(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 516 987 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
23.03.2005 Bulletin 2005/12

(51) Int Cl.[7]: **E05C 17/50**, E05C 17/04

(21) Application number: **04021034.6**

(22) Date of filing: **03.09.2004**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PL PT RO SE SI SK TR
Designated Extension States:
AL HR LT LV MK

(30) Priority: **16.09.2003 IT BO20030089**

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(54) Device for keeping open the door of the body of trucks, trailers and the like

(57) A device for keeping open the door of the body of trucks, trailers and the like, comprising a latch (2) that is constituted by a first portion (4), which is supported so that it can rotate within the chassis of the body and continues with a second portion (7) for retaining the door, the latch (2) being adapted to be turned manually, about the longitudinal axis of the first portion (4), from an inactive angular position, in which it allows the free rotation of the door about its own pivoting axis, to an active angular position, in which it keeps the door open and substantially adjacent to the outside wall of the body, the first portion (4) and the second portion (7) of the latch (2) being rigidly interconnected by way of removable connection means (9).

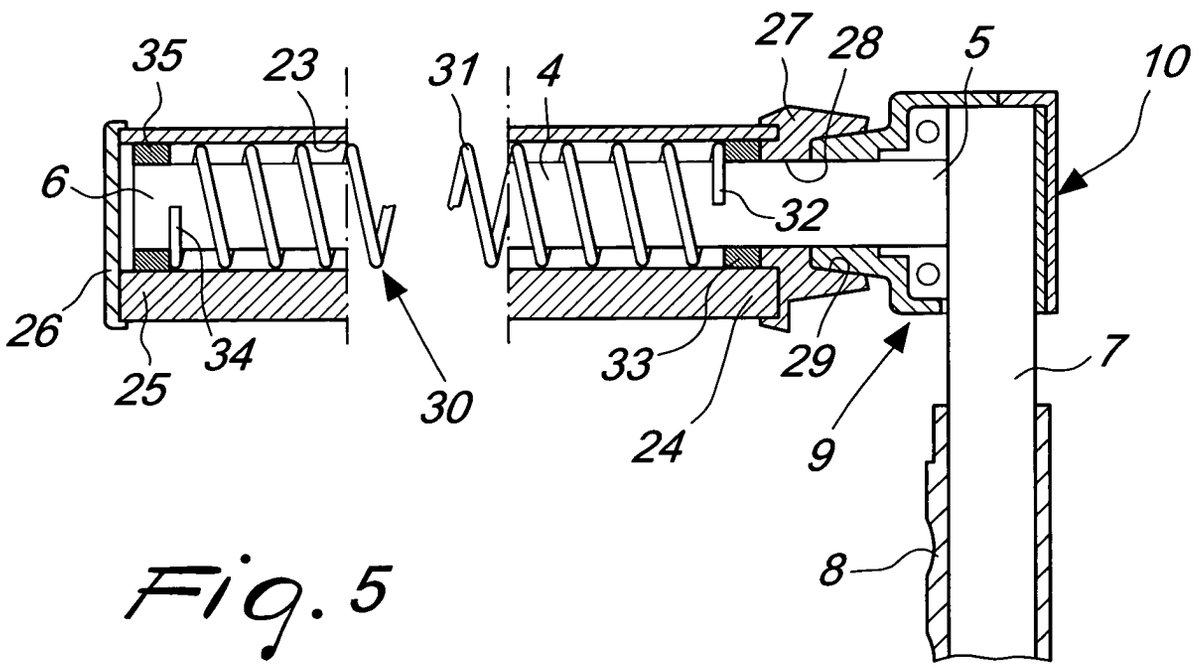

Fig. 5

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Description

[0001] The present invention relates to a device for keeping open the door of the body of trucks, trailers and the like.

[0002] The bodies of trucks, trailers and the like are currently provided, preferably along their sides, with elements or devices adapted to block the doors after they have been opened, preventing accidental and inadvertent movements or displacements of the doors from causing potential dangers for operators or from hindering the body loading and unloading operations.

[0003] These devices generally comprise sorts of latches, which are substantially L-shaped and are constituted by a first portion, which is supported so that it can rotate in the chassis of the body, and a second portion, which is perpendicular to the first portion and is intended for manual actuation in order to rotate the latch about the axis of the first portion: the latch can rotate from an inactive angular position, in which the second portion lies substantially horizontally, allowing the free movement of the body, to an active angular position, in which it constitutes a retainer against accidental movements of the door. The door is thus kept adjacent to the side of the chassis and is prevented from performing any movement during body loading and unloading operations. In some embodiments, the latch is further associated with elastic means that allow to retain stably said latch in the inactive or active angular position in which it is arranged by the operator.

[0004] The L-shaped latch is usually constituted, in known embodiments, by a metallic tubular element that is bent at right angles with a certain radius of curvature. The presence of such a radius of curvature, which cannot be smaller than a preset value due to technological and mechanical-strength requirements, causes an imperfect centering of the first portion of the latch in the respective chassis supports: the latch will therefore be affected, after a few operating cycles, by a gradual axial misalignment with respect to the supports, which is worsened by the manual effort that has to be applied to overcome the resistance of the elastic retention means. This unpleasant phenomenon inevitably compromises the effectiveness and correct functionality of the device.

[0005] The aim of the present invention is to obviate the cited drawback, by providing a device for blocking the door of the body of trucks, trailers and the like that features effective and correct functionality, i.e., without axial misalignments with respect to the body chassis.

[0006] Within this aim, an object of the present invention is to provide a device that retains its mechanical and functional characteristics even after a large number of operating cycles.

[0007] Another object of the present invention is to provide a device that is simple, relatively easy to provide in practice, safe in use, effective in operation, and has a relatively low cost.

[0008] This aim and these and other objects that will become better apparent hereinafter are achieved by the present device for keeping open the door of the body of trucks, trailers and the like, characterized in that it comprises a latch that is constituted by a first portion, which can slide along guiding means that are rigidly coupled to the chassis of said body and continues with a second portion for retaining said door, said latch being adapted to be turned manually, about the longitudinal axis of said first portion, from an inactive angular position, in which it allows the free rotation of said door about its own pivoting axis, to an active angular position, in which it keeps said door open and substantially adjacent to the outside wall of said body, said first portion and said second portion of said latch being rigidly interconnected by way of removable connection means.

[0009] Further characteristics and advantages of the present invention will become better apparent from the following detailed description of a preferred but not exclusive embodiment of a device for keeping open the door of the body of trucks, trailers and the like according to the invention, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is a perspective view of the device according to the invention, with the latch in the active position;
Figure 2 is a side elevation view of the device in the same position;
Figure 3 is a schematic perspective view of the device, with the latch in the inactive angular position;
Figure 4 is a schematic perspective view of the device, with the latch in the active angular position for retaining the door in the open condition;
Figure 5 is partially sectional detail plan view of the device;
Figure 6 is an exploded detail perspective view of the removable means for connection between the first portion and the second portion of the latch of the device according to the invention.

[0010] In the embodiments that follow, individual characteristics, given in relation to specific examples, may actually be interchanged with other different characteristics that exist in other embodiments.

[0011] Moreover, it is noted that anything found to be already known during the patenting process is understood not to be claimed and to be the subject of a disclaimer.

[0012] With reference to Figure 1, the reference numeral 1 generally designates a device according to the invention for keeping open the door of the body of trucks, trailers and the like.

[0013] The device comprises a latch 2, which is preferably made of metallic material and is supported so that it can rotate and slide axially in a guiding element 3 that is rigidly coupled to the chassis of the body; the latch 2 is constituted by a first tubular cylindrical portion 4 (Figure 5), which is inserted in the guiding element 3 and

forms an outer end 5 and an inner end 6, and continues with a shorter cylindrical tubular second portion 7, which is adapted to retain the door in the open position. The second portion 7 is provided with a covering 8 made of synthetic antislip material, such as rubber, which constitutes a sort of ergonomic grip to facilitate the manual actuation of the latch 2 on the part of the operator.

[0014] The latch 2 is adapted to be turned manually, within the guiding element 3 and about the longitudinal axis of the first portion 4, from an inactive angular position (Figure 3), in which the second portion 7 is arranged substantially horizontally (or in any case at right angles to the pivoting axis of the door), allowing the free rotation of the door about its pivoting axis, to an active angular position (Figure 4), which is rotated substantially through 90° with respect to the inactive angular position and in which the second portion 7 retains and blocks the door so that it is open and adjacent to the outer wall of the body.

[0015] According to the invention, the first and second portions 4 and 7 of the latch 2 are rigidly interconnected at right angles to each other and at their respective ends by way of removable connecting means 9 (Figures 5 and 6), so as to form a sort of horizontally arranged L-shape.

[0016] The removable connecting means 9 are constituted by a clamp, which is adapted to connect, at right angles to each other, the outer end 5 of the first portion 4 to the second portion 7 of the latch 2. The region of connection between the first portion 4 and the second portion 7 is enclosed in a protective box-like enclosure 10, which is constituted by a first half-shell 11 and by a second half-shell 12, which are rigidly coupled.

[0017] The clamp 9 is constituted by a laminar element that is bent substantially into a C-shape so as to form a sort of cylindrical bushing 13, which is affected by a longitudinal slot 14 along a generatrix, so that it can be divaricated elastically for the insertion of the end of the second portion 7. The edges of the longitudinal slot 14 continue radially toward the outside of the bushing 13 with respective facing flaps 15, each of which forms a respective curved portion 16 that is substantially semitubular, so as to form a cylindrical receptacle for the outer end 5 of the first portion 4 of the latch 2.

[0018] The flaps 15 of the clamp 9 are affected by respective pairs of through holes 17, which are coaxial in pairs and in which screw means (not shown in the figures since they are fully intuitive) engage, said means being adapted to fasten the clamp 9 about the first and second portions 4 and 7 of the latch 2.

[0019] The first half-shell 11 of the enclosure 10 is affected, at its four comers, by holes for the engagement of screws for connection to the second half-shell 12 and is affected centrally by a front opening 18 for the passage of the outer end 5 of the first portion 4, at which it forms a sort of extension 19 that has a substantially square transverse cross-section. The second half-shell 12 is affected, at its four comers, by mutually parallel cylindrical through channels 20 for the engagement of connecting screws and by a substantially semicylindrical chamber 21 for accommodating the clamp 9.

[0020] The guiding element 3 is substantially shaped like an elongated parallelepiped and is affected, along one side, by a plurality of longitudinal grooves 22, which have a transverse cross-section that is preferably shaped like an inverted T for fixing to the chassis of the body by way of appropriate brackets locked by means of screws, or by way of fully equivalent means. The guiding element 3 forms a through cylindrical cavity 23 for the rotation and axial sliding of the first portion 4 of the latch 2. The element 3 has a first end 24, from which the latch 2 protrudes, and a second end 25, which is closed by a corresponding cap 26. A head 27 is provided at the first end 24 and is affected by a circular through opening 28 for the exit of the first portion 4.

[0021] The guiding element 3 is provided with means 29 for the angular abutment of the latch 2 respectively in the inactive angular position and in the active angular position, and is retained stably in these positions; moreover, the latch can slide manually along the cylindrical cavity 23 from a retracted configuration, in which it is engaged in the angular abutment means 29 so that the first portion 4 is completely inserted in the cylindrical cavity 23 (thus preventing the rotation of the latch about the axis of the first portion 4) to an elongated configuration with respect to the guiding element 3, in which it is disengaged from the angular abutment means 29 and protrudes partially from the cylindrical cavity 23, so that it can be rotated accordingly from the inactive angular position to the active angular position for retaining the door, and vice versa.

[0022] The angular abutment means 29 are preferably constituted by a flared portion, which is provided toward the outside at the opening 28 of the head 27; such flared portion has a substantially square transverse cross-section, which is complementary to the cross-section of the extension 19 of the first half-shell 11; when the latch 2 is in the retracted configuration, the extension 19 engages in the flared portion 29, preventing the latch 2 from being able to rotate inadvertently about the axis of the first portion 4.

[0023] The guiding element 3 comprises elastic means 30, which are adapted to retain stably the latch 2 in the retracted configuration. The elastic means 30 comprise preferably a helical cylindrical spring 31, which is keyed along the first portion 4 of the latch and has a first end 32, which abuts against a first ring 33 keyed loosely on said first portion and rigidly coupled to the inner face of the head 27, and a second end 34, which is actuated by a second ring 35, which is keyed rigidly to the inner end 6 of the first portion 4 of the latch 2.

[0024] It is noted here that the head 27 is advantageously made of an elastic material such as rubber, in order to cushion, without risk of breakage even at very low temperatures, the impact of the extension 19 when the latch 2 is released.

[0025] The method of use of the device according to

the invention, shown in particular schematically in Figures 3 and 4, is as follows. With the door of the body closed, the latch 2 is in the inactive angular position (Figure 3). Once open, the door is arranged adjacent to the outer wall of the body, to which it must be coupled in order to prevent accidental movements. The latch 2 is then gripped by its second portion 7 and extracted partially from the cavity 23, overcoming the resistance of the spring 31 and moving from the retracted configuration to the elongated configuration and disengaging the extension 19 from the flared portion 29: in this manner, it can thus be rotated freely through 90° about the longitudinal axis of the first portion 4 to be then released, moving, by means of the action of the spring 31, from the elongated configuration to the retracted configuration and thus into the active angular position (Figure 4), therefore causing the engagement of the extension 19 in the flared portion 29, which have complementary substantially square transverse cross-sections. In this last angular position, the latch 2 thus constitutes a retention element preventing any unwanted movement of the door.

[0026] It has thus been shown that the invention achieves the intended aim and objects. The mutual fixing, by way of the detachable connecting means 9, between the first portion 4 and the second portion 7 of the latch allows to avoid the onset of axial misalignments of said latch with respect to the guiding element 3, which would compromise the correct use of the device. In this manner, the device can be kept efficient for a distinctly higher number of operating cycles than conventional devices.

[0027] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

[0028] All the details may further be replaced with other technically equivalent ones.

[0029] In practice, the materials used, as well as the shapes and dimensions, may be any according to requirements without thereby abandoning the protective scope of the appended claims.

[0030] The disclosures in Italian Utility Model Application No. BO2003U000089 from which this application claims priority are incorporated herein by reference.

[0031] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A device for keeping open the door of the body of trucks, trailers and the like, **characterized in that** it comprises a latch (2) that is constituted by a first portion (4), which is supported so that it can rotate within the chassis of said body and continues with a second portion (7) for retaining said door, said latch (2) being adapted to be turned manually, about the longitudinal axis of said first portion (4), from an inactive angular position, in which it allows the free rotation of said door about its own pivoting axis, to an active angular position, in which it keeps said door open and substantially adjacent to the outside wall of said body, said first portion (4) and said second portion (7) of said latch (2) being rigidly interconnected by way of removable connection means (9).

2. The device according to claim 1, **characterized in that** said removable connection means (9) comprise a clamp, which is adapted to connect the respective ends of said first portion (4) and said second portion (7) at right angles to each other.

3. The device according to claims 1 and 2, **characterized in that** said first portion (4) is supported so that it can rotate and can slide axially along a guiding element (3), which is rigidly coupled to said chassis and is provided with means (29) for the angular abutment of said latch (2) respectively in said inactive angular position and in said active angular position, said latch (2) being further able to slide manually along said guiding element (3) from a retracted configuration, in which it is inserted in said element (3) and is prevented, by said abutment means (29), from rotating about the axis of said first portion (4), to an elongated configuration, in which it is partially extracted from said element (3), causing the disengagement of said angular abutment means (29), so that it can rotate about said axis in order to be rotated manually from said inactive angular position to said active angular position, and vice versa.

4. The device according to one or more of the preceding claims, **characterized in that** said clamp is constituted by a laminar element that is bent so as to become substantially C-shaped, so as to form a sort of bushing (13), which is substantially cylindrical and is affected by a longitudinal slot (14) along a generatrix so that it can be divaricated elastically for the insertion of the end of said second portion (7), said bushing (13) continuing outward, from the mutually opposite edges of said longitudinal slot (14), with respective facing flaps (15), which form respective curved portions (16) that are substantially semitubular, so as to form a receptacle for the outer end (5) of said first portion (4).

5. The device according to one or more of the preceding claims, **characterized in that** said flaps (15) are affected by respective pairs of through holes (17), which are coaxial in pairs, for the insertion of screw

means that are adapted to fasten said clamp (9) around said first portion (4) and said second portion (7).

6. The device according to one or more of the preceding claims, **characterized in that** said guiding element (3) has a substantially box-like elongated shape, which forms a cylindrical cavity (23) for the axial sliding of said first portion (4), said guiding element (3) comprising elastic means (30), which are adapted to retain stably said latch (2) in said retracted configuration.

7. The device according to one or more of the preceding claims, **characterized in that** said clamp (9) is enclosed in a respective box-like enclosure (10), which is constituted by a first half-shell (11) and a second half-shell (12), which are rigidly coupled.

8. The device according to one or more of the preceding claims, **characterized in that** said guiding element (3) is provided with a head (27), which is affected by a circular opening (28) for the passage of said first portion (4) of said latch (2).

9. The device according to one or more of the preceding claims, **characterized in that** said angular abutment means (29) of said latch (2) are constituted by a flared portion that has a substantially square transverse cross-section and is formed at said circular opening (28), in which an extension (19) of said first half-shell (11) engages when said latch (2) is in the retracted configuration, said extension having a substantially square cross-section that is complementary to the cross-section of said flared portion (29).

10. The device according to one or more of the preceding claims, **characterized in that** said elastic means (30) comprise a cylindrical helical spring (31), which is keyed on said first portion (4) and has a first end (32), which abuts against a first ring (33) that is keyed loosely on said first portion (4) and is adjacent to the inner face of said head (27), and a second end (34), which is actuated by a second ring (35), which is keyed rigidly to the inner end (6) of said first portion (4).

11. The device according to one or more of the preceding claims, **characterized in that** said head (27) is made of a substantially elastic material such as rubber, which has mechanical characteristics that are constant at low and high temperatures.

Fig. 1

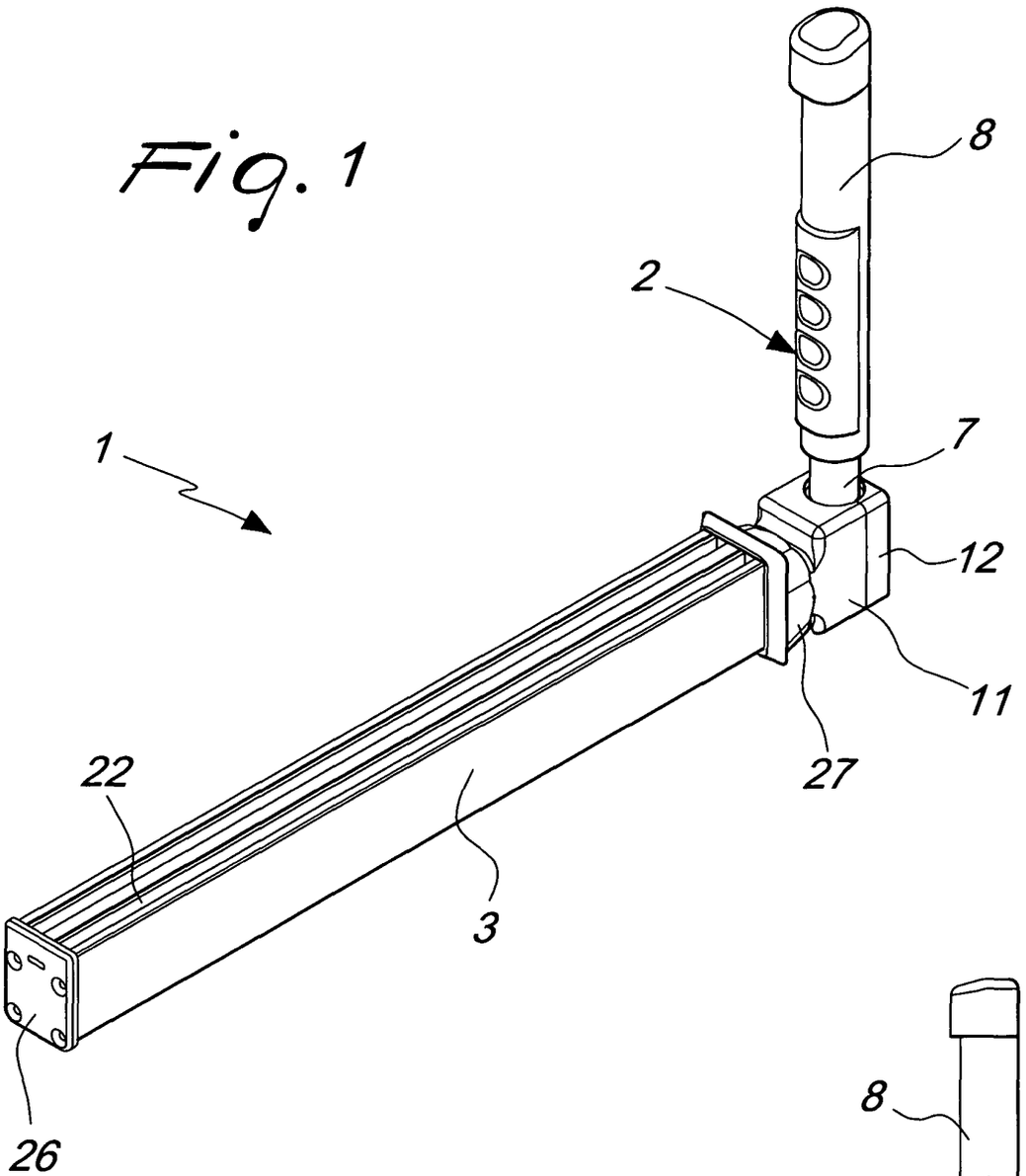


Fig. 2

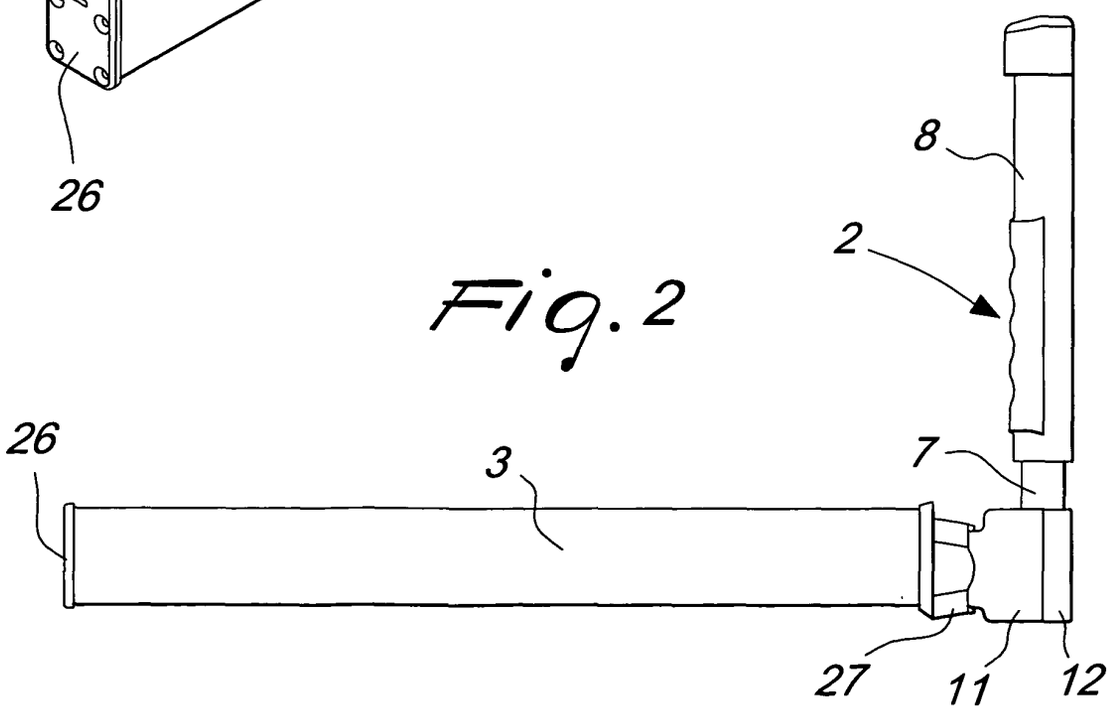
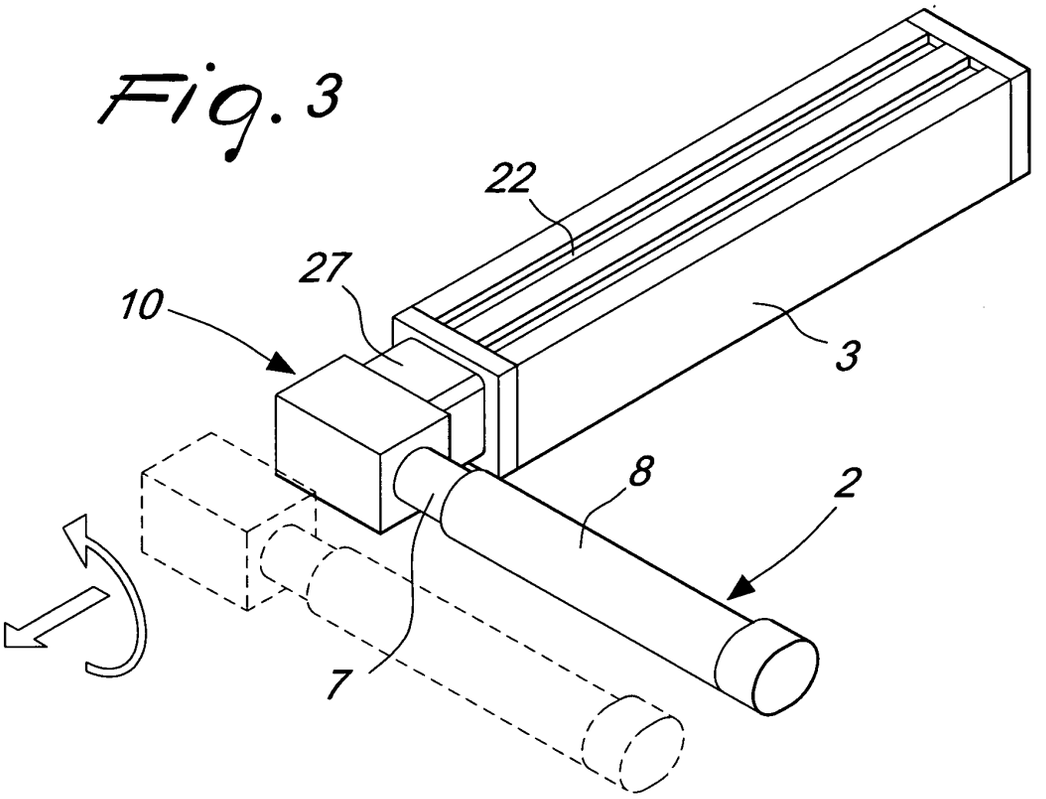


Fig. 3



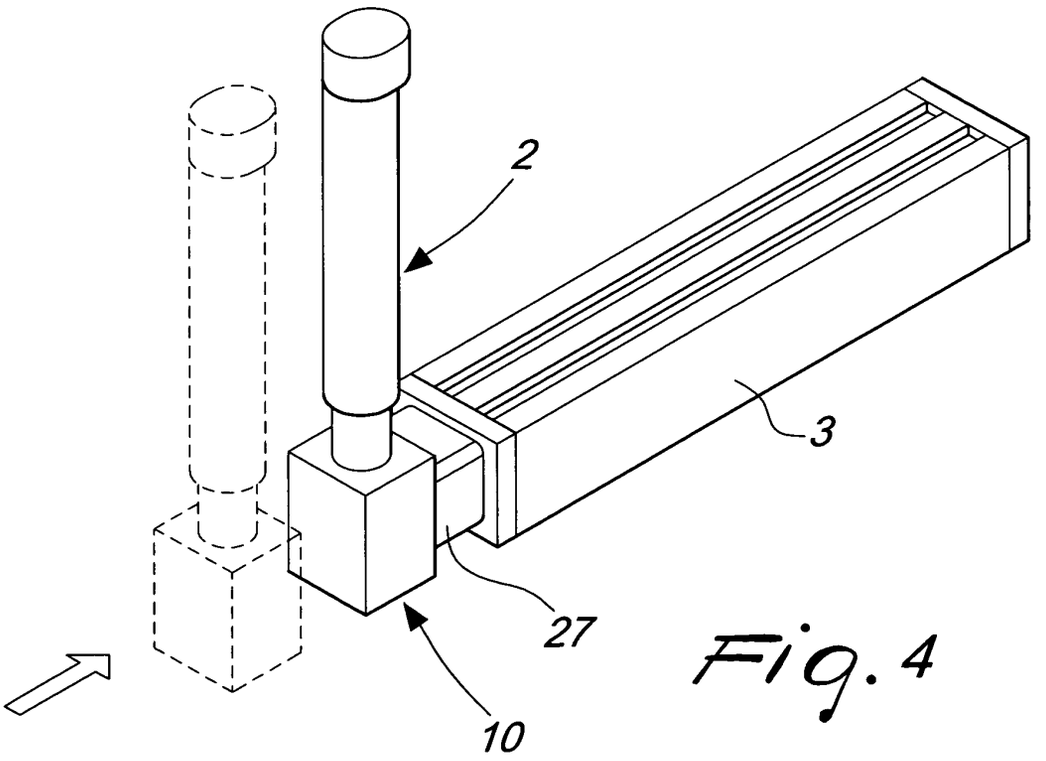


Fig. 4

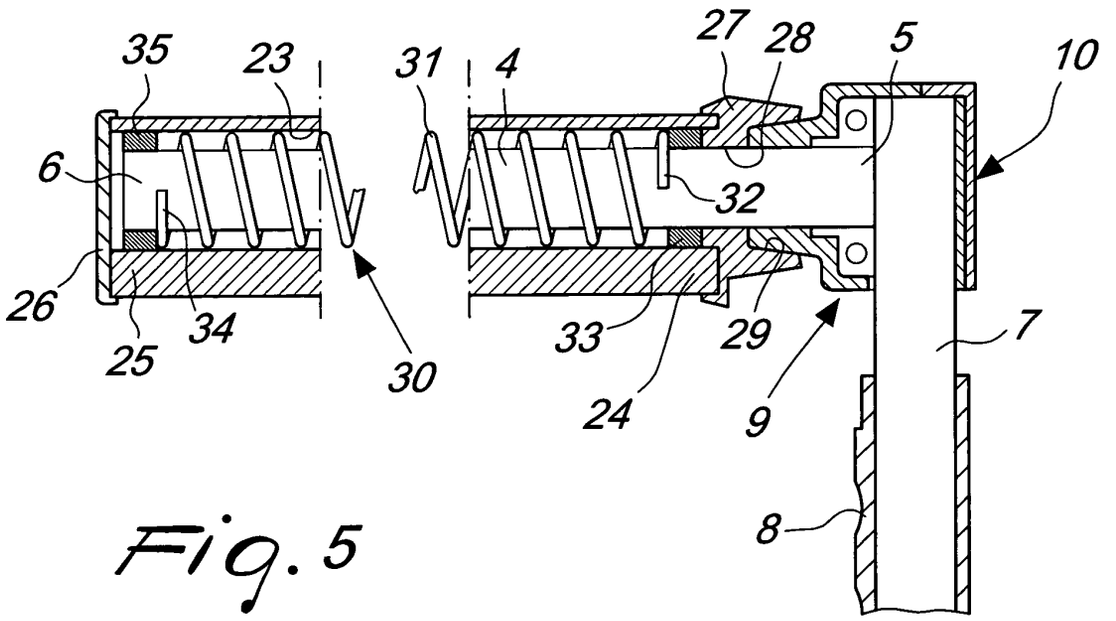

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Fig. 5

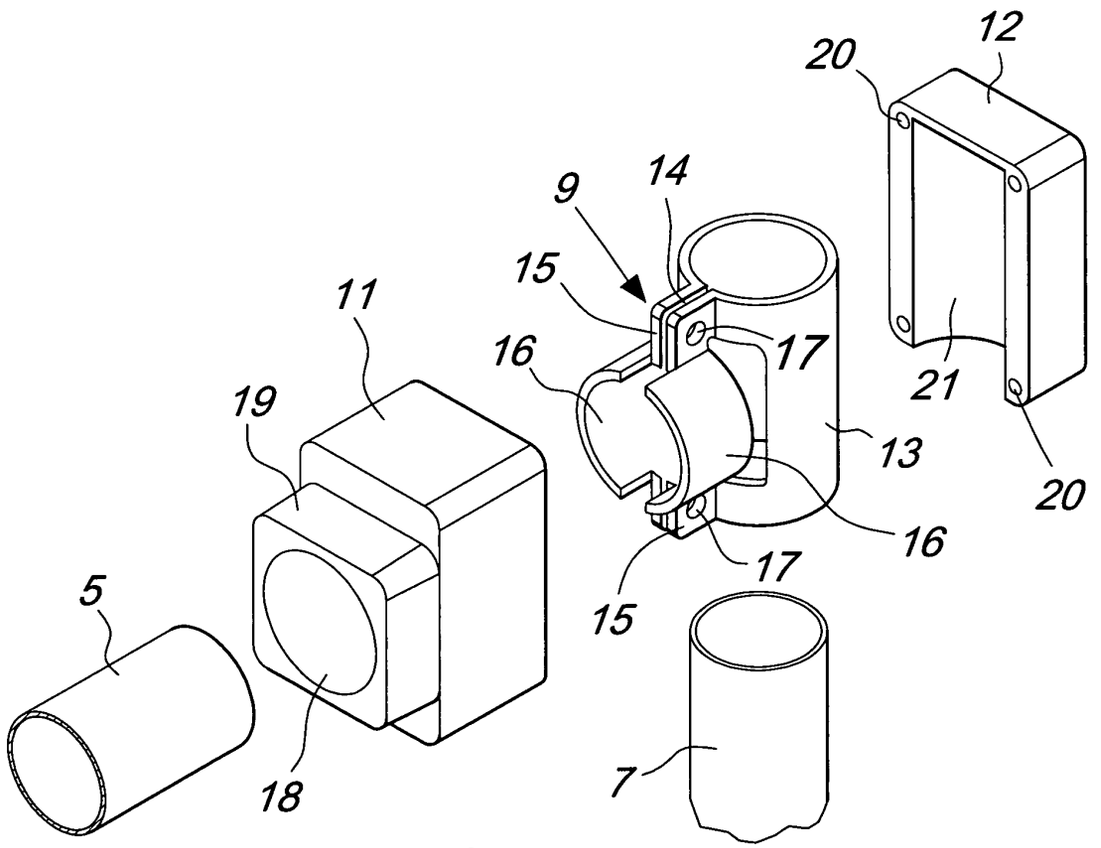
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Fig. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 04 02 1034

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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TECHNICAL FIELDS SEARCHED (Int.Cl.7)

E05C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	25 October 2004	Vacca, R

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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