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(54) Screen device

(57) The present invention relates to a screen device comprising a screen roller (1), a screen which can be rolled up onto and unrolled from said screen roller (1) and an interior space in which the screen roller (1) can be fitted in order to accommodate the latter in the installed position of the screen device, the screen device comprising an opening (4) facing the interior space (3), via which the screen roller (1) can be fitted in said interior space (3) in a direction essentially according to the direction of the rolling/unrolling movement of the screen.

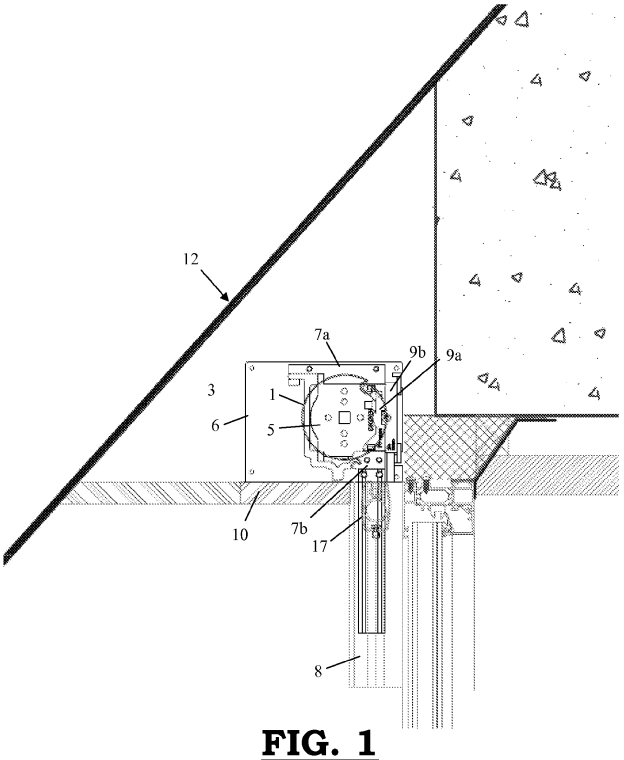

FIG. 1

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Description

[0001] The present invention relates to a screen device comprising:

- a screen roller;
- a screen which can be rolled up onto and rolled down from said screen roller;
- an interior space in which the screen roller can be fitted in order to accommodate the latter in the fitted position of the screen device;
- supporting elements on the lateral sides of the screen roller for installing the screen roller in said interior space;
- a fixing body to which at least one of said supporting elements can be attached by means of a linear sliding movement in order to install the screen roller in the interior space, comprising one or more guide elements for guiding the supporting element during said sliding movement;
- at least one screen guide and/or lath guide for guiding the lateral side of the screen corresponding to the supporting element or, respectively, for guiding the lateral sides of a bottom lath which is attached to the underside of the screen.

[0002] Such screen devices are usually placed near doors or windows, in which case these are positioned in such a manner with respect to these doors or windows that the screen can screen this door or window at least partially against, for example, sunlight and/or insects and/or heat and/or cold. In this case, these can be surface-mounted in front of said window or door, in which case the screen roller of this screen device is fitted in the interior space of a housing of this screen device in front of the door or window. This is the case, for example, with the screen device from FR 2 775 729 A1, in which the screen roller can be installed in the housing of the screen device from above and can be uninstalled from it again.

[0003] In order to accommodate the screen roller as aesthetically as possible in the vicinity of the door or window, it is preferred to fit this screen roller in an interior space which extends at least partially above this door or window, as is the case, for example, with the screen device from DE 103 40 899 A1.

[0004] In practice, it is often difficult to create such an interior space above a door or window when restoring existing buildings. In addition, there is a growing trend for windows or doors in new buildings to reach as far as the ceiling or roof finish. In these cases too, it is often not possible to install such a screen roller in an interior space, which extends at least partially above the door or window. Another reason to opt for the method of installation according to the invention is found with low-energy houses where the screen box is to be hidden out of sight.

[0005] However, with the existing solutions for fitting a screen roller in a screen device, such as for example the solutions from FR 2 775 729 A1 or DE 103 40 899 A1, it is not readily possible to (un)install a screen roller (from) in an interior space which does not extend above a door or window if surface-mounting is not desired and without external walls or ceiling or roof finishes forming obstructions and without the screen guide and/or lath guide being in the way.

[0006] It is therefore an object of the present invention to provide a screen device in which the screen roller can be (un)installed in a simple and aesthetic way, without this screen roller having to be installed in a housing which is fitted in a visible manner in front of a door or window, and in which this can also be achieved in locations where no interior space can be created which extends at least partially above the door or window.

[0007] This object of the invention is achieved by providing a screen device comprising:

- a screen roller;
- a screen which can be rolled up onto and rolled down from said screen roller;
- an interior space in which the screen roller can be fitted in order to accommodate the latter in the fitted position of the screen device;
- supporting elements on the lateral sides of the screen roller for installing the screen roller in said interior space;
- a fixing body to which at least one of said supporting elements can be attached by means of a linear sliding movement in order to install the screen roller in the interior space, comprising one or more guide elements for guiding the supporting element during said sliding movement;
- at least one screen guide and/or lath guide for guiding the lateral side of the screen corresponding to the supporting element or, respectively, for guiding the lateral sides of a bottom lath which is attached to the underside of the screen; wherein the screen device comprises an opening facing the interior space, via which the screen roller can be fitted in said interior space in a plane different from the plane of the screen guide and/or lath guide and in a direction essentially according to the direction of the rolling/unrolling movement of the screen and wherein the linear sliding movement is a movement in a direction essentially at right angles to the direction of the rolling/unrolling movement of the screen.

[0008] In this way, this interior space may, for example, be created in a ceiling or roof finish which extends next to the doors or windows. Said opening is then an opening in this ceiling or roof finish which can preferably also be closed by means of a wall element which may be made, for example, from the same material as the ceiling or roof finish.

[0009] In such an embodiment, the screen roller can be fitted in the interior space in a flowing movement, with less manual support of the screen roller being required during the sliding movement.

[0010] Preferably, such guide elements then comprise a first guide element and a second guide element, which are arranged essentially parallel to one another, between which the supporting element is guided during the linear sliding movement, and in which the first guide element is arranged further from said opening than the second guide element.

[0011] In order to ensure a good support and guidance of the supporting element, the first guide element has a length which is at least equal to the dimension of the supporting element along the length direction of said guide element in the installed position of the screen device. If the movement is guided as much as possible in guide elements, fitting the screen roller in the correct position is greatly facilitated.

[0012] The second guide element preferably has a length which is such that, in the installed position of the screen device, it prevents the screen roller from being able to leave its position in the interior space due to the force of gravity. When, in addition, the screen roller is removably fixed in the interior space by means of securing means, this offers the advantage that when these securing means are loosened in order to uninstall the screen, the screen roller does not have to be held up by hand in order to prevent it from leaving its position in the interior space due to the force of gravity. In this way, a person who loosens these securing means can use both hands to remove these securing means. Moreover, in this way, this screen roller can also be installed and/or uninstalled safely by one single person.

[0013] In a particular embodiment, the second guide element preferably has a length which essentially corresponds to the dimension of said screen guide and/or lath guide along the length direction of said guide element in the installed position of the screen device. In this way, the dimensions of the interior space can be kept as small as possible.

[0014] In order to secure the screen roller in the interior space after it has been fitted between the guide elements, a screen device according to the present invention furthermore preferably comprises at least one bracket which can be attached to the guide elements. Said bracket can preferably be hingedly attached to the second guide element. The hinged attachment to the second guide element ensures that this bracket will no longer move when the securing means are being fastened.

[0015] A particular embodiment of a screen device according to the present invention furthermore comprises a motor for driving the rolling/unrolling movement of the screen, in which the supporting element is fitted on an end of said motor.

[0016] Such a screen device comprising a motor preferably comprises a power supply cable for supplying electrical power to the motor, in which case said screen device comprises an electrical connection for electrically connecting the power supply cable to the motor, comprising a male connecting piece and a female connecting piece, in which the male or the female connecting piece is fitted on the end of the motor and the female or the male connecting piece is fitted on said fixing body, respectively, and in which the male and the female connecting piece are positioned on the motor and the fixing body in such a manner that they are electrically connected at the end of said sliding movement.

[0017] If such an embodiment of a screen device is provided with an abovementioned bracket, and is provided with a motor support on which the male or the female connecting piece is arranged, then this bracket will push against this motor support and thus ensure a good electrical connection between the male connecting piece and the female connecting piece.

[0018] The present invention will now be explained in more detail by means of the following detailed description of some preferred screen devices according to the present invention. The aim of this description is solely to give illustrative examples and to indicate further advantages and features of these screen devices, and can therefore not be interpreted in any way as a limitation of the area of application of the invention or of the patent rights defined in the claims.

[0019] In this detailed description, reference numerals are used to refer to the attached drawings, in which

- ***Fig. 1*** shows in cross section how a first embodiment of a screen device according to the present invention is partially built into a roof construction, in which the opening is finished with a roof finish, and in which the guide elements extend essentially at right angles to the direction of the rolling/unrolling movement of the screen;
- ***Fig. 2*** shows in cross section how a second embodiment of a screen device according to the present invention is partially fitted between a window and the outer face of a wall, in which the opening is covered with a cover plate, in which the screen roller is fixed in the interior space by means of a bracket and in which the guide elements extend essentially at right angles to the rolling/unrolling movement of the screen;
- ***Fig. 3*** shows the embodiment from Fig. 2, without a bracket and without a cover plate;
- ***Figs 4 to 7*** show in successive steps how a screen roller can be uninstalled from an interior space of a screen device as illustrated in Figs. 2 and 3.

[0020] A screen device according to the present invention in each case comprises a screen roller (1), as illustrated in Figs. 1 to 7 and a screen which can be rolled up onto and rolled down from this screen roller (1). The screen roller (1) can in this case be fitted in an interior space (3) of the screen device via an opening (4) in a direction essentially parallel to the rolling/unrolling movement of the screen.

[0021] The illustrated screen devices are in each case motorized screen devices, which comprise a motor for driving the rolling/unrolling movement of the screen. This

motor has not been shown in the figures. In the interior space (3) a fixing body (6) is in each case arranged, to which an end of the motor can be attached via a linear sliding movement at right angles to its axis. To this end, the motor comprises a motor support (5) at this end, which can be attached to the fixing body (6) in order to attach the motor to this fixing body (6). In this case, the motor is in each case a tube motor which is fitted in the screen roller (1) so that by attaching the motor support (5) to the fixing body (6), the screen roller (1) is also secured in the interior space (3). On the other lateral side, different from the side on which this motor is fitted, this screen roller (1) is then provided with a second supporting element (5). This second supporting element (5) may be configured in a similar way and may be attached to a similar fixing body (6) in a similar way, or may, for example, be designed as a ball support which can be fitted in a bearing on a fixing body.

[0022] The screen device furthermore comprises a power supply cable which has not been shown, for supplying electrical power to the motor. Furthermore, it comprises an electrical connection (9a, 9b) for electrically connecting the power supply cable to the motor, comprising a male connecting piece (9a) and a female connecting piece (9b), in which the male (9a) or the female connecting piece (9b) is arranged on the end of the motor and the female (9b) or the male connecting piece (9a) is arranged on said fixing body (6), respectively. The male (9a) and the female connecting piece (9b) are in this case positioned on the motor and the fixing body (6) in such a manner that they are electrically connected at the end of said sliding movement for attaching the motor support to the fixing body (6).

[0023] In the first embodiment of a screen device according to the present invention, as illustrated in Fig. 1, the interior space (3) of the screen device is situated in a space within the roof construction (12) of a building. The opening (4) facing this interior space (3) is in this case covered by a cover plate (10) which forms part of the roof cladding.

[0024] In a first movement, the screen roller (1) can be fitted in the interior space (3) via this opening (4) in a direction essentially parallel to the direction of the rolling/unrolling movement of the screen.

[0025] In a second movement, this screen roller (1) can then be attached to the fixing body (6) of this screen device by means of a sliding movement essentially at right angles to the direction of the rolling/unrolling movement of the screen, by attaching the motor support (5) to this fixing body (6). This fixing body (6) is fixedly arranged in the interior space (3) and comprises a first (7a) and a second guide element (7b) for guiding the motor support (5) during said sliding movement.

[0026] There is sufficient room in the space within the roof construction to place the screen roller (1) in the correct position for the guide elements (7a, 7b) in order to start this sliding movement. The guide elements (7a, 7b) are in this case also both sufficiently long to guide this sliding movement over a significant distance, so that the male (9a) and the female connecting piece (9b) are also correctly positioned to produce the electrical connection at the end of said sliding movement.

[0027] In the second embodiment as illustrated in Figs. 2 and 3, the interior space (3) of the screen device is situated between a window (13) and the outer face of a wall (14). A housing profile (15) is installed in the space between the window (13) and the outer face of a wall (14), as a housing for the screen roller (1). This profile (15) also delimits the interior space (3). The housing is furthermore limited by means of fixing bodies (6) which cover the ends of the housing profile (15). In Fig. 2, the opening (4) facing this interior space (3) is covered by means of a cover plate (10). In Fig. 3, this cover plate (10) has been removed.

[0028] In a first movement, the screen roller (1) can be fitted in the interior space (3) via this opening (4) in a direction essentially parallel to the direction of the rolling/unrolling movement of the screen.

[0029] In a second movement, this screen roller (1) can then be attached to the fixing body (6) of this screen device by attaching the motor support (5) to this fixing body (6) by means of a sliding movement essentially at right angles to the direction of the rolling/unrolling movement of the screen. This fixing body (6) comprises a first (7a) and a second guide element (7b) for guiding the motor support (5) during said sliding movement.

[0030] In order to enable attachment of the screen roller (1) by means of attachment of the motor support (5) in this limited space, the second guide element (7b) which is closest to the opening (4), has been made shorter. In this case, this second guide element (7b) is configured such that, in the installed position of the screen device, it prevents the screen roller (1) from being able to leave its position in the interior space (3) due to the force of gravity. Therefore, the screen roller (1) will remain in the position illustrated in Fig. 3 when the bracket (11) is removed, by means of which it is still fixed in Fig. 2, until said bracket (11) is removed from this position. Due to the counterweight of the bottom lath (17) which is attached to the underside of the screen in order to stretch this screen, it is sufficient for this second guide element (7b) to have a length which essentially corresponds to the dimension of the screen guide and the lath guide (8) along the length direction of this guide element (7b) in the installed position of the screen device, which screen guide and lath guide (8) are provided for guiding the corresponding lateral side of the screen, and for guiding the corresponding lateral side of the bottom lath (17) which is attached to the underside of the screen. In this way, the housing profile (15) can be designed to be very compact and to have a dimension in the direction of the sliding movement which can be limited to the sum of the outer diameter of the screen rolled up onto the screen roller (1) and the length of the screen guide and the lath guide (8) in this direction.

[0031] A very compact size of the housing profile (15)

can be achieved by installing or uninstalling the screen in the unrolled position. The dimension of the housing profile (15) in the direction of the sliding movement is thus limited to the sum of the outer diameter of the screen roller (1) without screen and the length of the screen guide and/or lath guide (8) in the direction of the sliding movement.

[0032] The first guide element (7a), which is situated furthest from the opening, is designed to be longer in order to ensure good guidance of the motor support (5) during the sliding movement. Here, this first guide element (7a) has a length which is essentially equal to the dimension of the supporting element (5) along the length direction of this guide element (7a) in the installed position of the screen device.

[0033] At the end of said sliding movement, the male and the female connecting pieces (9a, 9b) are also connected to one another.

[0034] In the installed position, as illustrated in Fig. 2, the motor support (5) is furthermore secured by means of a bracket (11), which is fixedly secured in the interior space (3) by means of a securing means (16). Here, this bracket (11) is, on the one hand, hingedly fitted in the second guide element (7b) and, on the other hand, attached to an extension of the first guide element (7a) by means of this securing means (16). The hinged attachment to the second guide element (7b) ensures that this bracket (11) will no longer move when the securing means (16) are being fastened. Due to the hinging action, the bracket (11) pushes firmly against the motor support and in this way ensures a good electrical connection between the male (9a) connecting piece and the female (9b) connecting piece.

[0035] Furthermore, Figs. 4 to 7 show, for illustrative purposes and in successive steps, how a screen roller (1) can be uninstalled from the interior space (3) of an embodiment of a screen device according to Figs. 2 and 3.

[0036] Fig. 4 shows the screen roller (1) in the installed position of the screen device, with this screen roller (1) being fixed by means of a bracket (11).

[0037] By loosening the securing means (16), the bracket (11) can be removed. Due to the counterweight of the bottom lath (17), which is not shown here, and due to the second guide element (7b), the screen roller (1) remains in its position, as is illustrated in Fig. 5.

[0038] Thereafter, the screen roller (1) can be displaced between the guide elements (7a, 7b) in a direction essentially at right angles to the direction of the rolling/unrolling movement of the screen, until the screen roller (1) has been displaced across the entire length of the second guide element (7b) and is situated in the position illustrated in Fig. 6. In the course of this sliding movement, the electrical connection (9a, 9b) is also disconnected.

[0039] From the position illustrated in Fig. 6, the screen roller (1) can then be brought down in a direction essentially according to the direction of the rolling/unrolling movement of the screen and thus be removed from the interior space (3) through the opening (4), as can be seen in Fig. 7.

[0040] This procedure is carried out in reverse order in order to install the screen roller (1).

Claims

1. Screen device comprising:

- a screen roller (1);
- a screen which can be rolled up onto and rolled down from said screen roller (1);
- an interior space (3) in which the screen roller (1) can be fitted in order to accommodate the latter in the fitted position of the screen device;
- supporting elements (5) on the lateral sides of the screen roller (1) for installing the screen roller (1) in said interior space (3);
- a fixing body (6) to which at least one of said supporting elements (5) can be attached by means of a linear sliding movement in order to install the screen roller (1) in the interior space (3), comprising one or more guide elements (7a, 7b) for guiding the supporting element (5) during said sliding movement;
- at least one screen guide (8) and/or lath guide for guiding the lateral side of the screen corresponding to the supporting element (5) or, respectively, for guiding the lateral sides of a bottom lath (17) which is attached to the underside of the screen;

characterized in that the screen device comprises an opening (4) facing the interior space (3), via which the screen roller (1) can be fitted in said interior space (3) in a plane different from the plane of the screen guide (8) and/or lath guide and in a direction essentially according to the direction of the rolling/unrolling movement of the screen, and **in that** the linear sliding movement is a movement in a direction essentially at right angles to the direction of the rolling/unrolling movement of the screen.

2. Screen device according to Claim 1, **characterized in that** the guide elements (7a, 7b) comprise a first guide element (7a) and a second guide element (7b), which are arranged essentially parallel to one another, between which the supporting element (5) is guided during the linear sliding movement, and in which the first guide element (7a) is arranged further from said opening than the second guide element (7b).

3. Screen device according to Claim 2, **characterized in that** the first guide element (7a) has a length which is at least equal to the dimension of the supporting element (5) along the length direction of said guide element (7a) in the installed position of the screen

device.

4. Screen device according to Claim 2 or 3, **characterized in that** the second guide element (7b) has a length which is such that, in the installed position of the screen device, it prevents the screen roller (1) from being able to leave its position in the interior space (3) due to the force of gravity.

5. Screen device according to Claim 4, **characterized in that** the second guide element (7b) has a length which essentially corresponds to the dimension of said screen guide (8) and/or lath guide along the length direction of said guide element in the installed position of the screen device.

6. Screen device according to one of Claims 2 to 5, **characterized in that** said screen device comprises at least one bracket (11) which can be attached to the guide elements (7a, 7b) for securing the screen roller (1) in the interior space (3) after the screen roller (1) has been fitted between said guide elements (7a, 7b).

7. Screen device according to Claim 6, **characterized in that** said bracket (11) can be hingedly attached to the second guide element (7b).

8. Screen device according to one of the preceding claims, **characterized in that** said screen device comprises a motor for driving the rolling/unrolling movement of the screen, in which the supporting element (5) is fitted on an end of said motor.

9. Screen device according to Claim 8, **characterized in that** said screen device comprises a power supply cable for supplying electrical power to the motor, **in that** said screen device comprises an electrical connection (9a, 9b) for electrically connecting the power supply cable to the motor, comprising a male connecting piece (9a) and a female connecting piece (9b), in which the male (9a) or the female connecting piece (9b) is fitted on the end of the motor and the female (9b) or the male connecting piece (9a) is fitted on said fixing body (6), respectively, and **in that** the male (9a) and the female connecting piece (9b) are positioned on the motor and the fixing body (6) in such a manner that they are electrically connected at the end of said sliding movement.

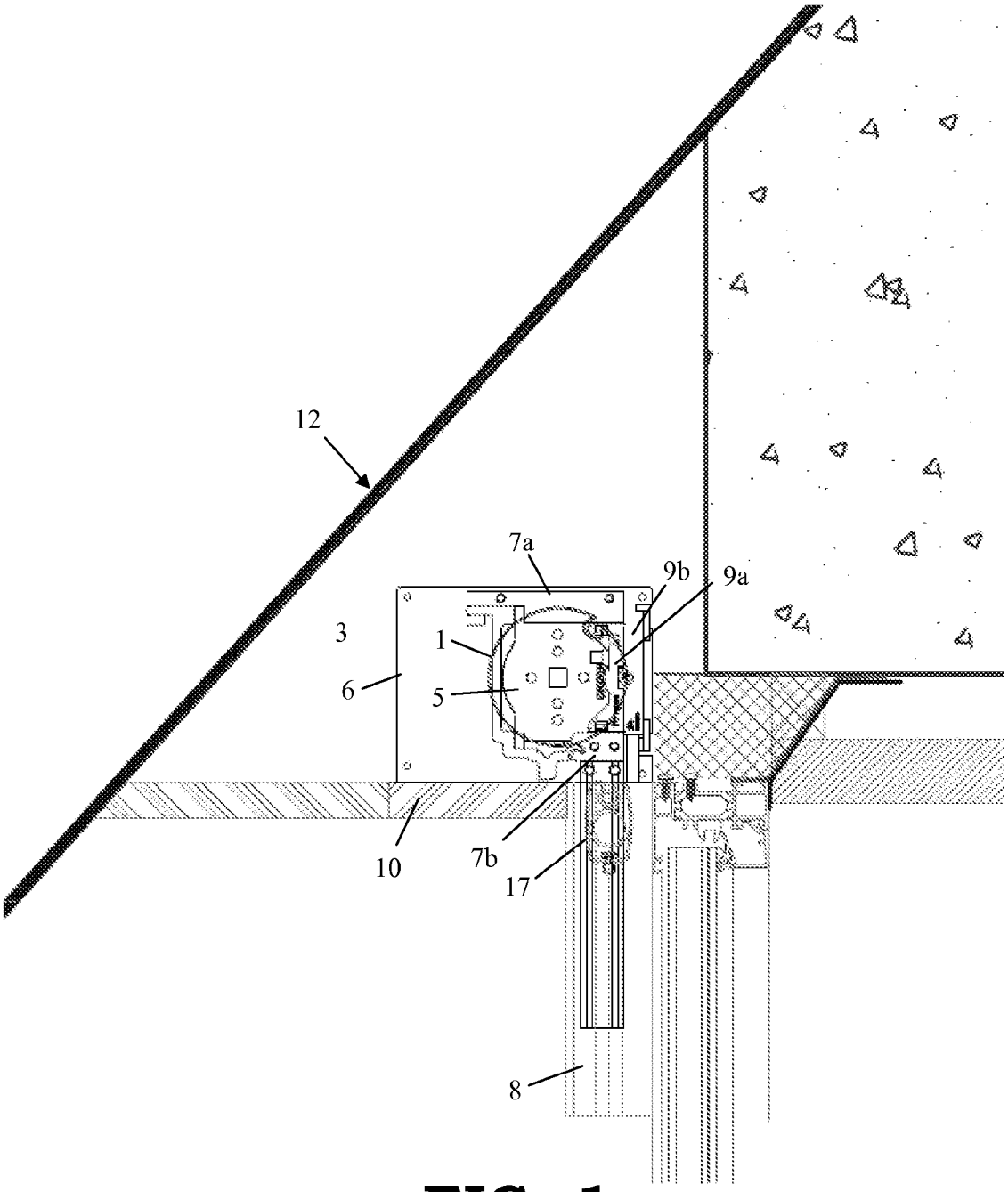

FIG. 1

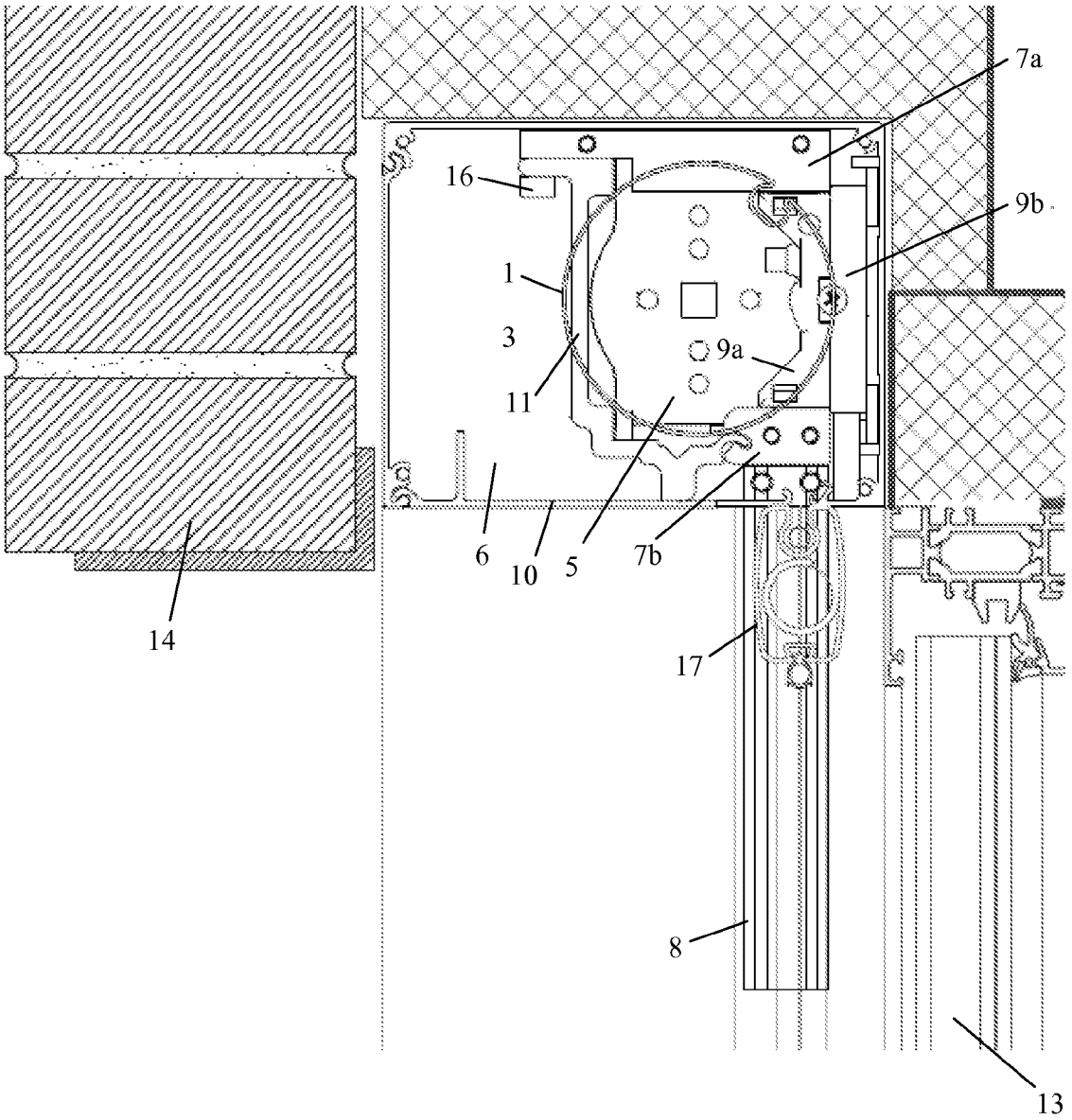

FIG. 2

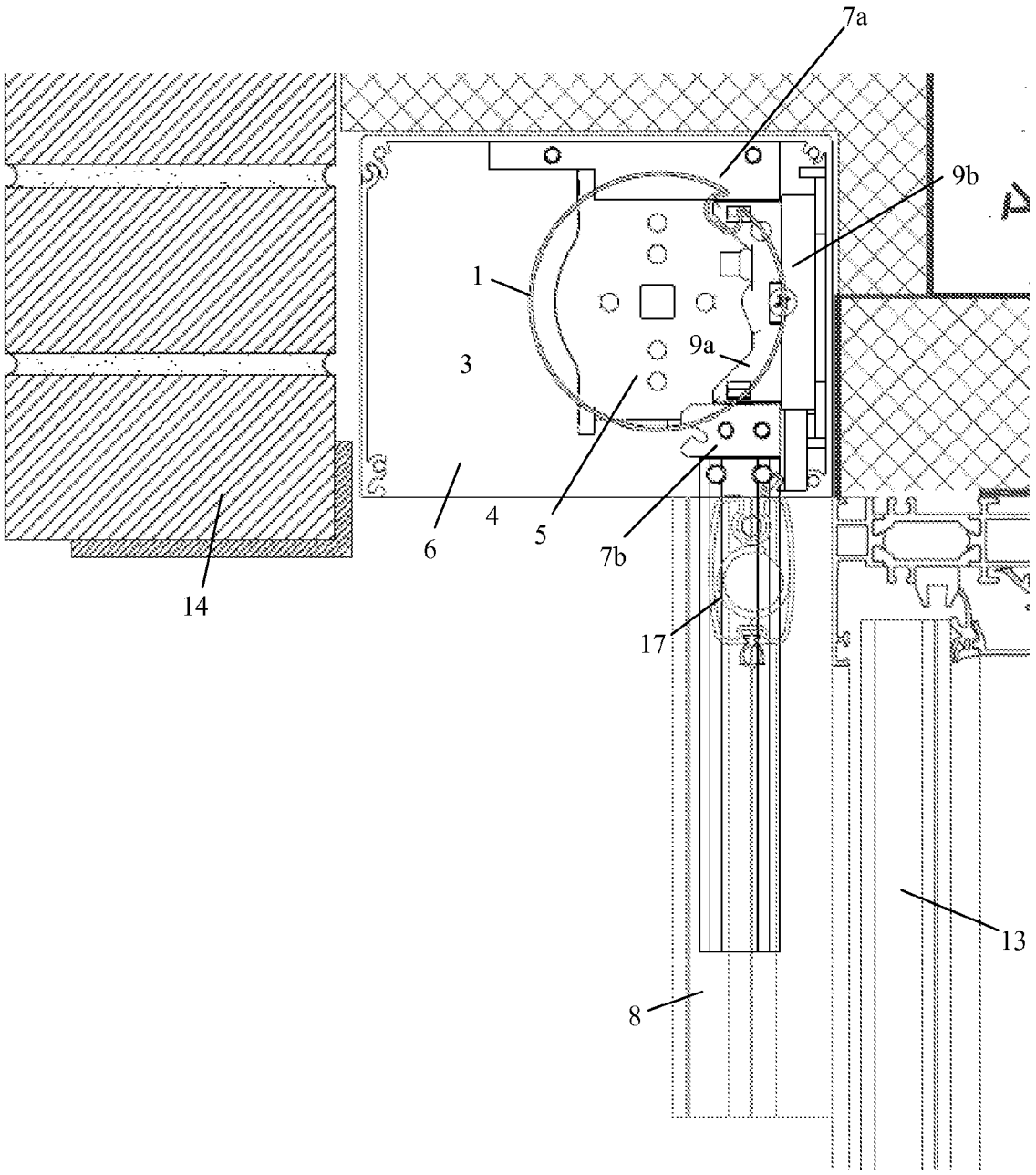

FIG. 3

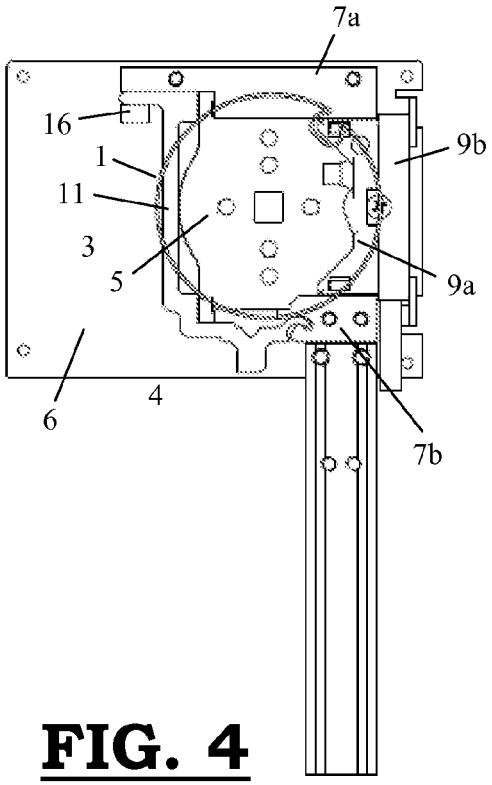

FIG. 4

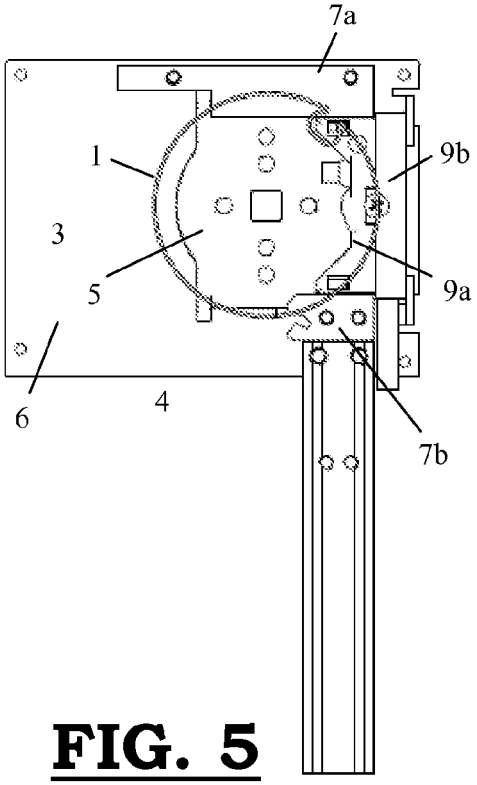

FIG. 5

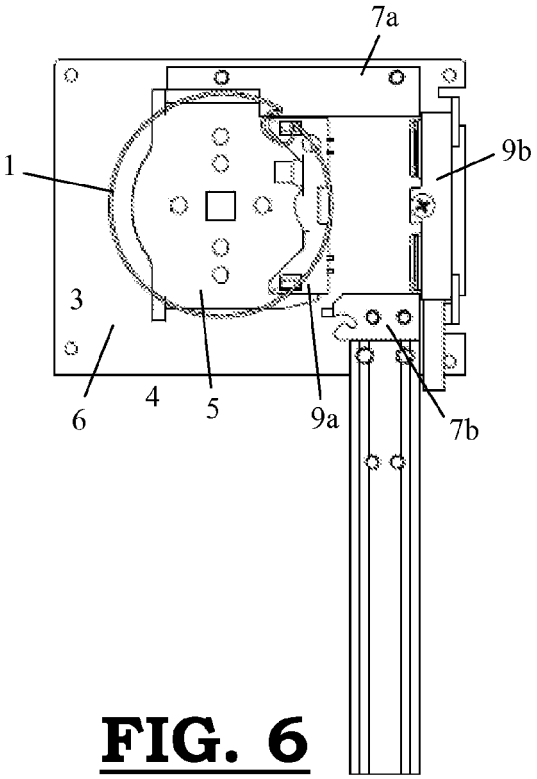

FIG. 6

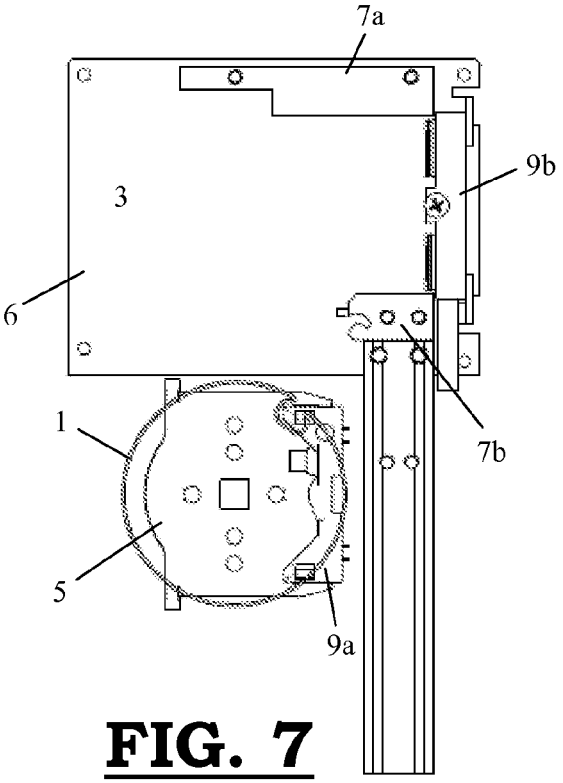

FIG. 7

REFERENCES CITED IN THE DESCRIPTION

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