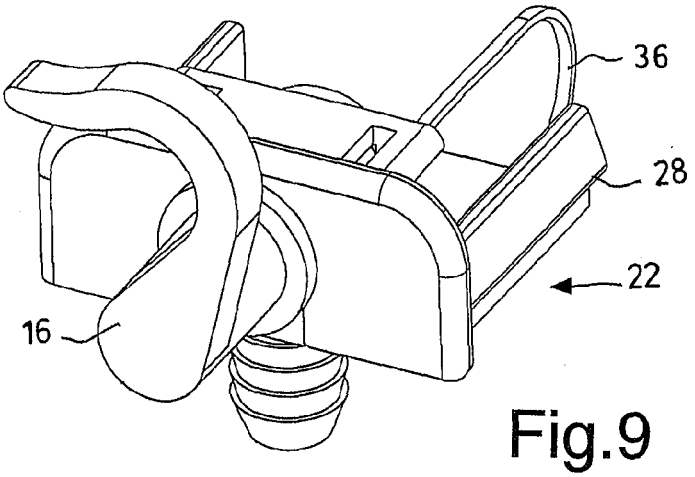


Fig.9

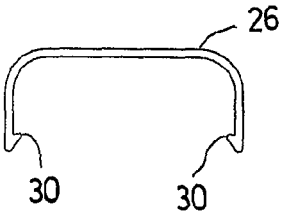
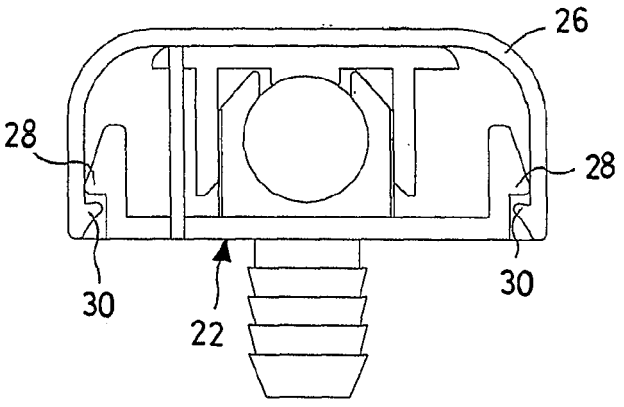


Fig.10

Fig.11



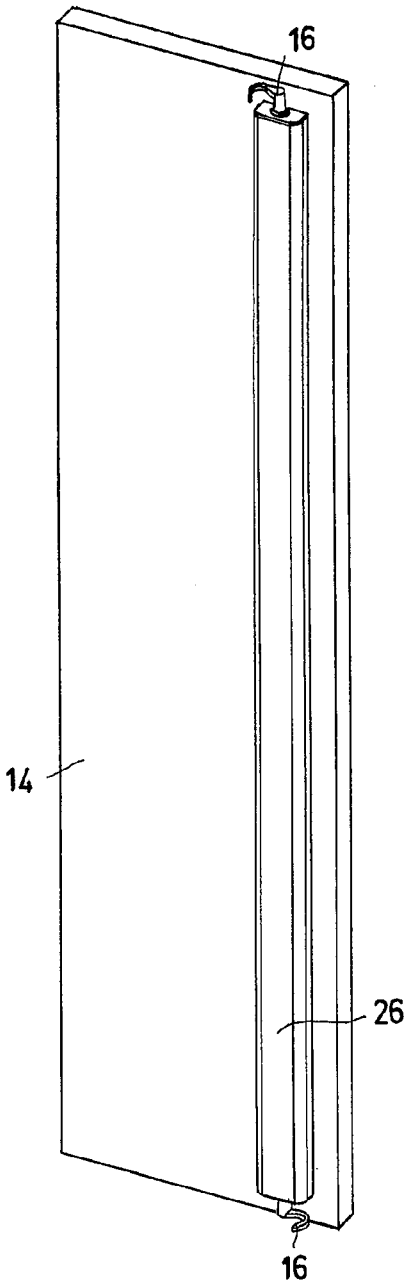
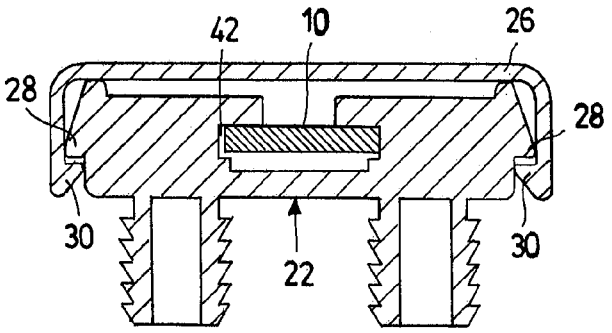


Fig.12

Fig.16



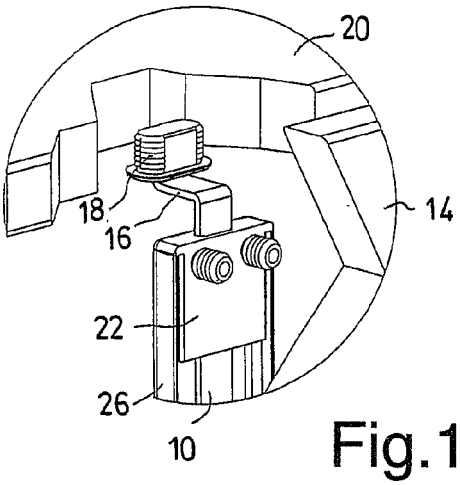
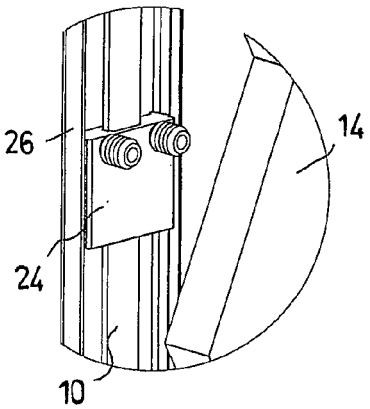


Fig.14

Fig.15



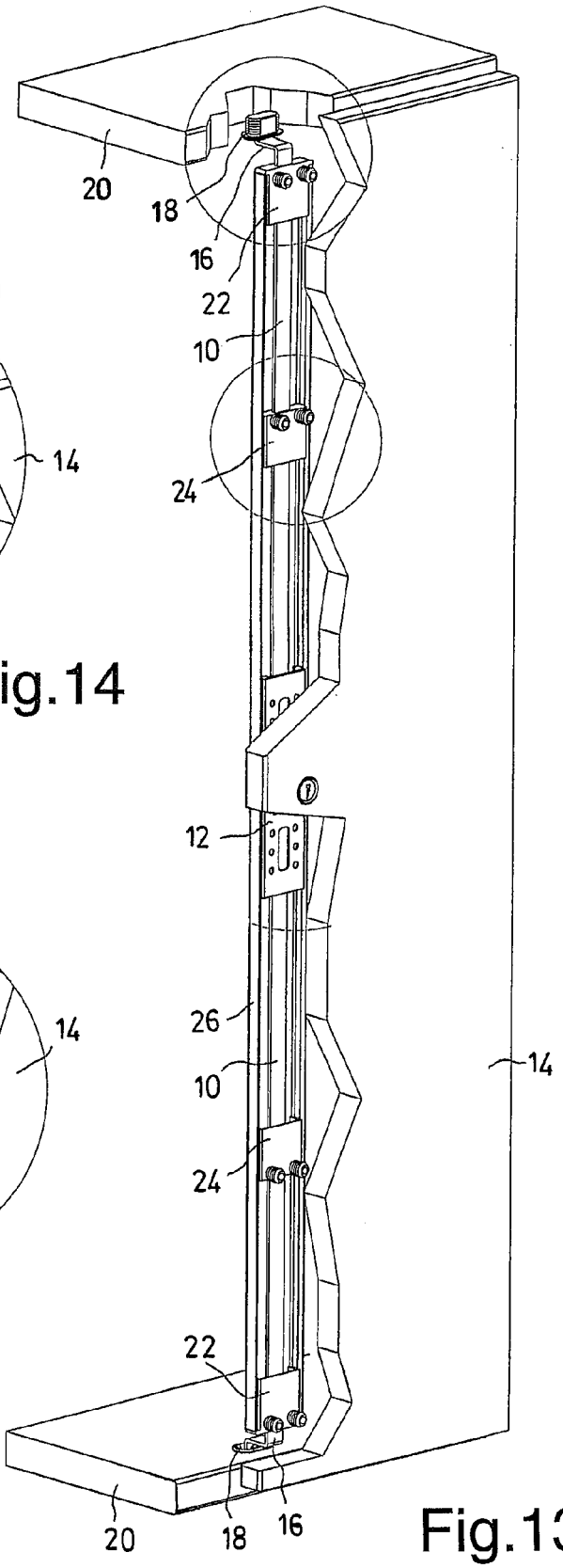


Fig.13