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(54) **Device for coupling a winding shaft of a blind, awning or the like to corresponding supports**

(57) A device (10) for coupling the winding shaft of a blind, awning or the like to corresponding supports, the device comprising opposite coaxial pivoting means for the two ends (12, 13) of a winding shaft (14), at least one of the pivoting means comprising an axially translatable pivot (15), which is adapted to mate reversibly with a complementarily shaped coaxial seat (16) formed on one end (12) of the winding shaft (14), elastic means (17) being provided for the automatic return of the axially translatable pivot (15) to the configuration for engagement with the complementarily shaped coaxial seat (16) on the end of the winding shaft.

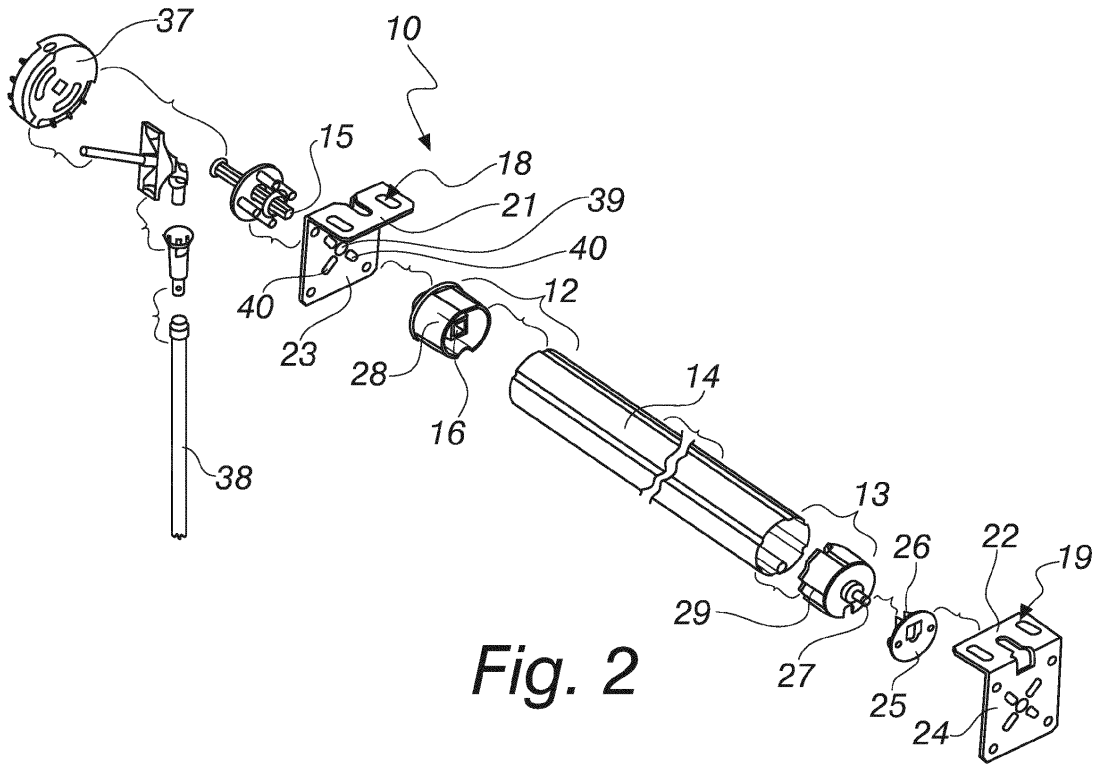

Fig. 2

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Description

[0001] The present invention relates to a device for coupling a winding shaft of a blind, awning or the like to corresponding supports.

[0002] Nowadays the use is increasingly widespread in building construction of prefabricated single-piece windows, which are quicker to mount on the wall structure and offer better levels of thermal and acoustic insulation than traditional windows.

[0003] Such prefabricated single-piece windows can have, for the installation of an outer blind or awning, or other, similar roll-up shade, an overlying box, especially made, for example with walls made of polystyrene or other, similar material, in order to ensure the highest possible insulation.

[0004] In the absence of such boxes, adapted recesses are predefined in the masonry for the insertion of the aforementioned roll-up shades.

[0005] One of the typical drawbacks of the techniques used today for mounting a roll-up shade, for example a blind, is linked to the fact that the actuation means also have to be installed together with the winding shaft, and this operation is usually inconvenient and also complicates the availability for inspection of the blind or of the awning after mounting is completed, for example in the event of repair or replacement.

[0006] The aim of the present invention is to provide a device for coupling a winding shaft of a blind, awning or the like to corresponding supports, which is capable of overcoming the aforementioned drawback of the known art.

[0007] Therefore an object of the invention is to devise a coupling device that enables the separate installation of the actuation and winding shaft.

[0008] Another object of the invention is to devise a coupling device that is easy and intuitive to use.

[0009] Another object of the invention is to devise a coupling device that enables both the easy mounting and the easy removal of the winding shaft.

[0010] Another object of the invention is to provide a device for coupling a winding shaft of a blind, awning or the like to corresponding supports, which can be made using conventional systems and technologies.

[0011] This aim and these and other objects which will become more evident hereinafter are achieved by a device for coupling the winding shaft of a blind, awning or the like to corresponding supports, **characterized in that** it comprises opposite coaxial pivoting means for the two ends of a winding shaft, at least one of said pivoting means comprising an axially translatable pivot, which is adapted to mate reversibly with a complementarily shaped coaxial seat formed on one end of said winding shaft, elastic means being provided for the automatic return of said axially translatable pivot to the configuration for engagement with said complementarily shaped coaxial seat on the end of said winding shaft.

[0012] Further characteristics and advantages of the invention will become more apparent from the description of a preferred, but not exclusive, embodiment of the coupling device according to the invention, which is illustrated by way of non-limiting example in the accompanying drawings wherein:

Figure 1 is a perspective view of the coupling device according to the invention;

Figure 2 is an exploded perspective view of the device according to the invention;

Figure 3 is a side view of the device according to the invention, in the coupled configuration of the winding shaft;

Figure 4 is a side view of the device according to the invention, in the uncoupled configuration of the winding shaft;

Figures 5 and 6 each show a step of mounting a winding shaft with a coupling device according to the invention.

[0013] With reference to the figures, a device for coupling the winding shaft of a blind, awning or the like to corresponding supports, according to the invention, is generally designated with the reference numeral 10.

[0014] Such a coupling device 10, which is clearly visible overall in Figure 2, comprises opposite coaxial pivoting means for the two ends 12 and 13 of a winding shaft 14.

[0015] One of the pivoting means is constituted by an axially translatable pivot 15, which is adapted to mate reversibly with a complementarily shaped coaxial seat 16 formed on one end 12 of said winding shaft 14.

[0016] Advantageously there are elastic means 17, described in more detail hereinbelow, for the automatic return of the axially translatable pivot 15 to the configuration for engagement with the complementarily shaped coaxial seat 16 on the end 12 of the winding shaft 14.

[0017] The pivoting means are constituted not only by the axially translatable pivot 15 and by the associated automatic elastic return means 17, but also by two opposite brackets 18 and 19, which are adapted to be fixed within a recess 20 for accommodating the roll-up shade, each bracket comprising a first portion 21 and 22 for fixing to the wall or supporting frame, and a second portion 23 and 24 for supporting the winding shaft 14.

[0018] The elastic means 17 for the pivot 15 are fixed to the second portion 23 of the first bracket 18, while a flange 25 is fixed to the second portion 24 of the second bracket 19 and has a U-shaped insertion and resting protrusion 26 for a corresponding pivoting element 27 that extends from the second end 13 of the winding shaft 14.

[0019] The ends 12 and 13 of the winding shaft 14 are constituted, in the present embodiment, by caps 28 and 29 which are contoured to be inserted into the tubular element that forms the winding shaft 14.

[0020] Defined on the first cap 28 is the seat 16 which is complementarily shaped for the pivot 15 and is coaxial thereto, while the second cap 29 has the pivoting element

27, which is coaxial with the pivot 15.

[0021] The elastic means 17 for the automatic return of the axially translatable pivot 15 are constituted by a helical pusher spring 30, which is enclosed axially between a flange 31, which is fixed to the second portion 23 of the first bracket 18, and an annular abutment body 32, for example a metallic open elastic ring of the snap-ring type, which is fixed to the pivot 15.

[0022] For easier actuation of the pivot 15, there is a second annular body 33, which has a larger radius than the first annular body 32, for example a washer, placed between the second portion 23 of the first bracket 18 and the first annular body 32.

[0023] The flange 31 is fixed to the second portion 23 of the first bracket by way of a plurality of spacer columns 34 which are traversed axially by respective screws 35.

[0024] The pivot 15 has a polygonal cross-section for transmitting the rotational torque between the pivot 15 and the winding shaft by way of the complementarily shaped seat 16.

[0025] The hole 39, which can be seen in Figure 2, on the second portion 23 of the first bracket 18 for the passage of the pivot 15 has a bush 36 for resting and sliding, which is adapted to facilitate the rotation of the pivot 15 and its translation when required.

[0026] In the embodiment described herein, also mounted on the pivot 15 is the actuation mechanism 37 with the corresponding command means 38 for a user, for example a rod with a crank.

[0027] The actuation mechanism 37 is supported by the pivot 15, to which the actuation mechanism 37, which is conventional, supplies the rotary motion for the winding and unwinding of the awning, blind or the like.

[0028] The actuation mechanism 37 can vary its position on the pivot 15, within a predefined range of the length of the pivot 15, so as to facilitate the installation by insertion of the command means 38 through a hole in the wall.

[0029] The use of the coupling device 10 according to the invention is exemplified in Figures 3, 4, 5 and 6.

[0030] Figure 3 shows the coupling device 10 with the pivot 15 inserted in the corresponding seat 16 on the winding shaft 14; the helical spring 30 is at least partially extended and the second annular body 33 is in abutment on the second part 23 of the first bracket 18.

[0031] In order to make the pivot 15 perform a translational motion to disengage from the seat 16, as in Figure 4, the user operates with an adapted tool, or even with an ordinary screwdriver, on the second annular body 33, or the washer in the figures, gaining access to such washer through adapted slots 40 formed in the second portion 23 of the first bracket 18, as can clearly be seen in Figures 1 and 2.

[0032] In order to mount the winding shaft 14, on the other hand, the user operates, as in Figure 5, by pushing the pivot 15 by its tip, and then releasing it after coaxially positioning the seat 16 of the winding shaft 14 thereon; the pivoting element 27 has previously been inserted in the U-shaped protrusion 26 supported by the second bracket 19.

[0033] In practice it has been found that the invention fully achieves the intended aim and objects.

[0034] In particular, with the invention a coupling device has been devised that enables the separate installation of the actuation and winding shaft, thanks to the translationally moveable pivot 15 which is adapted to be fitted in the wall recess 20 first and separately from the mounting of the winding shaft which can be done easily at any later time, thanks to the elastic means 17 which make the engagement and disengagement of the pivot 15 into and from the complementarily shaped seat 16 at the end of said winding shaft easy and immediate.

[0035] Furthermore, with the invention a coupling device has been devised that is easy and intuitive to use, since it is sufficient to operate either on the tip of the pivot 15 or on the adapted second annular body 33, or a washer, depending on whether the user is mounting or removing the winding shaft.

[0036] In addition, with the invention a device for coupling a winding shaft of a blind, awning or the like to corresponding supports has been devised which can be made using conventional systems and technologies.

[0037] The invention, thus conceived, is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims. Moreover, all the details may be substituted by other, technically equivalent elements.

[0038] In practice the materials employed, provided they are compatible with the specific use, and the contingent dimensions and shapes, may be any according to requirements and to the state of the art.

[0039] The disclosures in Italian Patent Application No. PD2012A000296 from which this application claims priority are incorporated herein by reference.

[0040] Where technical features mentioned in any claim are followed by reference signs, such reference signs have been inserted 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 (10) for coupling the winding shaft of a blind, awning or the like to corresponding supports, **characterized in that** it comprises opposite coaxial pivoting means for the two ends (12, 13) of a winding shaft (14), at least one of said pivoting means comprising an axially translatable pivot (15), which is adapted to mate reversibly with a complementarily shaped coaxial seat (16) formed on one end (12) of said winding shaft (14), elastic means (17) being provided for the automatic return of said axially translatable pivot (15) to the configuration for engagement

with said complementarily shaped coaxial seat (16) on the end of said winding shaft.

2. The coupling device according to claim 1, **characterized in that** said pivoting means comprise two opposite brackets (18, 19), which are adapted to be fixed within an accommodation recess (20), each bracket comprising a first portion (21, 22) for fixing to the wall or to the supporting frame, and a second, supporting portion (23, 24) for the winding shaft (14).

3. The coupling device according to one or more of the preceding claims, **characterized in that** said elastic means (17) for the pivot (15) are fixed to the second portion (23) of the first bracket (18), a flange (25) being fixed to the second portion (24) of the second bracket (19) and having a U-shaped insertion and resting protrusion (26) for a corresponding pivoting element (27) that extends from the second end (13) of the winding shaft (14).

4. The coupling device according to one or more of the preceding claims, **characterized in that** said elastic means (17) for the automatic return of said axially translatable pivot (15) are constituted by a helical pusher spring (30), which is enclosed axially between a flange (31), which is fixed to the second portion (23) of the first bracket (18), and an annular abutment body (32), for example a metallic open elastic ring of the snap-ring type, which is fixed to the pivot (15).

5. The coupling device according to one or more of the preceding claims, **characterized in that** on the pivot (15) there is a second annular body (33), for example a washer, that has a larger radius than the first annular body (32), arranged between the second portion (23) of the first bracket (18) and the first annular body (32).

6. The coupling device according to one or more of the preceding claims, **characterized in that** said pivot (15) has a polygonal cross-section for transmitting the rotational torque between said pivot (15) and the winding shaft by way of the complementarily shaped seat (16).

7. The coupling device according to one or more of the preceding claims, **characterized in that** the hole (39) on the second portion (23) of the first bracket (18) for the passage of the pivot (15) has a bush (36) for resting and sliding, which is adapted to facilitate the rotation of the pivot (15) and its translation.

8. The coupling device according to one or more of the preceding claims, **characterized in that** an actuation mechanism (37) is also mounted on said pivot (15).

9. The coupling device according to one or more of the preceding claims, **characterized in that** slots (40) for accessing the second annular body (33) through said second portion (23) are provided in said second portion (23) of said first bracket (18).

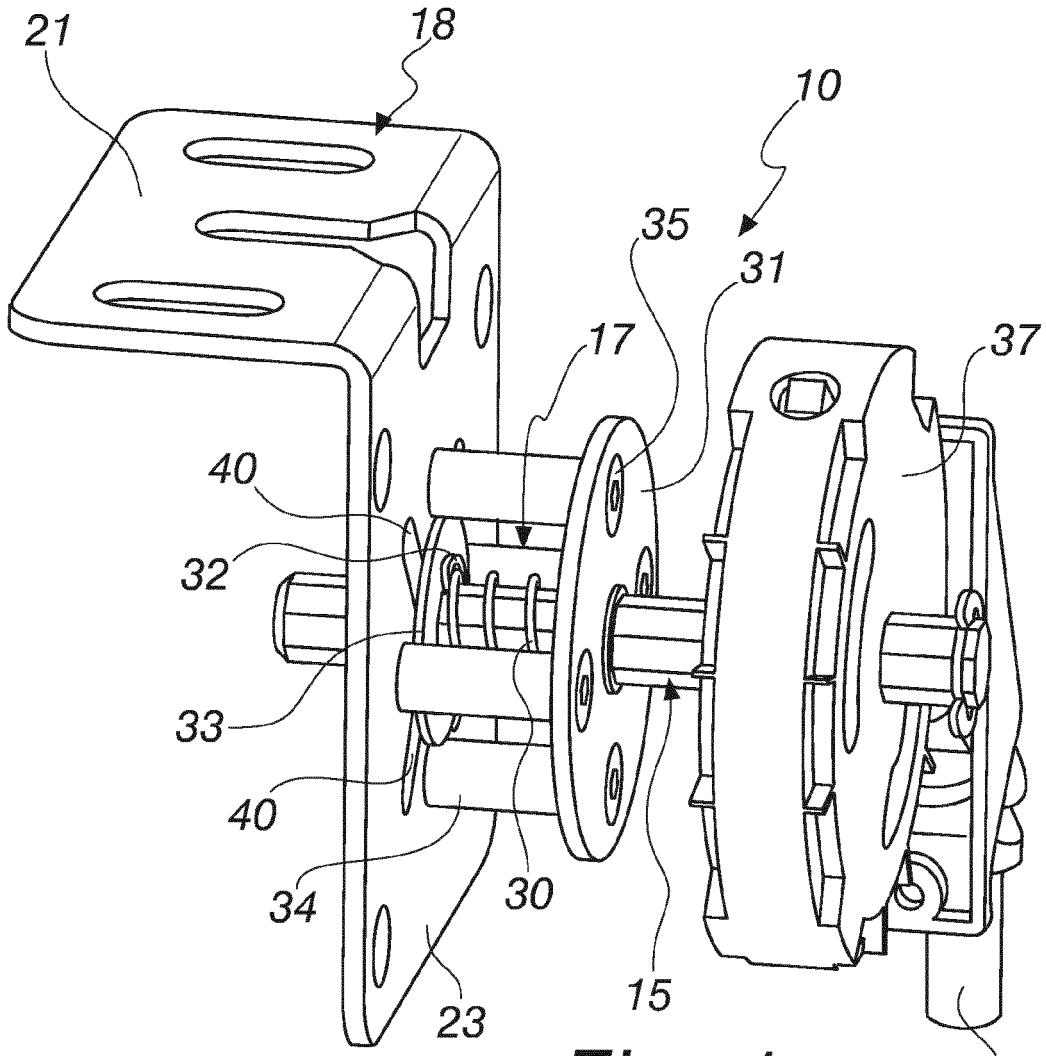

Fig. 1

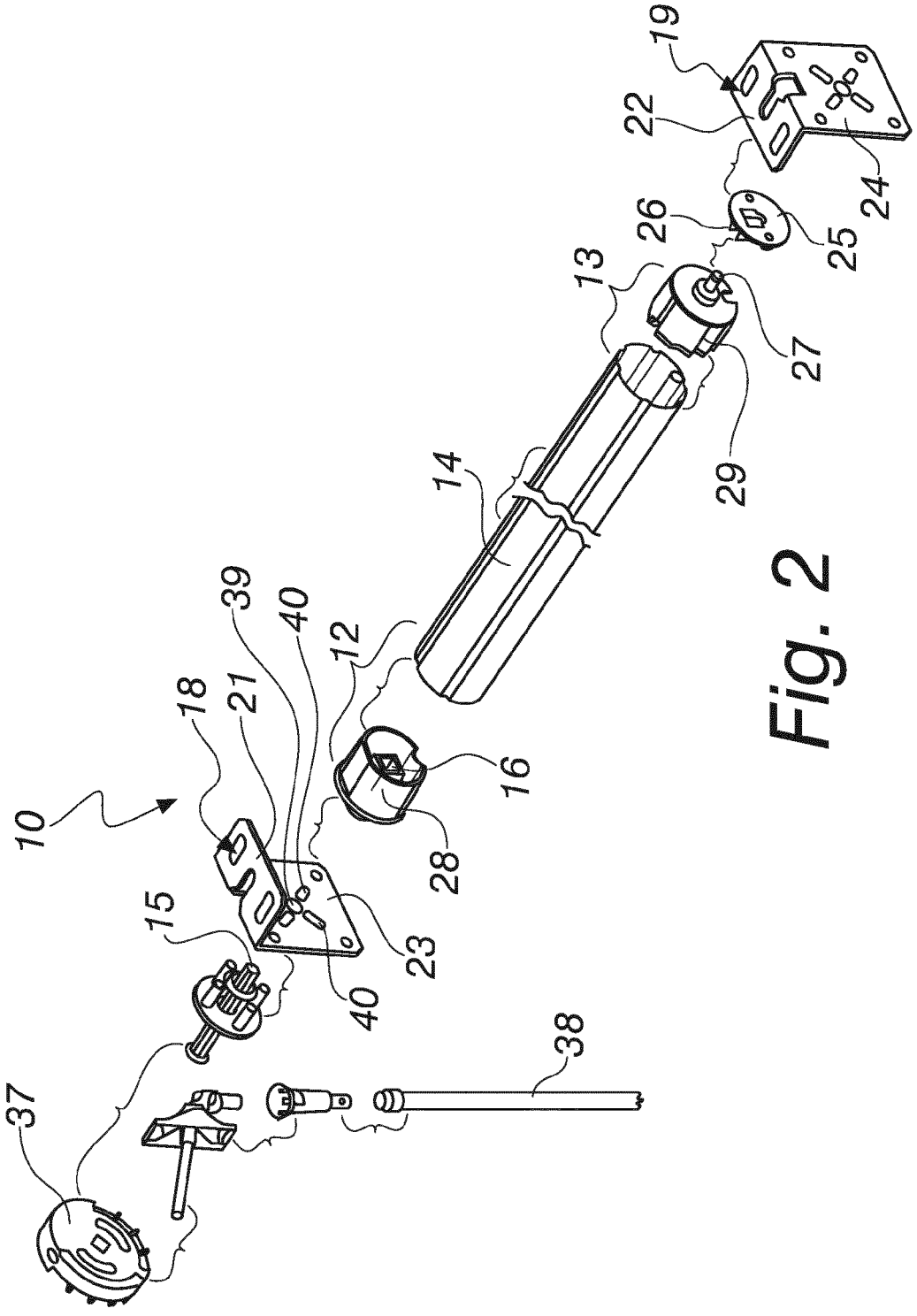

Fig. 2

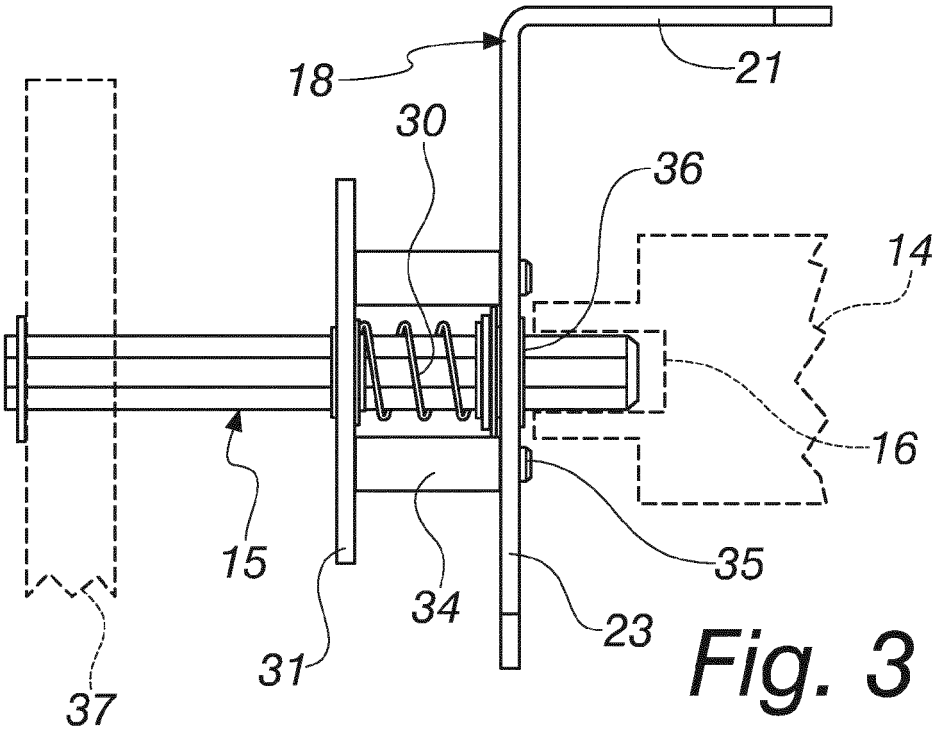

Fig. 3

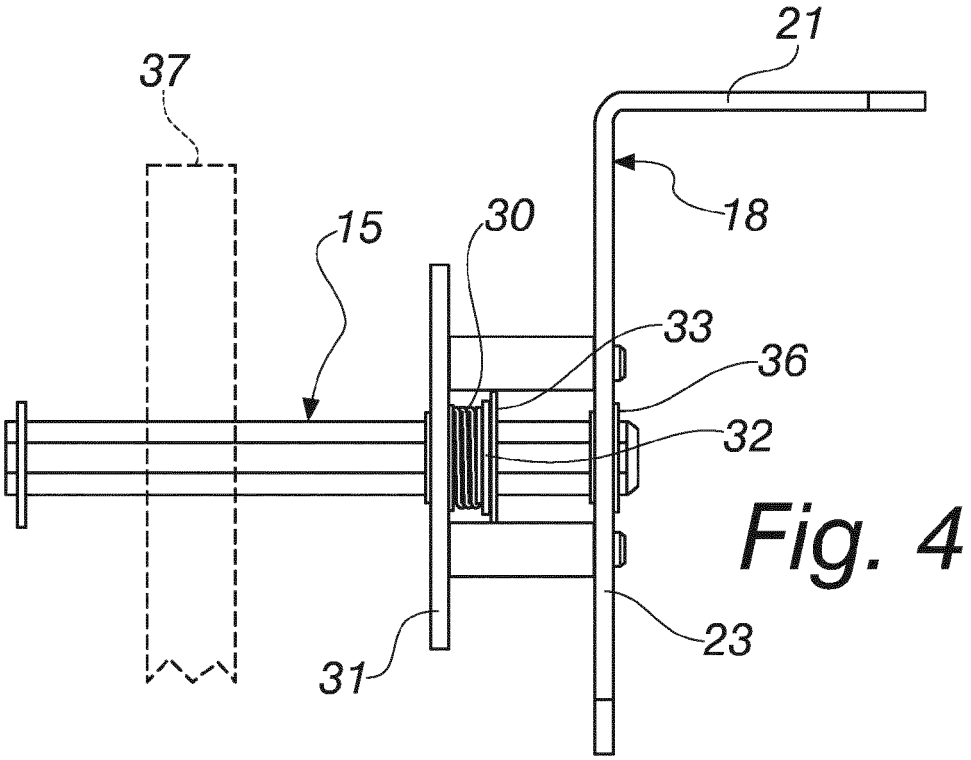

Fig. 4

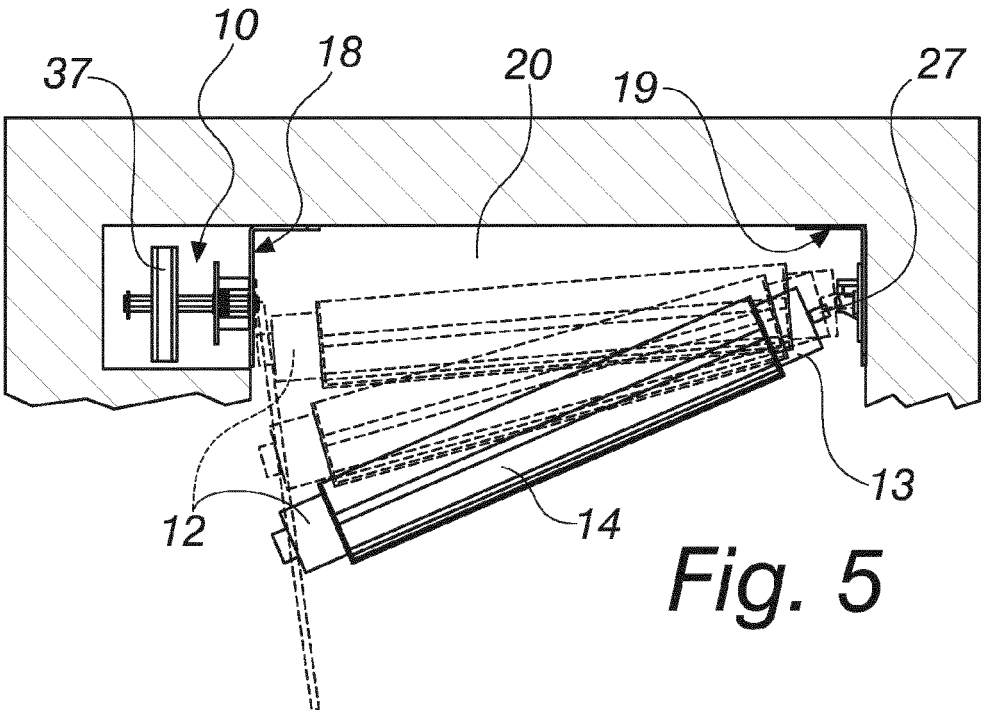

Fig. 5

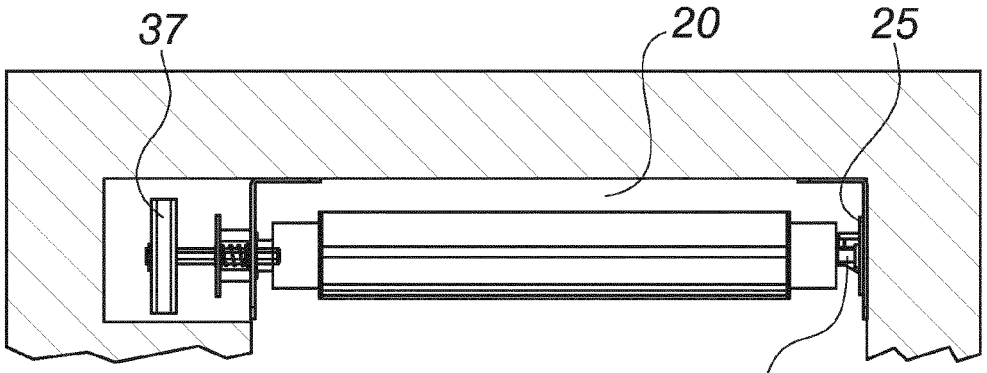

Fig. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 13 18 7662

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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	25 October 2013	Knerr, Gerhard

CATEGORY OF CITED DOCUMENTS

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REFERENCES CITED IN THE DESCRIPTION

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