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(54) **A SYSTEM FOR USE IN A WINDOW**

(57) System for a corner in a door a window or another object which system comprises a corner section with a first surface portion (20) and a second surface portion (30) positioned substantially perpendicular to each other. These are intended for embedding in a track in the corner of a door, a window or another object which comprises a brake activation upon rotation of a rod. The system comprises: a rotatable cylinder (4) for engagement with the rod so as to enable it to activate the brake, and a flexible activation means (2) which can be displaced over the corner under elastic deformation and thereby push or pull a connection portion (3) transferring a rotational movement to the cylinder (4). The connection portion (3) comprises a knob (5) adapted to a sliding engagement with a cam control (6) of the cylinder which cam control (6) and knob (5) are mutually adapted in such a way that the cylinder (4) rotates around its center axis (c) when the knob (5) is pulled in the longitudinal direction of the cylinder (4) while the knob (5) is engaged with the cam control (6) and moved in same.

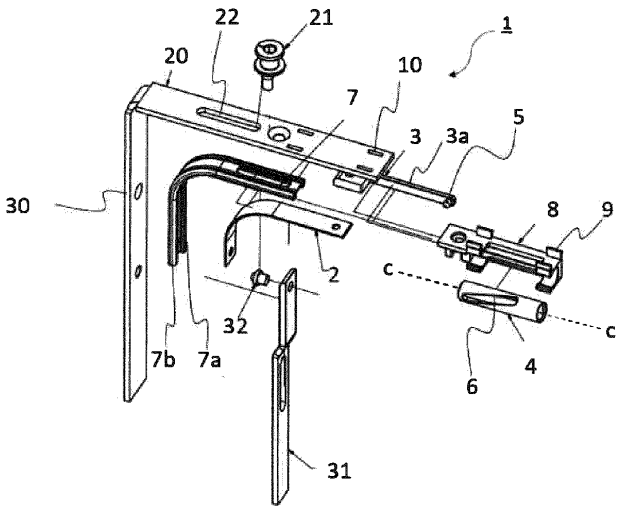


Fig. 1

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## Description

**[0001]** The invention relates to a system for use in a window which can be opened and comprises a corner and a brake which is activated upon rotation of a rod in the brake, the system comprising: a corner section having a first surface portion and a second surface portion positioned substantially perpendicular to each other og intended for embedding in a track in the window corner; a rotatable cylinder for engagement with the rod so as to enable it to activate the brake, which cylinder comprises a longitudinal center axis; at least one flexible activation means which can be displaced over the corner under elastic deformation and thereby push or pull a connection portion transferring a rotational movement to the cylinder.

**[0002]** An openable window is often made in a way that it can be locked in optional positions between its completely opened position and its closed position. This may be achieved with a hooklike engagement portion which is insertable in various holes depending on the user's desired opening degree of the window.

**[0003]** In more advanced systems the window can be locked in different positions by the user simply turning the handle also used to unlock the window. In these systems the handle activates a locking mechanism, and usually this is done in such a way that a movement of the handle causes a rod to rotate which is engaged in a brake mechanism activated by this rotation. The handle itself is normally positioned on (i) the lower horizontal strip of the window while the mechanism for activating the locking mechanism is positioned on (i) one of the vertical strips of the window.

**[0004]** These systems are therefore provided with a system which can mechanically transfer a movement of the handle - positioned in the horizontal lower strip - to a movement in one of the vertical strips.

**[0005]** The movement must therefore take place over a corner in a window.

**[0006]** In the systems known this is done by an eccentric solution which can convert a linear movement in the lower part into a rotational movement in a side portion.

**[0007]** This solution is complicated and expensive, and it is an object of the invention to provide an alternative.

**[0008]** This is achieved by the connection portion comprising a knob adapted to a sliding engagement with a cam control of the cylinder adapted thereto which cam control and knob are mutually adapted in such a way that the cylinder rotates around its center axis when the knob is pulled in the longitudinal direction of the cylinder while the knob is engaged with the cam control and moved in same.

**[0009]** The configuration of knob and cam control is a simple and strong mechanical connection.

**[0010]** In an embodiment the cylinder with cam control is mutually adapted to the connection portion and the knob in such a way that the knob engages with the cam control of the cylinder from the outer side of the cylinder and towards its central center axis. By letting the engagement take place from the outer side of the cylinder a torque will be applied to the knob which is less than the torque in a corresponding connection in which the knob engages from the inner side of the cylinder.

**[0011]** In an embodiment the cylinder is made in such a way that it can be held in a correspondingly adapted cylinder housing.

**[0012]** By holding the cylinder in a cylinder housing a strong construction with a uniform functioning is achieved as the cylinder retains its position at varying loads.

**[0013]** In an embodiment the cylinder is held in a cylinder housing and the connection portion comprises an elongated body held between cylinder housing and cylinder in such a way that the knob engages with the cam control of the cylinder from the outer side of the cylinder and towards its central center axis. In this construction the elongated body is consequently "locked" between these parts and therefore this construction/embodiment can withstand a greater load than constructions in which the elongated body is not locked and at the same time - in this embodiment - the torque applied to the cylinder is optimized as the knob is in engagement as far away as possible from the center axis of the cylinder.

**[0014]** In an embodiment the cylinder housing is configured to comprise one or more engagement means for engagement with complementary engagement means on one surface portion of the system.

**[0015]** This results in a good and strong connection and at the same time the two elements may be manufactured independently of each other and not be assembled until they are to be used together in the system.

**[0016]** In an embodiment the flexible activation means comprises a leaf spring which can be displaced over the corner under elastic deformation. A leaf spring allows large compressive/tractive forces and it can easily be bent around a corner. The leaf spring is therefore a simple and strong solution and as leaf springs are configured as an elongated "leaf" the "leaf" does not occupy much space when the system is to be installed in a window frame.

**[0017]** In an embodiment the corner section comprises a guiding portion which holds the flexible activation means in a sliding engagement which guiding portion comprises two flange like portions extending along the sides of the guiding portion og simultaneously configured in such a way that the flexible activation means is held behind these.

**[0018]** The flange like portions holds the leaf spring in such a way that it is secured against deflection. The guide portion consequently ensures that the leaf spring can be manufactured slightly thinner than would be possible if it was not held by flange like portions. Apart from the before mentioned advantages with regard to occupying space the thinner configuration furthermore has the advantage that the leaf spring is more easily deformed and therefore it is more easily bendable over the corner, resulting in an easy operation - on the part of users of the system.

**[0019]** In the following an embodiment of the invention

is explained under reference to the figures wherein:

figure 1 shows an exploded view of an embodiment of a system according to the invention;
figure 2 shows a perspective view of an assembled embodiment of the invention.

**[0020]** In figure 1 is shown a system 1 for a corner in a door, a window or another object which can be opened and held in a position between completely opened and completely closed.

**[0021]** The system is to be inserted in a corner and for this it comprises a corner section with a first surface portion (20) and a second surface portion (30). These portions are positioned substantially perpendicular to each other and normally they are placed in a milled out track in the corner of the window or the door.

**[0022]** The purpose of the system is to activate a brake in such a way that the window or the door can be held in positions between completely opened and completely closed. Systems of this type are normally coupled to the handle used by a user when a window is to be unlocked because thereby the user may with this handle also lock the window in optional positions.

**[0023]** The coupling itself between the handle and the system takes place indirectly with the surface portion 30 shown to the left in figure 1 as it takes place through a coupling portion 31.

**[0024]** The mechanism itself between handle and coupling portion is not part of the invention, however it will be well-known to a person skilled in the art how to make such a mechanism and therefore it and the functioning of the handle will not be explained any further in this application.

**[0025]** The system is consequently to be used in a well-known construction of a window or a door in which a movement of the handle pushes or pulls the coupling portion 31 as indicated by the arrow m in figure 2.

**[0026]** The coupling portion 31 is connected to one end of a leaf spring 2 and in the embodiment shown this connection has been made by a riveted bolt 32, it may however naturally be made in other ways. The leaf spring 2 is mounted in a bent guide portion 7 behind two flanges 7a and 7b of the guide portion 7. The other end of the leaf spring 2 is through a track 22 in the first surface portion 20 connected to a connection portion 3 via a peg 21.

**[0027]** The connection portion 3 comprises an elongated body 3a which at its outer end is provided with a knob 5 as shown to the right in the figure. In a mounted system the knob 5 is in engagement with a cam control 6 of a cylinder 4 mounted rotatably in a cylinder housing 8 which is fastened to the second surface portion 30. The cylinder 4 is mounted in the cylinder housing 8 so as to be able to rotate around its longitudinal axis c. The cam control may be configured as a track made in the side of the cylinder, however provided that the cylinder at least partially forms an annular elongated body the cam control may also be made in a way that the track - in the annular part of the cylinder - forms an opening extending from the outer side of the cylinder to its inner side.

**[0028]** As seen in figure 1, the cylinder housing 8 is provided with engagement means 9 insertable in openings 10 in the second surface portion 20 complementary hereto. In an embodiment these engagement means are made as flexible pieces of plate and in practice the fastening of the cylinder housing takes place by inserting the pieces of plate through the openings 10 and thereafter bending these towards the flange portion (as can be seen in figure 2).

**[0029]** In figure 2 an assembled system according to the invention is shown and it is indicated by arrows that a movement m of the coupling portion 31 will propagate to the leaf spring 2 which moves through the corner and on to the connection portion 3 (not shown in figure 2) and its peg connection 21 which will move correspondingly m as shown at the top of figure 2.

**[0030]** As the knob 5 of the connection portion (not shown in figure 2) is in engagement with the cam control 6 (also not shown in figure 2) the movement will cause the cylinder to rotate as indicated by the arrow r in figure 2, it can however naturally be brought to rotate in both directions.

**[0031]** In window constructions this rotation is normally used to activate a brake in such a way that the window can be kept in a particular position. As the window handle as explained earlier is to be coupled to the system via the connection portion 31 a brake can consequently be coupled to the cylinder and activated via the window handle.

**[0032]** The knob 5 and the elongated body 3a may also be made in a way that the knob 5 engages with the cam control from the outer side of the cylinder or from the inner side of the cylinder.

**[0033]** In a preferred embodiment the knob engages with the cam control from the outer side of the cylinder. I.e. in such a way that the free end of the knob is located within the cylinder while the elongated body 3a is located on the outer side of the cylinder 4. This is a simple and stable construction and in a further embodiment cylinder housing 8, the elongated body 3a, cylinder 4 and cam control 6 are adapted to each other in such a way that the elongated body 3a is located between cylinder 4 and cylinder housing 8 when the parts are assembled with the knob 5 in engagement with the cam control 6.

**[0034]** In this construction the elongated body 3a is consequently "locked" between these parts and therefore this construction/embodiment can withstand a larger load than constructions in which the elongated body 3a is not locked and at the same time - in this embodiment - the torque applied to the cylinder 4 is optimized as the knob 5 grips as far away as possible from the center axis of the cylinder.

**[0035]** Normally, the cylinder 4 activates a brake via a rod which is inserted in the cylinder and the two parts are normally designed mutually adapted in such a way that

the rod cannot be rotated in the cylinder without the latter rotating as well. Such mechanisms are well-known and they may be made by configuring the parts with edges, such as square or hexagonal edges (such as e.g. umbraco or torx).

**[0036]** By letting the elongated body extend on the outer side of the cylinder it is furthermore achieved that the elongated body cannot complicate interconnections of this type between cylinder and rod as the elongated body does not extend inside the cylinder 4.

**[0037]** In the application it is explained that the system can be used in a window or a door. Another aspect of the invention relates to a door or a window having the system installed and all embodiments described in the application can be built into this door or this window. This aspect has not been claimed, however this may naturally be done also in independent divisional applications.

## Claims

1. System (1) for use in a window which can be opened and comprises a corner and a brake which is activated upon rotation of a rod in the brake, the system comprising:

   • a corner section having a first surface portion (20) and a second surface portion (30) positioned substantially perpendicular to each other og intended for embedding in a track in the window corner;
   • a rotatable cylinder (4) for engagement with the rod so as to enable it to activate the brake, which cylinder (4) comprises a longitudinal center axis (c);
   • at least one flexible activation means (2) which can be displaced over the corner under elastic deformation and thereby push or pull a connection portion (3) transferring a rotational movement to the cylinder (4),

   **characterized in that** the connection portion (3) comprises a knob (5) adapted to a sliding engagement with a cam control (6) of the cylinder adapted thereto which cam control (6) and knob (5) are mutually adapted in such a way that the cylinder (4) rotates around its center axis (c) when the knob (5) is pulled in the longitudinal direction of the cylinder (4) while the knob (5) is engaged with the cam control (6) and moved in same.

2. System according to claim 1, **characterized in that** the cylinder with cam control is mutually adapted to the connection portion and the knob (5) in such a way that the knob (5) engages with the cam control (6) of the cylinder (4) from the outer side of the cylinder and towards its central center axis.

3. System according to claims 1 or 2, **characterized in that** the cylinder (4) is held in a cylinder housing (8).

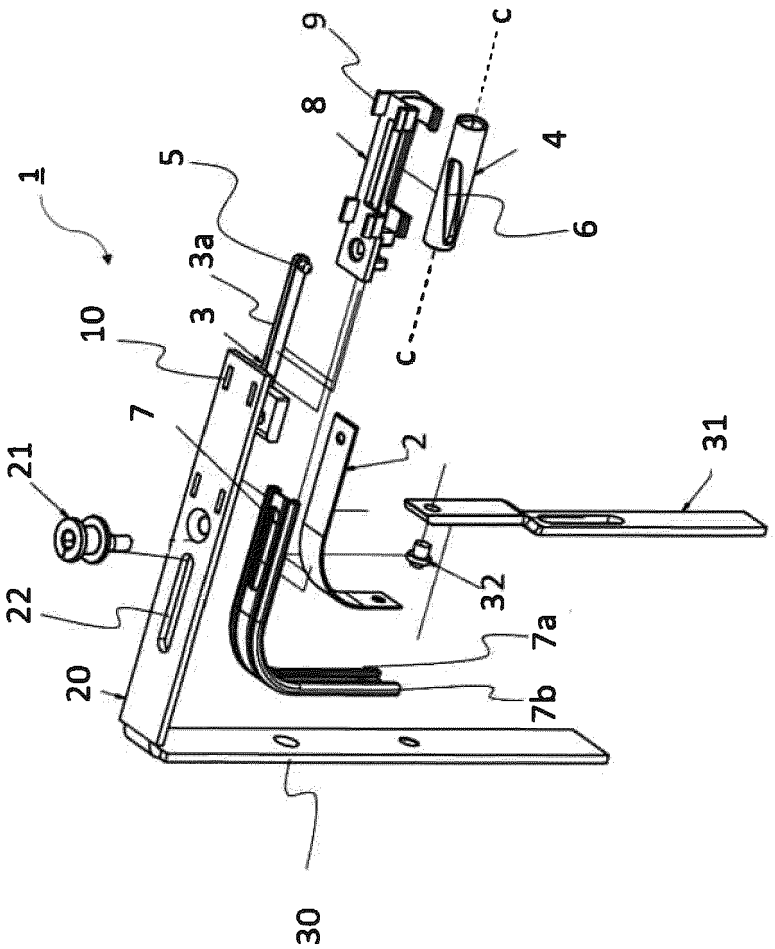
4. System according to claim 3, **characterized in that** the cylinder housing comprises one or more engagement means (9) for engagement with complementary engagement means (10) on one surface portion (20) of the system.

5. System according to any of the claims 1-4, **characterized in that** the flexible activation means (2) comprises at least a leaf spring which can be displaced over the corner under elastic deformation.

6. System according to claim 5, **characterized in that** the corner section comprises a guiding portion (7) which holds the flexible activation means (2) in a sliding engagement which guiding portion (7) comprises two flange like portions (7a, 7b) extending along the sides of the guiding portion og simultaneously configured in such a way that the flexible activation means (2) is held behind these.

7. System according to claims 3-6, **characterized in that** the cylinder (4) is held in a cylinder housing (8) and that the connection portion (3) comprises an elongated body (3a) held between cylinder housing and cylinder in such a way that the knob (5) engages with the cam control (6) of the cylinder (4) from the outer side of the cylinder and towards its central center axis.

Fig. 1



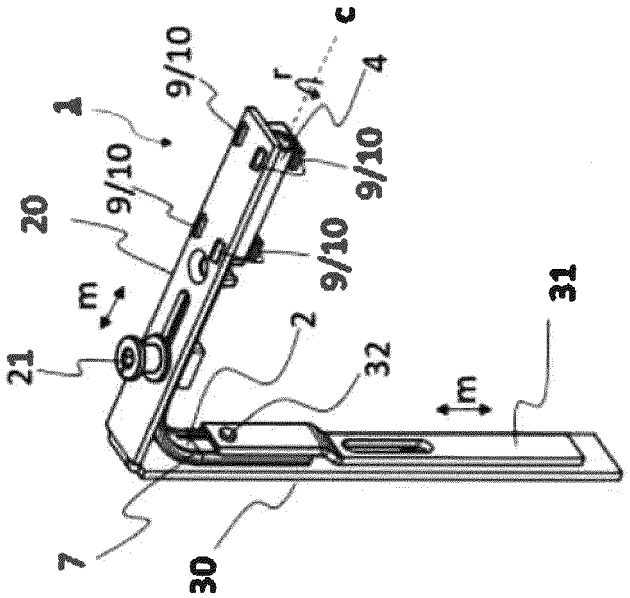



Fig. 2

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# EUROPEAN SEARCH REPORT

Application Number
EP 22 15 9792

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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 |
|---|---|---|
| The Hague | 27 June 2022 | Pérez Méndez, José F |

CATEGORY OF CITED DOCUMENTS

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## ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 22 15 9792

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