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(54) **Mechanical device for opening/closing the shutters of external doors/windows**

(57) The invention is a new device for opening and closing the shutters of external doors/windows, comprising at least one pivot (N1) comprising a tubular cylindrical element or bushing (B) integral with said shutter arranged with its axis (Bx) parallel to the rotation axis of the shutter itself, a cylindrical element or pin (A) integral with said post (M), partially inserted coaxially at one end (B2) of said bushing (B) and rotating with respect to it, and one torsion spring (C) positioned coaxially inside said bushing (B) and constrained with one end (C2) to said pin (A) and with the opposite end (C1) to the bushing (B) itself, said torsion spring (C) being loaded.

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Description

[0001] The present patent concerns the shutters of doors and windows, and in particular it concerns a new mechanical device for opening and closing the shutters of external doors and windows with no need to open the door/window.

[0002] Glazed doors and windows for outdoor use are known, comprising, in addition to at least one glazed board, also at least one external shuttering element, suited to prevent light from reaching the inside, like a blind, a roller shutter, a sliding shutter or a similar device.

[0003] Shutters are known that substantially consists of rigid boards, made up of two or more elements, hinged to the wall and/or to the door or window post and rotating on pivots and/or hinges towards the outside.

[0004] Full or articulated shutters are known.

[0005] Full shutters comprise one or two boards, and each board is constituted by a single rigid board hinged to the wall and/or to the frame post and rotating on pivots towards the outside.

[0006] Articulated shutters, on the other hand, are constituted by at least two boards, of which a first board, or inner board, is hinged to the post or to the external wall, and a second board, or outer board, is hinged to said inner board.

[0007] The pivots of known type are provided with at least one pin or cylindrical element integral with the post of the window frame and with at least one further cylindrical element or bushing integral with the inner board of the board, said bushing being inserted on said pin and rotating coaxially with respect to the same.

[0008] The outer boards of the articulated shutters are hinged to the corresponding inner boards by means of analogous pivots, that is, pivots equipped with at least one pin or cylindrical element integral with the inner board of the board and with at least one bushing integral with the outer board of the board, said bushing being inserted on said pin and rotating coaxially with respect to the same.

[0009] Said inner board thus rotates around the pivots towards the outside; analogously, said outer board rotates around the corresponding pivots, with respect to said inner board, in the same direction towards the outside.

[0010] The operation required for opening/closing the shutters is rather uncomfortable, because the user has to open the windows, that is, the glazed panels, and then partially lean out of the door or window in order to be able to grasp the handles of the shutters and pull them towards himself/herself if he/she wants to close them or push them towards the outside if he/she wants to open them.

[0011] In order to make sure that the shutters remain completely open, the user must lean out even further and fix them to suitable fasteners integral with the outside wall, so that said shutters are substantially parallel to the wall and grazing it.

[0012] In the same way, to close the shutters he/she must lean out in order to release them and then pull them toward himself/herself.

[0013] Furthermore, if the doors/windows are provided with mosquito nets and/or Venetian blinds, these must be rolled up whenever it is necessary to open/close the shutters manually, thus letting annoying insects in.

[0014] These operations are extremely complex and uncomfortable, especially during the winter, as the user has to open the window and be exposed to cold and weather agents like rain and wind.

[0015] The operation required for opening/closing the shutters is extremely uncomfortable even for people with limited mobility and for elderly people, and also extremely dangerous, for example for children who may lean out too much or get their fingers pinched between the shutters.

[0016] The operation is quite uncomfortable also when under the window, inside the room, there is for example a piece of furniture or another obstacle that forces the user to stretch out even more in order to be able to open/close the shutters.

[0017] In order to overcome all the drawbacks mentioned above, a new mechanical device has been designed and constructed which serves for opening/closing the shutters of doors and windows and can be operated from the inside of a room with no need for the user to open glazed panels, mosquito nets, Venetian blinds, etc.

[0018] The main object of the present invention is to allow shutters to be opened/closed automatically, from the inside and with closed door/window, with no need for the user to lean out of the door/window to open/close the shutters directly.

[0019] Another object of the present invention is to be able to guarantee locking of the shutters in a completely or partially open position, with no need for the user to resort to external fasteners that for this reason become unnecessary. Another object of the present invention is to speed up and simplify the shutter opening/closing operation, thus making it easier to carry out also for elderly people, children or people with scarce or limited mobility.

[0020] Another important advantage of the invention lies in that it involves reduced costs for the material compared to the known devices for the automatic opening/closing of shutters, which are generally provided with an electric motor and are therefore much more expensive also in terms of installation and maintenance.

[0021] The new device, furthermore, can be effectively installed on pre-existing shutters and does not involve complex installation procedures. In fact, it is not necessary to lay any electric cable, nor to carry out any building work. The new device can be installed directly on the pre-existing shutter, with no need to remove the panels, glazed panels, mosquito nets, Venetian blinds or other fixtures.

[0022] Furthermore, the new device can be at least partially be effectively integrated in the shutter during its construction, thus further reducing the already reduced overall dimensions and improving the appearance of the

shutter, both outside and inside.

[0023] The new device is furthermore extremely resistant to any kind of tampering or breaking through.

[0024] These and other direct and complementary objects have been achieved through the construction of the new mechanical device for the automatic opening/closing of the shutters of doors and windows that can be operated from the inside.

[0025] The new composite device for opening/closing shutters comprises at least one device for the automatic opening of the panels, hereinafter called elastic hinge or pivot, and at least one return means for bringing the panels back from the open to the closed position.

[0026] The new device may also comprise at least one device for locking/releasing the panels in/from the closed position, wherein all said devices can be operated from the inside of the room with no need for the user to open glazed panels, mosquito nets, Venetian blinds, etc.

[0027] According to the invention, the new device comprises at least one of said elastic pivots for each one of the panels making up the shutter and, in the case of articulated shutters, at least one further elastic pivot for each one of the outer boards of each panel.

[0028] Said elastic pivots, in particular, are positioned in proximity of the pre-existing pivots of the panels and, in the case of articulated shutters, also in proximity of the pre-existing hinges between the boards of the articulated shutters.

[0029] More precisely, the rotation axis of said elastic pivots coincides with or is parallel to the rotation axis of said pre-existing pivots.

[0030] According to the preferred embodiment of the invention, said elastic pivots even replace the pivots of known type.

[0031] At least one elastic pivot is thus applied in proximity or in replacement of the pivots of each panel, hinged to the post of the window frame.

[0032] The new elastic pivot comprises in its main parts at least one elastic means, preferably a torsion spring, like a helical spring, with one end of said spring resting directly or indirectly against the window/door post, while its opposite end rests directly or indirectly against the panel, and wherein said torsion spring is loaded, preferably in the winding direction of the helix.

[0033] As this torsion spring is loaded, by resting against said post and the panel it causes the rotation of the panel itself around the axis of the spring, in a direction opposite the applied twisting moment, preferably in the opening direction.

[0034] In its preferred embodiment, the new elastic pivot comprises:

- at least one tubular cylindrical element or bushing suited to be made directly or indirectly integral with the panel or with the post and arranged with its axis parallel to or coinciding with the rotation axis of the panel itself;
- at least one cylindrical element or pin inserted coaxially at one end of said bushing and suited to be made directly or indirectly integral with said post or said panel;
- at least one of said torsion springs positioned inside said bushing and substantially coaxial to it,

and wherein said loaded torsion spring is constrained with one end to said pin and with the opposite end to the bushing itself.

[0035] According to the invention, said pivot is applied at the level of the corner defined between the panel and the post, in vertical position and on the external or internal side of the shutter, and wherein said torsion spring is loaded so that the direction of the twisting moment applied thereto is opposite the opening direction of the panel.

[0036] In this way, when the panel is fastened in closed position, said torsion spring is loaded, while when said panel is released, said spring causes the rotation of the panel in the opening direction, that is, towards the outside.

[0037] To close the shutter it is sufficient to pull it towards the inside, making it rotate on the pivots, so that said torsion spring is loaded again. In order to maintain the shutter in closed position, it is therefore necessary to fasten it, for example as described and claimed later on herein.

[0038] According to the invention, in the case of articulated shutters, that is, shutters consisting of at least one inner board hinged to the post and at least one outer board hinged to said inner board, the new opening/closing device comprises, in addition to said elastic pivot constrained to the inner board, also at least one further elastic pivot for each outer board, wherein said elastic pivot is applied in proximity or in replacement of the pivots of each outer board of the articulated shutter, hinged to the corresponding inner board of the same shutter.

[0039] According to the invention, said elastic pivot of the outer board is applied at the level of the adjacent edges of the inner and outer boards, in vertical position and on the external or internal side of the shutter, wherein said torsion spring is loaded so that the direction of the twisting moment applied thereto is opposite the opening direction of the outer board.

[0040] In this way, when said outer board is fastened in closed position, the torsion spring of said elastic pivot is loaded, while when said outer board is released, said spring of the elastic pivot causes the rotation of the outer board in the opening direction, that is, towards the outside with respect to said inner board, while said elastic pivot of the inner board causes at the same time the rotation of the inner board itself always towards the outside, thus causing the opening of the entire articulated shutter.

[0041] Furthermore, thanks to the presence of said elastic pivots, the shutters remain completely open with no need for the user to lean out in order to lock the shutters with the external fasteners.

[0042] To close the shutter it is sufficient to pull the

outer board towards the inside, making it rotate on the pivots, so that the torsion spring of said elastic pivot is loaded again.

[0043] When said outer board is brought to a position parallel to the inner board, also the latter is set rotating around the pivots towards the inside, thus loading the torsion spring of said elastic pivot.

[0044] In order to maintain the shutter in closed position, it is therefore necessary to fasten at least said inner board, for example as described later on herein. In the preferred embodiment of the invention, said device also comprises at least one automatic shutter locking/releasing device, for example connected to one or more bolts or locking pins constrained to the panels and suited to be directly or indirectly fastened to the bottom rail and/or to the window/door lintel and/or to the adjacent panel.

[0045] Said locking/releasing device comprises for example a lever acting directly or indirectly on one or more of said locking pins, in such a way as to move them, in order to release and thus automatically open the shutter.

[0046] The new device also comprises shutter return means, like for example a handle or a cord with one end attached to the panel, for example to the inner board. To close the shutter, the user simply needs to seize the cord and pull it towards himself/herself, loading the elastic means, thus aligning the boards and closing the shutters.

[0047] The new device thus allows the user to automatically open/close the shutters while remaining inside the room and with no need to lean out.

[0048] Furthermore, the operation is extremely quick and the user doesn't have to assume uncomfortable positions or make particular efforts.

[0049] The characteristics of the invention will be highlighted in greater detail in the following description, with reference to the drawings attached as nonlimiting examples.

Figures 1 and 1a show a side view and a top view of the new pivot or elastic hinge (N1).

Figures 2a and 2b show two side views of the bushing (B) only, while

Figures 3, 3a, 3b show the other components of the elastic pivot (N1, N2), that is, the elastic means or torsion spring (C) and the lower cylindrical element or pin (A).

Figura 4 shows a schematic plan view of the operation of the new device, comprising pivots (N1, N2) applied outside the shutters, of which at least one pivot (N1) is applied to the inner board (P1) and at least one further pivot (N2) is applied between the outer board (P2) and the inner board (P1), and also comprising at least one return means such as a cord (D) attached to said outer board (P2).

Figura 4a shows a schematic plan view of the operation of the new device, comprising pivots (N1, N2) applied inside the shutters, in particular applied to the inner board (P1), and at least one return means such as a cord (D) attached to said outer board (P2).

Figure 5 shows a front view of the sliding pin system (K) intended to lock the shutters, each pin (K) being fastened to the corresponding outer board (P2) and being able to be fastened to the locking element (K1) integral with the lintel (M2) of the door/window frame.

Figure 5a shows an outside view of an articulated shutter with the new elastic pivots (N1, N2).

Figures 6a, 6b and 7a, 7b schematically show in detail the operation of the device for releasing the outer boards (P2), where the lever (L) acts on moving elements that release said sliding pins (K), in order to allow the shutter to be opened.

Figures 8a and 8b schematically show the operation of the release device according to an alternative embodiment of the invention.

[0050] The new composite device for opening/closing shutters comprises at least one device for the automatic opening of the shutters, hereinafter called elastic hinge or pivot (N1, N2), and at least one return means (D) for bringing the shutters back from the open to the closed position.

[0051] According to the invention, the new device comprises at least one of said elastic pivots (N1) for each one of the panels making up the shutter and, in the case of articulated shutters, at least one further elastic pivot (N2) for each one of the outer boards of each panel.

[0052] According to the preferred embodiment of the invention, said elastic pivots (N1, N2) replace the pivots of known type, outside the shutters, as shown in Figures 4 and 5a, or inside the shutters, as shown in Figure 4a.

[0053] In its preferred embodiment, the new elastic pivot (N1) comprises:

- at least one tubular cylindrical element or bushing (B) suited to be made directly or indirectly integral with the panel or with the post (M) and arranged with its axis (Bx) parallel to or coinciding with the rotation axis of the panel itself;
- at least one cylindrical element or pin (A) suited to be made directly or indirectly integral with said post (M) or with said panel, and inserted coaxially at the lower end (B2) of said bushing (B) and capable of being rotated with respect to it;
- at least one torsion spring (C) positioned inside said bushing (B) and substantially coaxial to it,

and wherein said loaded torsion spring (C) is fastened with its lower end (C2) to said pin (A) and with the opposite upper end (C1) to the bushing (B) itself.

[0054] Said torsion spring (C) is preferably of the type with cylindrical helix and is loaded in the winding direction of the helix.

[0055] As shown in Figures 1-3b, said bushing (B) comprises at least one plug or closing element (B3) for the upper free end (B1) of the bushing (B), wherein said closing element (B3) comprises at least one substantially cylindrical part (B31) suited to be inserted in said end

(B1) of said bushing (B) and to which the upper end (C1) of said spring (C) is directly fastened.

[0056] Said closing element (B3) also comprises one or more one or more radial projections (B32) suited to be inserted in corresponding seats (B33) created in proximity of the end (B1) of the bushing (B) and suited to prevent the relative rotation of said closing element (B3) with respect to the bushing (B), due to the elastic action of said loaded torsion spring (C).

[0057] According to the invention, also said pin (A) comprises at least one substantially cylindrical part (A2) suited to be inserted in said lower end (B2) of said bushing (B) and to which the lower end (C2) of said spring (C) is directly fastened.

[0058] Said spring (C) is fastened between said closing element (B3) and said plug (A) in such a way as to be stretched between them, that is, so that the distance between said closing element (B3) and said plug (A) exceeds the length of the unloaded spring (C).

[0059] As said spring (C) is stretched, it is possible to load the torsion spring without causing the bending of the spring (C) itself inside the bushing (B), which may cause the elastic pivot to seize.

[0060] Furthermore, since said torsion spring (C) is also loaded in the winding direction of the helix, said ends (C1, C2) of the spring (C) are further wound around said cylindrical parts (B31, A2) of the closing element (B3) and of the pin (A), in such a way as to reduce the risk of accidental removal of the device.

[0061] According to the invention, furthermore, said bushing (B) and said pin (A) of said pivots (N1) comprise at least one projecting part (B4, A4), preferably flat, for fastening to the post and/or shutter and/or outer board (P2) and/or inner board (P1).

[0062] According to the invention, in the case of articulated shutters, that is, shutters consisting of at least one inner board (P1) hinged to the post (M) and at least one outer board (P2) hinged to said inner board (P1), the new opening/closing device comprises, in addition to said elastic pivot (N1) fastened to the inner board (P1), at least one further elastic pivot (N2) for each outer board (P2).

[0063] In order to make sure that the shutters remain closed, each one of the panels of the shutter, and in particular the outer boards (P2), in the case of articulated shutters, can be fastened to the lintel (M2) and/or to the bottom rail (M1) of the door/window frame and/or to the outer board (P2) of the adjacent panel by means of one or more sliding pins (K).

[0064] In particular, each one of said pins (K) is constrained in such a way as to slide vertically into guides (K4) that are integral with the outer board (P2) of each shutter.

[0065] Each one of said pins (K) also comprises a hook-shaped upper end (K3) suited to be hooked for example to a cross element or other locking element (K1) integral with the lintel (M2) of the door, in order to fasten said boards (P2) so that the shutter remains closed.

[0066] Each one of said pins (K) also comprises a lower end, for example connected to a latch (K5) suited to rest against a fixed locking element (L6) integral with the bottom rail (M1).

[0067] In order to open the shutter it is necessary to make said pins (K) travel vertically upwards, so that the upper hooked end (K3) of each pin (K) is released from said locking element (K1) to which it was fastened.

[0068] According to the invention, said pins (K) can be lifted manually, by means of kinematic mechanisms that cause said latch (K5) and said upper hooks (K3) to be lifted, releasing the shutters that are thus opened automatically, as previously described.

[0069] According to the solution illustrated in Figures 5, 6a, 6b, 7a, and 7b, the new device comprises a lever (L) hinged (L1) to the lower beam (M1) of the door/window and connected (L2) to an angular element (L3) that rotates on the horizontal plane around a fixed point (L31).

[0070] The rotation of said lever (L) causes the rotation of said angular element (L3), whose end (L32) rests on an element (L4) that slides on the horizontal plane and in its turn rests on said latch (K5) of the pins (K).

[0071] The rotation of said lever (L) thus indirectly causes the horizontal travel of said sliding element (L4) that, resting on said latch (K5), causes it to be lifted, thus releasing it from said fixed locking element (L6). This causes the upward travel of said pins (K), releasing the boards (P2) and allowing the automatic opening of the shutter.

[0072] At least one elastic means (L5), resting on said sliding element (L4) and opposing its travel, causes the return of the element (L4) and of the lever (L) to the starting position.

[0073] On the contrary, to close the shutter it is sufficient to pull it towards the inside, so that the latch (K5), resting on the locking element (L6), lifts up, causing the upward travel of said pins (K) and thus of the hooks (K3), and then lowers, so that said hooks (K3) lower, too, becoming coupled with said locking element (K1) and fastening the shutters in the closed position.

[0074] According to the alternative solution illustrated in Figures 8a and 8b, the new device comprises one or two cords (H11, H12), each connected to an element (H21, H22) that rotates on the horizontal plane around a fixed point (H31, H32) on the bottom rail (M1) of the door/window and whose rotation is counteracted by an elastic means (H41, H42).

[0075] Acting on one or both of said cords (H11, H12) causes the rotation of the corresponding rotary element (H31, H32), each in its turn resting on the latch (K5) of the pin (K) of one of the two shutters.

[0076] Acting on one or both of said cords (H11, H12) indirectly causes the lifting of one or both of said latches (K5), which are released from said fixed locking element (L6), thus causing the upward travel of said pins (K) and releasing the boards (P2) in order to automatically open the shutter.

[0077] Said elastic means (H41, H42) resting on said rotary elements (H31, H32) cause them to return to their

initial position.

[0078] On the contrary, to close the shutter it is sufficient to pull it towards the inside, so that the latch (K5), resting on the corresponding rotary element (H31, H32), lifts up, causing the upward travel of said pins (K) and thus of the hooks (K3), and then lowers, so that said hooks (K3) lower, too, becoming coupled with said locking element (K1) and fastening the shutters in the closed position.

[0079] According to the invention, said rotary elements (H31, H32) can be operated at the same time or one after the other, in such a way as to open the boards at the same time or one after the other. Said rotary elements are advantageously in the shape of a circle or sector of a circle, as shown in Figures 8a and 8b.

[0080] To close the shutter, it is also possible to use at least one cord (D) for each panel, each cord (D) having one end (D1) suitably connected to the corresponding panel and the opposite end (D2) free and ready to be grasped by the user.

[0081] Said constrained end (D1) of the cord (D), in particular, is preferably fixed to the outer half of the panel, in the case of a full shutter, or to the outer board (P2), in the case of an articulated shutter, for example by means of a spacer element (D3) that facilitates the operation for closing the shutter.

[0082] In particular, said cord (D) passes through slots (D4) suitably distributed on the inner side of the shutter, wherein said free end (D2) of the cord (D) is inside the room, so that the user, once having grasped the free end (D2) from the inside of the room, can pull it towards himself/herself, thus causing first the rotation of the outer board (P2) towards the inside, then the rotation of the inner board (P1) towards the inside.

[0083] According to the invention, said cord (D) may even be passed through holes made in the glazed panel (V) of the door/window, so that the user can operate said return device with no need to open the glazed panel (V). Therefore, with reference to the above description and the attached drawings, the following claims are expressed.

Claims

1. Device for opening and closing the shutters of external doors/windows, said shutters comprising two or more panels, each hinged by means of one or more pivots (N1) to the post (M) or to the wall in proximity of the door/window frame, **characterized in that** at least one of said pivots (N1) comprises:

   - at least one tubular cylindrical element or bushing (B) suited to be made directly or indirectly integral with said panel, or with said post (M), and arranged with its axis (Bx) parallel to or coinciding with the rotation axis of the panel itself;
   - at least one cylindrical element or pin (A) suited to be made directly or indirectly integral with said post (M), or with said panel, said pin (A) being at least partially inserted coaxially at one end (B2), or lower end, of said bushing (B) and rotating with respect to it;
   - at least one torsion spring (C) positioned coaxially inside said bushing (B) and fastened with one end (C2) to said pin (A) and with the opposite end (C1), or upper end, to the bushing (B) itself, said torsion spring (C) being loaded;

   and wherein said device also comprises at least one cable or cord (D) or other shutter return means fastened to the shutter and suited to cause its rotation in the direction opposite the opening direction, counteracting the elastic action of one or more of said springs (C).

2. Device for opening/closing the external shutters of windows and/or doors according to claim 1, **characterized in that** each one of said shutters is constituted by two or more boards, of which one is an inner board (P1), hinged to the post by means of one or more pivots (N1), and at least one is an outer board (P2), hinged to said inner board (P1) by means of one or more further pivots (N2), wherein at least one of said pivots (N2) comprises:

   - at least one tubular cylindrical element or bushing (B) suited to be made directly or indirectly integral with said outer (P2) or inner (P1) board and arranged with its axis (Bx) parallel to or coinciding with the rotation axis of the panel itself;
   - at least one cylindrical element or pin (A) suited to be made directly or indirectly integral with said outer (P1) or inner (P2) board, said pin (A) being at least partially inserted coaxially at one end (B2), or lower end, of said bushing (B) and rotating with respect to it;
   - at least one torsion spring (C) positioned coaxially inside said bushing (B) and fastened with one end (C2) to said pin (A) and with the opposite end (C1), or upper end, to the bushing (B) itself, said torsion spring (C) being loaded.

3. 1) Device according to claim 1 or 2), **characterized in that** said torsion spring (C) is a cylindrical helical spring.

4. Device according to claim 3, **characterized in that** said helical torsion spring (C) is loaded in the winding direction of the helix.

5. Device according to claims 1, 2, 3, 4, **characterized in that** said spring (C) is stretched between said bushing (B) and said pin (A).

6. Device according to claims 1, 2, 3, 4, 5, **character-**

ized in that said cable or cord (D), fastened with one end (D1) to the corresponding panel or outer board (P2), has the opposite end (D2) free and ready to be grasped by the user, and wherein pulling said end (D2) of said cable or cord (D) towards the inside means counteracting the elastic action of one or more of said springs (C), therefore causing the rotation of said panel or of said inner board (P1) and said outer board (P2) in the direction opposite the opening direction.

7. Device according to claim 6, **characterized in that** said cable or cord (D) is fastened with one end (D1) to said outer board (P2) of the corresponding panel by means of at least one spacer (D3).

8. Device according to claim 6, **characterized in that** said free end (D2) of said cable or cord (D) is suited to be constrained to a fixed point, in such a way as to maintain said cord (D) stretched, counteracting the elastic action of one or more of said springs (C).

9. Device according to the preceding claims, **characterized in that** said bushing (B) comprises at least one plug or closing element (B3) for the upper free end (B1) of the bushing (B), and wherein said closing element (B3) comprises at least one substantially cylindrical part (B31) suited to be inserted in said end (B1) of said bushing (B) and to which one end (C1) of said spring (C) is directly fastened.

10. Device according to claim 9), **characterized in that** said closing element (B3) comprises one or more radial projections (B32) suited to be fitted into corresponding seats (B33) obtained in proximity of the upper end (B1) of said bushing (B).

11. Device according to the preceding claims, **characterized in that** said pin (A) comprises at least one substantially cylindrical part (A2) suited to be inserted in said end (B2) of said bushing (B) and to which one end (C2) of said spring (C) is directly fastened.

12. Device according to the preceding claims, **characterized in that** said bushing (B) and said pin (A) of said pivots (N1) comprise at least one projecting part (B4, A4) for fastening to the post and/or panel and/or outer board (P2) and/or inner board (P1).

13. Device according to the preceding claims, **characterized in that** it comprises:

- at least one bolt or pin (K) for closing each shutter, sliding vertically into guides (K4) that are integral with the shutter itself, and comprising at least one hooked part (K3), suited to be hooked to a locking element (K1) integral with the lintel (M2) and/or the post and/or the adjacent shutter, and at least one latch (K5) that can be constrained to a locking element (L6) integral with the lintel (M2) and/or the post and/or the bottom rail (M1) of the door/window frame;
- at least one sliding (L4) or rotary element (H21, H22), resting on said latch (K5) and connected to at least one lever (L) hinged (L1) to the lintel (M2) and/or the post and/or the bottom rail (M1) of the door/window frame, and/or connected to at least one cord (H11, H12), and wherein the rotation of said lever (L) or the travel of said cord (H11, H12) causes the travel of said sliding element (L4) or the rotation of said rotary element (H21, H22), which lifts the latch (K5), making said pins (K) slide, so that said hook (K3) is released from the locking element (K1), thus allowing the shutter to be opened.

14. Device according to claim 13, **characterized in that** the travel of said sliding element (L4) and the rotation of said rotary element (H21, H22) is counteracted by at least one elastic means (L5, H41, H42).

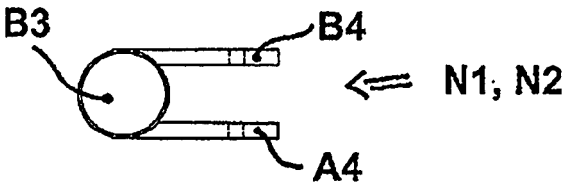

Fig. 1a

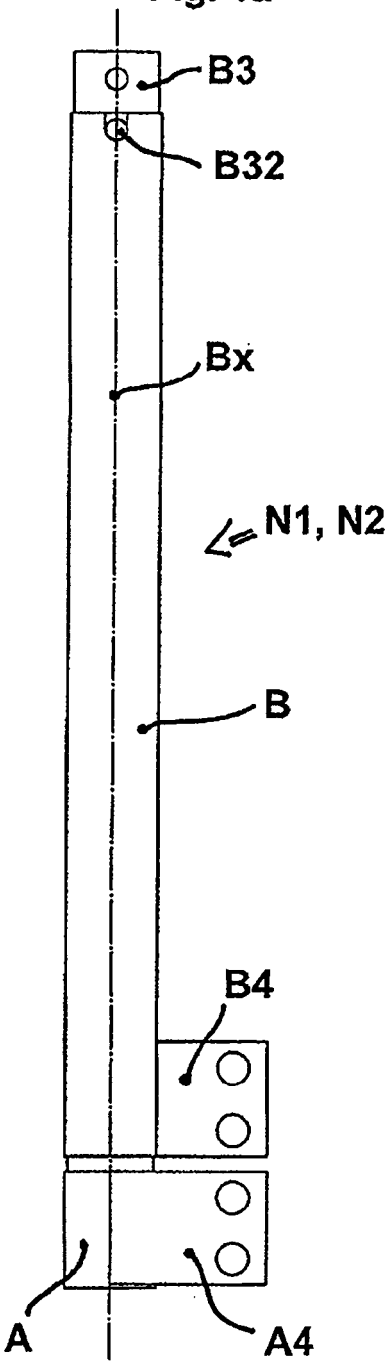

Fig. 1

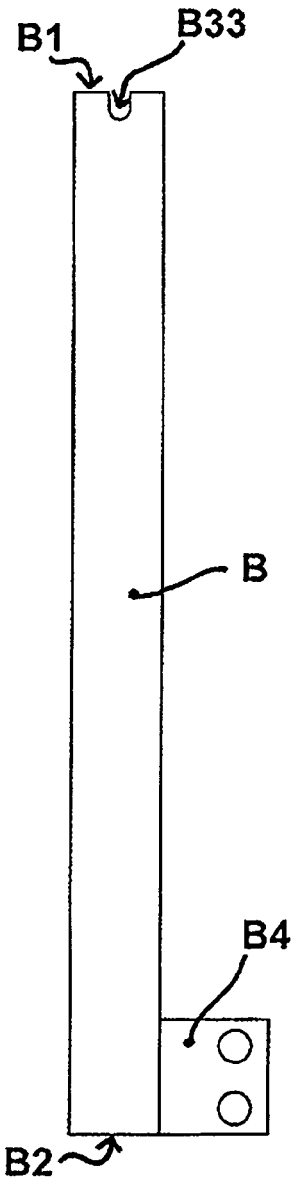

Fig. 2a

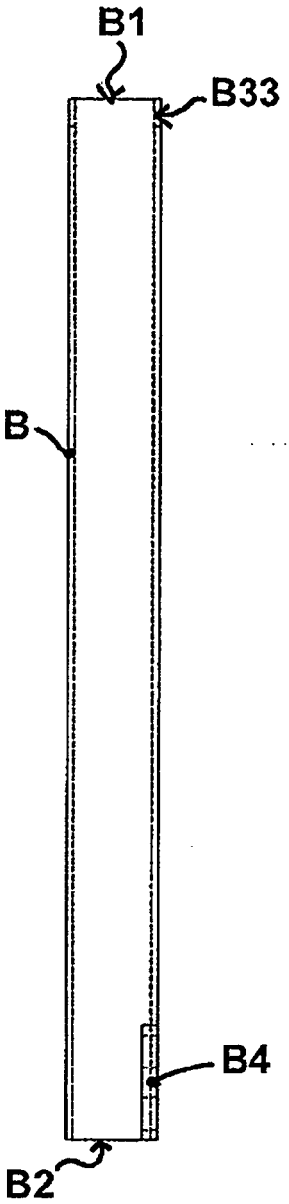

Fig. 2b

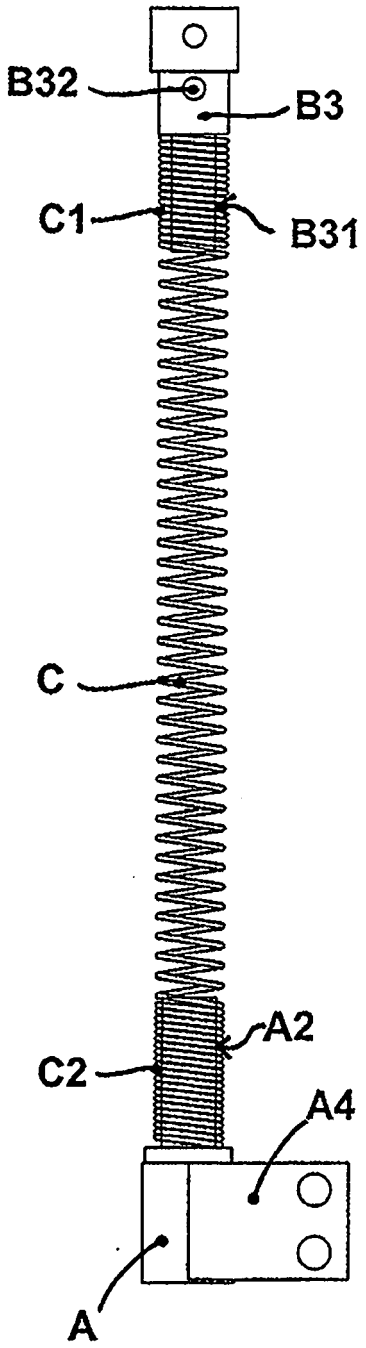

Fig. 3

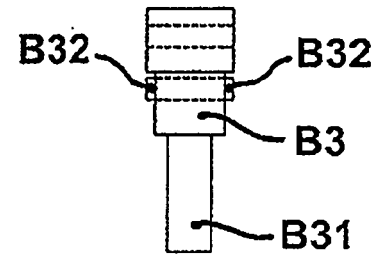

Fig. 3b

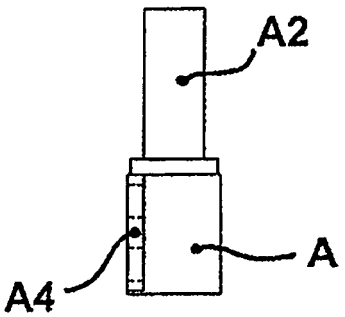

Fig. 3a

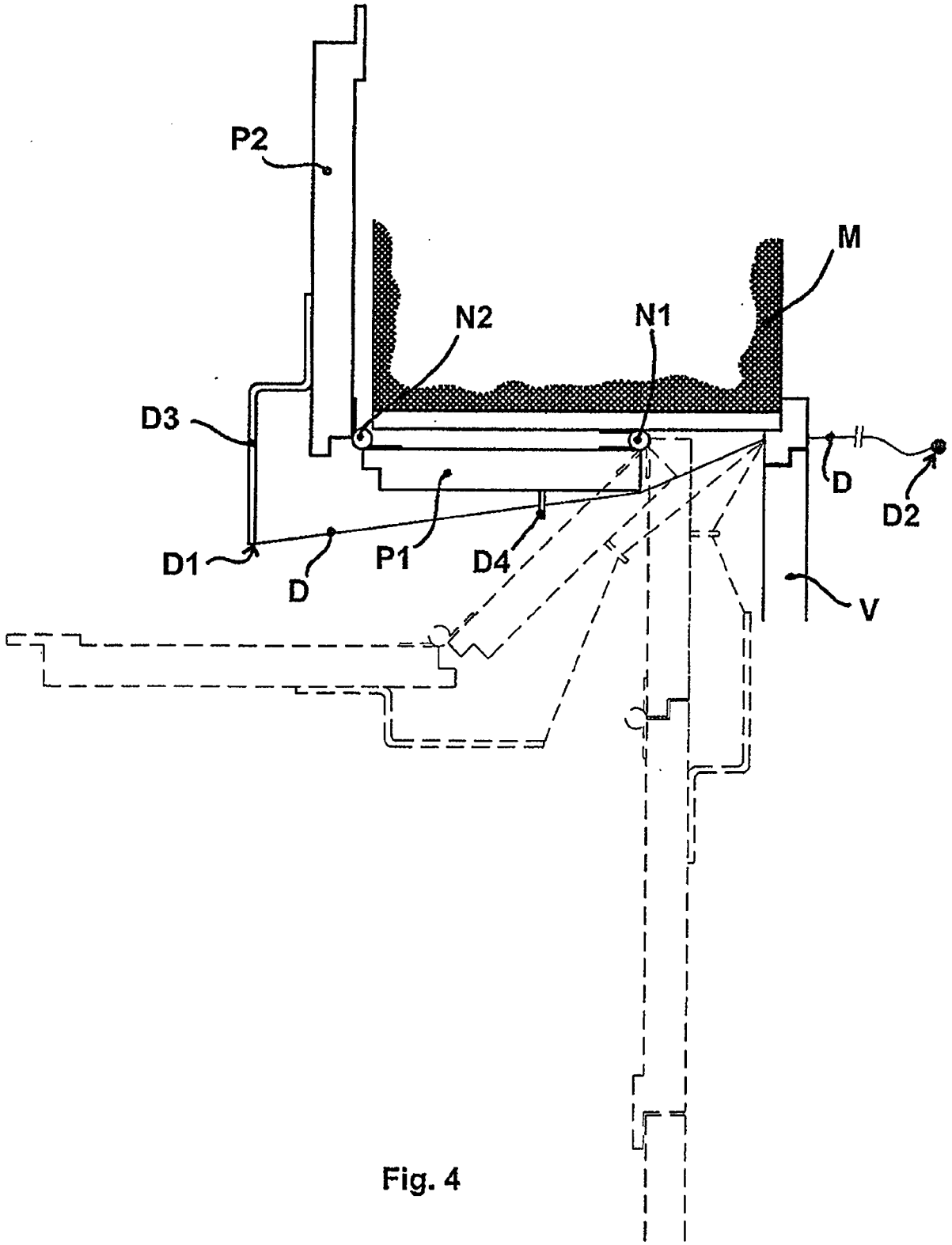

Fig. 4

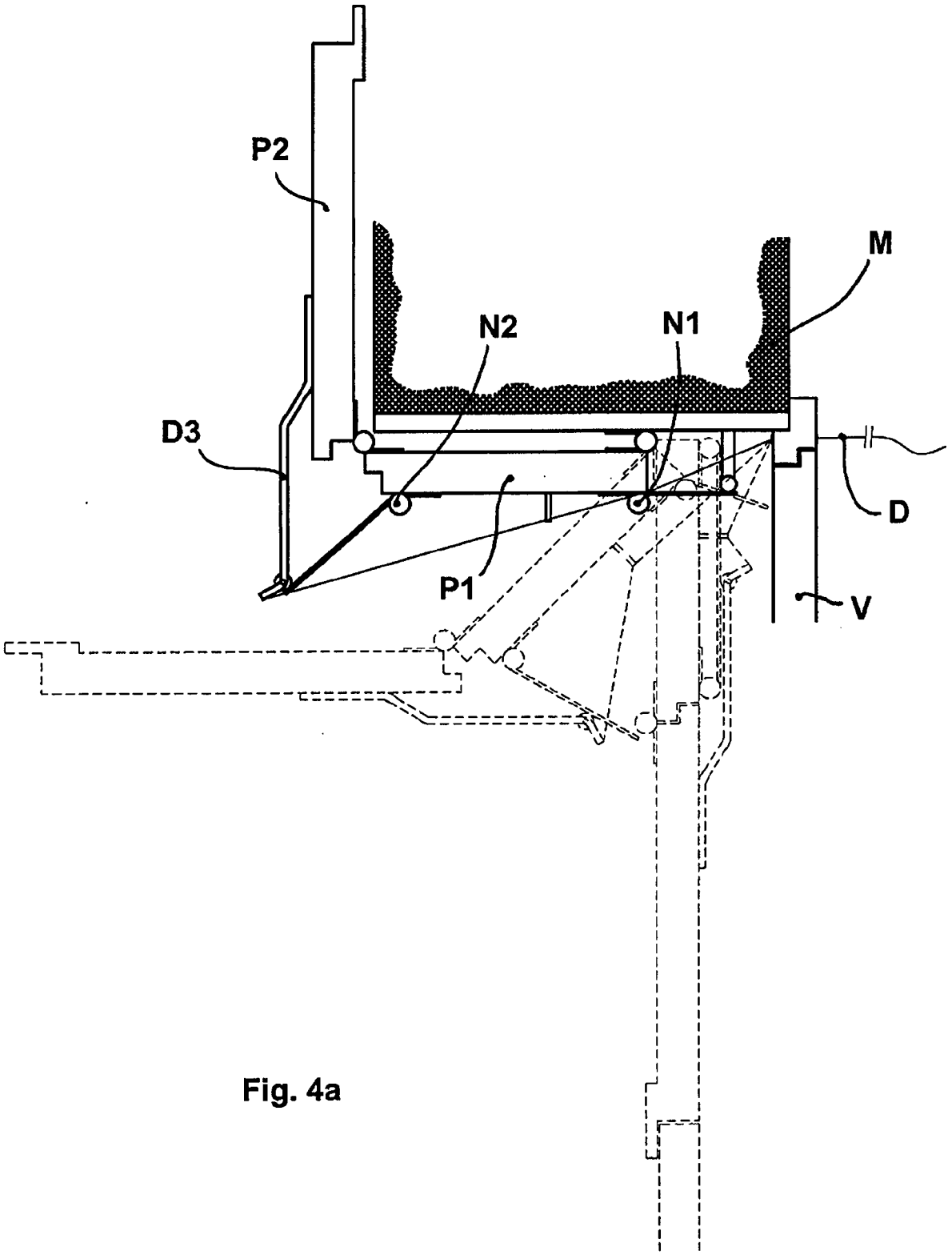

Fig. 4a

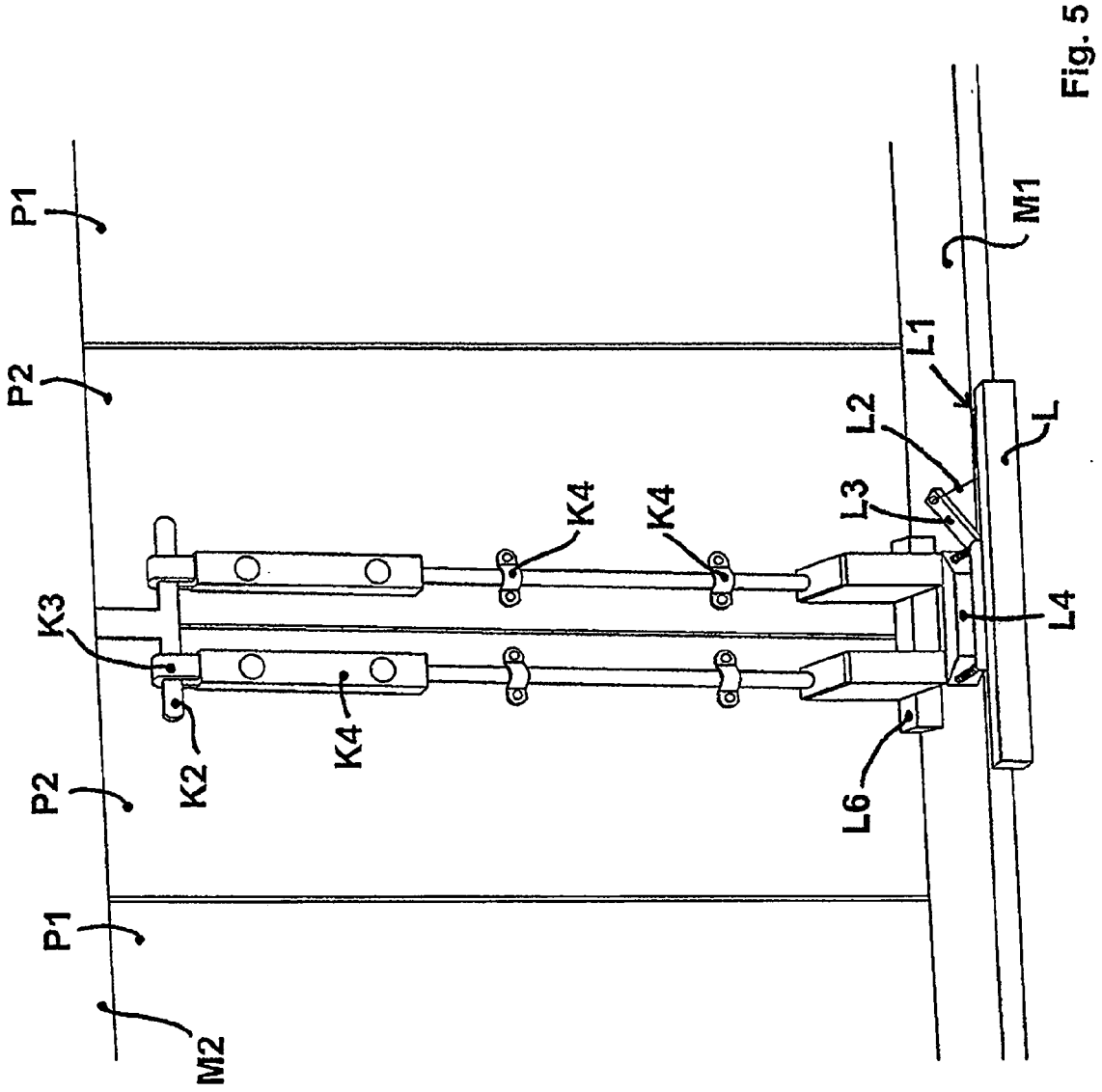

Fig. 5

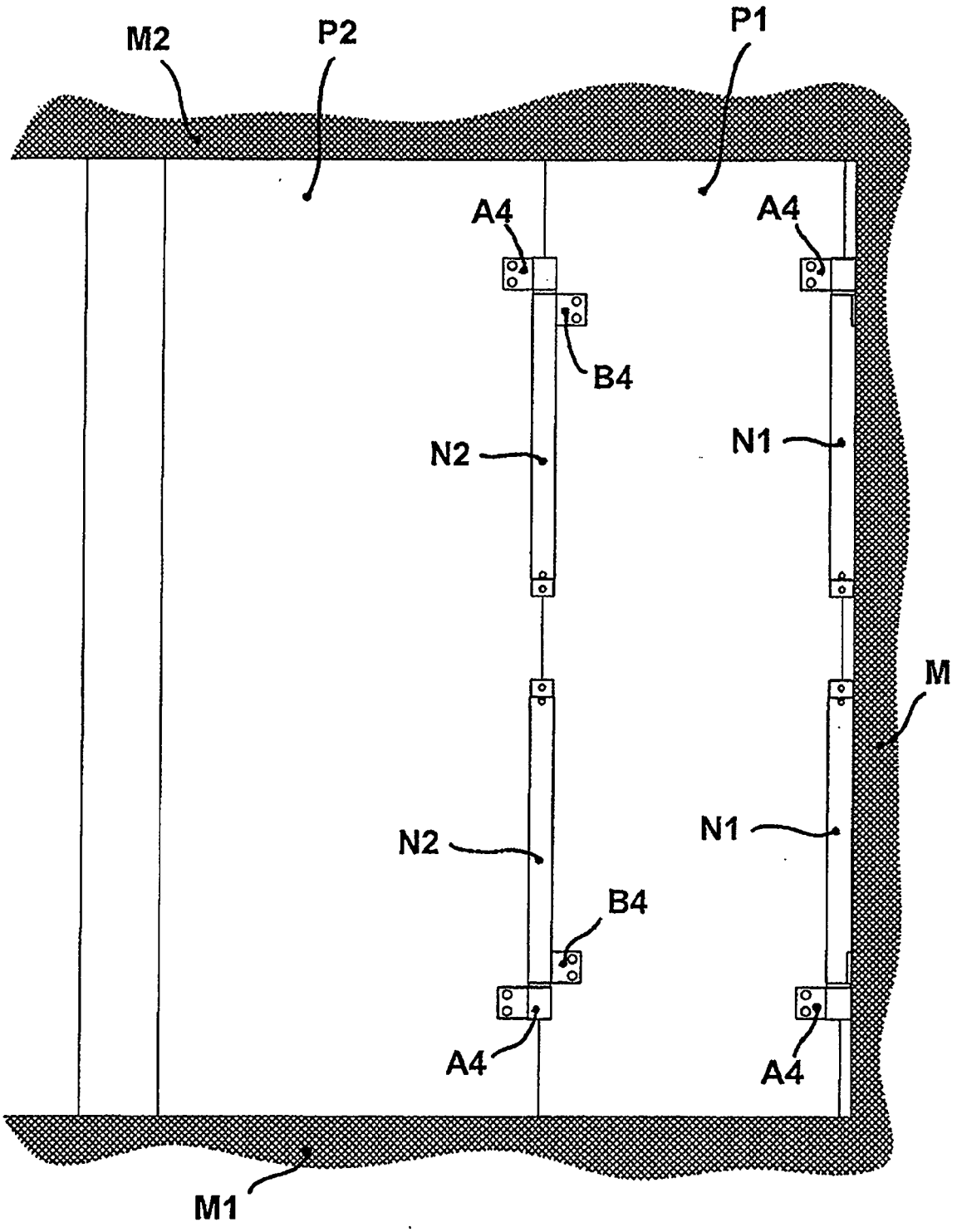

Fig. 5a

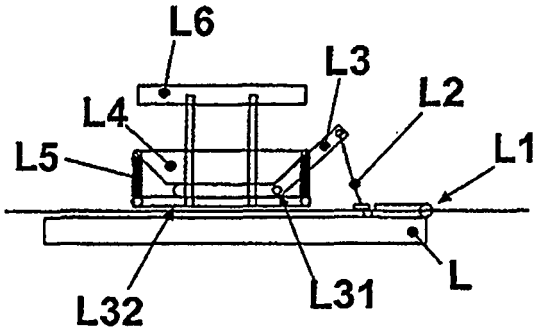

Fig. 6a

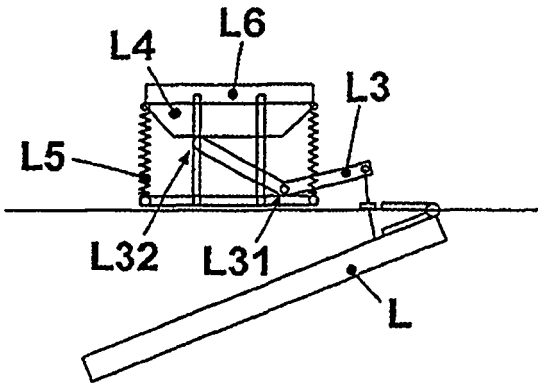

Fig. 6b

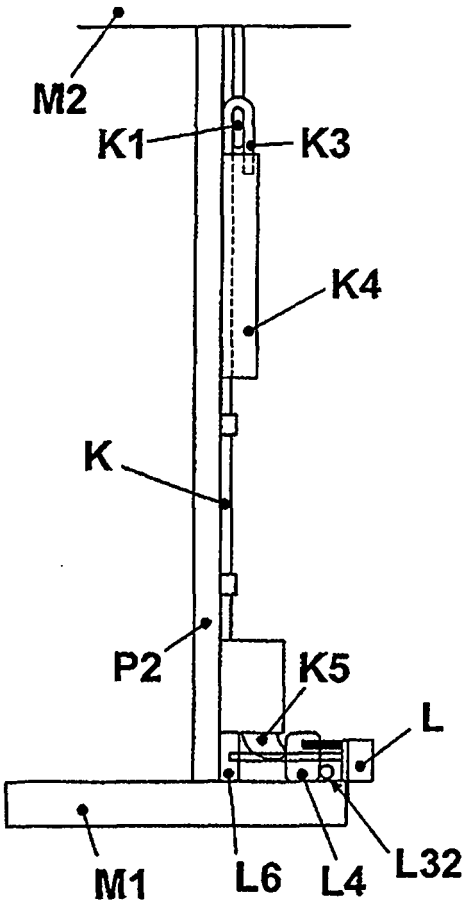

Fig. 7a

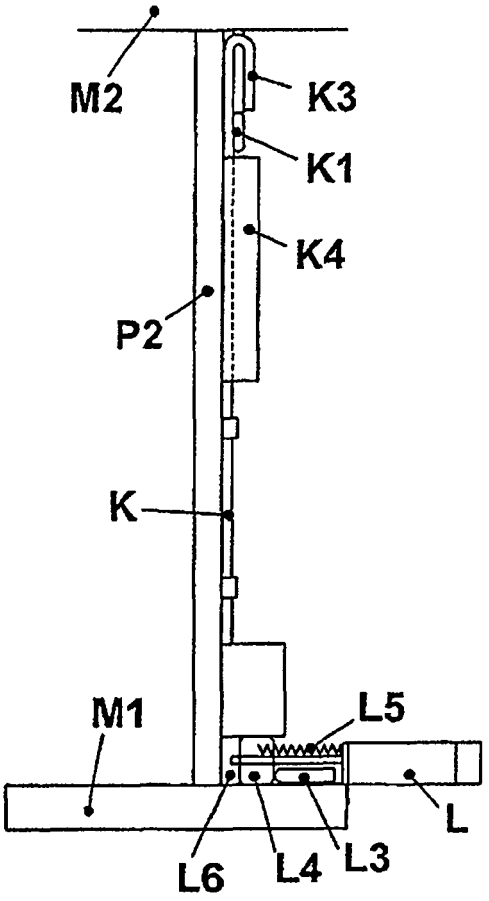

Fig. 7b

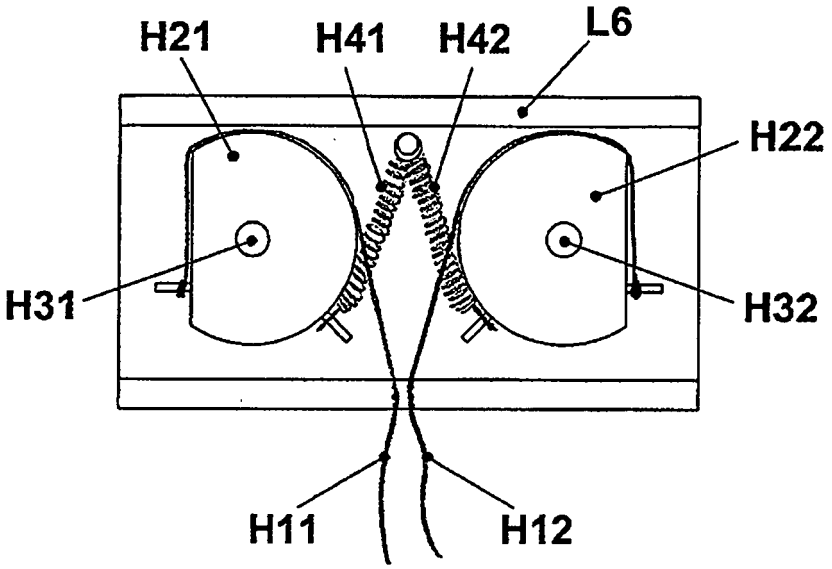
H21
H41
H42
L6
H22
H31
H32
H11
H12

Fig. 8a

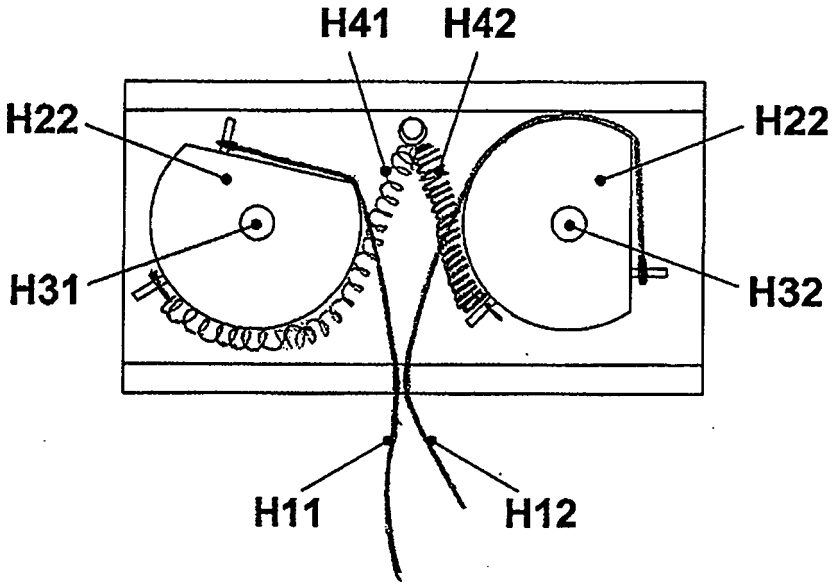
H41
H42
H22
H22
H31
H32
H11
H12

Fig. 8b