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(54) Screen device

(57) The present invention relates to a screen device, comprising a screen which can be rolled up onto and rolled down from a screen roller, a bottom lath (1), one or more lath guides (3) and a tensioning system to tension the screen in the roll-up and roll-down direction, said screen device being provided with a protection component to prevent the bottom lath (1) from becoming detached from the lath guides (3) when the tension of the screen on one of the lateral sides of the screen drops, in the form of a blocking element (7) which is provided at an end of the bottom lath (1) and a blocking profile (5) which extends along a lateral side of the screen.

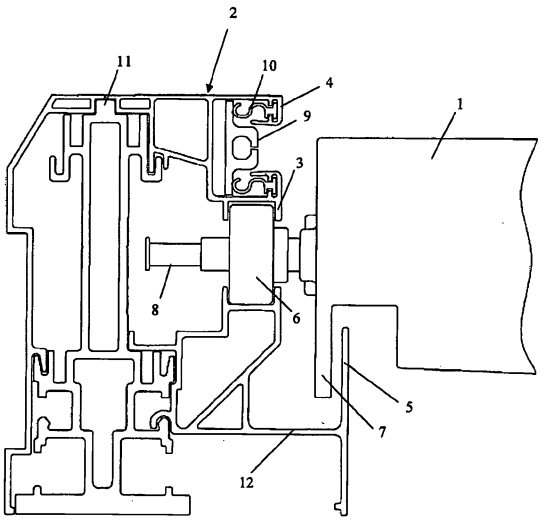

FIG. 1

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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 this screen roller;
- a motor for driving the roll-up and roll-down movement of the screen;
- a bottom lath which is provided on the side of the screen opposite the side where the screen can be rolled up and rolled down;
- one or more lath guides which extend at least partly along the lateral sides of the screen for guiding the movement of the bottom lath when the screen is being rolled up and rolled down;
- one or more lath guide elements which are provided at the ends of the bottom lath and which are arranged in the one or more lath guides so as to be displaceable in order to guide the movement of the bottom lath when the screen is being rolled up and rolled down;
- a tensioning system to tension the screen in the roll-up and roll-down direction;
- at least one blocking element which is provided at an end of the bottom lath; and
- at least one blocking profile which extends at least partly along a lateral side of the screen, in which the blocking element and the blocking profile are arranged with respect to one another in such a manner that, at an angular rotation of the bottom lath with respect to a perpendicular position with respect to the blocking profile which remains smaller than a predetermined blocking angle, the blocking element can be moved past the blocking profile when the screen is being rolled up and rolled down and that, when the angular rotation exceeds this blocking angle, the blocking element blocks the bottom lath with respect to the blocking profile.

[0002] Screen devices may, for example, be provided with running wheels or sliding pieces as lath guide elements which are arranged in the lath guides in order to guide the movement of the bottom lath during rolling-up and rolling-down of the screen. Such guides of the bottom lath are described, inter alia, in the patent publications EP 0 918 118 A1, BE 905 606, DE 39 32 520 C1 and BE 1015 475 A5.

[0003] Screen devices may be provided with a tensioning system such as for example described in EP 0 918 118 A1, EP 0 615 051 A1, or BE 905 606 as tensioning system. Such a tensioning system also helps to prevent a screen from moving or flapping excessively or from becoming damaged on account of wind. If a screen cannot be rolled up and rolled down in an essentially vertical plane, such a tensioning system also ensures that the bottom lath can be pushed out. In addition, such a tensioning system prevents a screen, which is for example fitted at an incline to a window or which is fitted as a roof of a terrace covering without glazing, from sagging under its own weight and coming up against the window or in the terrace covering. Such a tensioning system comprises a tension strip or tension rope or tension cable on each side of the screen. The one end of the tension strip or tension rope or tension cable of such a tensioning system runs on a wheel which is fitted on the end of the screen roller. When the screen is rolled up, the tension strip or tension rope or tension cable rolls down from this wheel. When the screen is rolled down, the tension strip or tension rope or tension cable is rolled up. The tension strip or tension rope or tension cable is then guided via guide wheels and via a reversing wheel and is attached to an end of the bottom lath by its other end. The tension strip or tension rope or tension cable is furthermore kept under tension by means of, for example, a spring system. In this way, such a tensioning system keeps the screen tensioned in the roll-up and roll-down direction.

[0004] If now, for example due to a tension strip or tension rope or tension cable snapping or coming off a wheel, or due to a wheel breaking, etc. the tension on one side of the screen drops, when the cloth is rolled down further, the bottom lath becomes slanted, leading to the risk of the bottom lath detaching from the lath guides. In this case, this bottom lath will fly off these lath guides with a certain force, which may cause damage to the screen device itself and/or to for example the window casing and glass if the screen device is fitted next to or above glass and/or to elements which are situated in the area surrounding the screen device. If people are present nearby, these may in this case be injured.

[0005] EP 1 127 996 A2 describes a screen device according to the preamble of the first claim. However, if, in the case of such a system, the tension of the tensioning system drops on only one side of the screen, then either such a system is not able to prevent the bottom lath from detaching, or the tension on only one side of the screen and the obstruction on the other side cause considerable damage to the screen device. Only when the tension of the tensioning system drops on both sides of the screen simultaneously do the blocking element and the blocking profile offer an effective solution against the guide of the bottom lath derailing.

[0006] It is an object of the present invention to provide a screen device in which the problem of the bottom lath detaching when the tension on the tension strip or tension rope or tension cable on one side of the screen drops is solved satisfactorily without significant damage to the screen device.

[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 this screen roller;
- a motor for driving the roll-up and roll-down move-

ment of the screen;

- a bottom lath which is provided on the side of the screen opposite the side where the screen can be rolled up and rolled down;
- one or more lath guides which extend at least partly along the lateral sides of the screen for guiding the movement of the bottom lath when the screen is being rolled up and rolled down;
- one or more lath guide elements which are provided at the ends of the bottom lath and which are arranged in the one or more lath guides so as to be displaceable in order to guide the movement of the bottom lath when the screen is being rolled up and rolled down;
- a tensioning system to tension the screen in the roll-up and roll-down direction;
- at least one blocking element which is provided at an end of the bottom lath; and
- at least one blocking profile which extends at least partly along a lateral side of the screen, in which the blocking element and the blocking profile are arranged with respect to one another in such a manner that, at an angular rotation of the bottom lath with respect to a perpendicular position with respect to the blocking profile which remains smaller than a predetermined blocking angle, the blocking element can be moved past the blocking profile when the screen is being rolled up and rolled down and that, when the angular rotation exceeds this blocking angle, the blocking element blocks the bottom lath with respect to the blocking profile;

[0008] in which the motor comprises a motor protection component which ensures that the screen stops or stops and rolls back up again when the motor protection component detects a sudden change in load on the output shaft of the motor and in which the one or more lath guide elements are designed to be displaceable with respect to the bottom lath in the longitudinal direction of said bottom lath.

[0009] Motorized roller shutter devices with a protection component which ensures that said motor protection component detects a sudden change in load on the output shaft of the motor when a bottom lath encounters an obstruction during the downward movement of the roller shutter are already known. The protection component in this case ensures that the roller shutter stops automatically or stops and is rolled back up. However, with the known screen devices, this motor protection component does not solve said problem, as when a tension strip or a tension rope or a tension cable breaks, the load to which the motor is subjected builds up only gradually so that the motor protection component will not detect this load as an obstruction. However, such a gradual load build-up may also be desirable during normal operation of a screen device, so that there is no desire to adapt the protection component of the motor in such a manner that it stops or that it stops and the screen is rolled back up again when such a gradual load build-up occurs.

[0010] However, if, in the case of a screen device according to the invention, the tension of the tensioning system drops on one side of the screen, for example, as a result of a component of a tensioning system failing or due to a tension strip or a tension rope or a tension cable of a tensioning system snapping, etc., then the blocking element and the blocking profile ensure that a sudden blocking of the bottom lath with respect to the blocking profile occurs. As a result of this blocking, the bottom lath will not be detached from the lath guide. Such a blocking of the bottom lath will now be recognized as a sudden obstruction by such a motor. The bottom lath will then also jam, after which the motor stops or stops and starts the rolling up of the screen.

[0011] Preferably, such a screen device according to the present invention comprises a blocking element at each end of the bottom lath and at least one blocking profile on each lateral side of the screen.

[0012] In an advantageous embodiment of such a screen device, each such blocking profile forms part of said lath guide. In this way, the assembly of guide profiles (lath guides, guides of the tensioning system, screen guides, etc.) and the blocking profile which together extend along a lateral side of the screen can be kept compact. Also, with regard to production and consumption of material, it is more advantageous to use the same profile of such a screen device for several purposes.

[0013] In a particular embodiment of such a screen device with one or more lath guide elements, these one or more lath guide elements are designed as one or more running wheels, which are arranged in the one or more lath guides so that they can roll in order to guide the bottom lath in the lath guides. These running wheels are in this case preferably guided in the one or more lath guides along two opposite sides. By guiding the running wheels along two opposite sides, the risk of these running wheels derailing is limited still further.

[0014] Alternatively, these one or more lath guide elements can, for example, be designed as sliding pieces which are fitted in the one or more lath guides so as to be displaceable in order to guide the bottom lath in the lath guides.

[0015] In order to be able to produce a compact screen device, the blocking element is preferably provided at an end of the bottom lath, between one or more lath guide elements and the rest of the bottom lath. The blocking element may in this case be attached to the bottom lath, but may also form part of this bottom lath.

[0016] On either side of the screen, the tensioning system of a screen device according to the present invention furthermore preferably comprises a tension strip or a tension rope or a tension cable which is attached, at its one end, to a fastening element of the tensioning system which is provided on the corresponding end of the bottom lath.

[0017] The screen device then preferably comprises one or more guides of the tensioning system in which the

fastening element of the tensioning system is provided with a positioning element of the tensioning system which is fitted in the one or more guides of the tensioning system so as to be displaceable for positioning the fastening element of the tensioning system with respect to the one or more guides of the tensioning system when the screen is being rolled up and rolled down.

[0018] Guiding the movement of the end of the tension rope or tension strip or tension cable, which is attached at the end of the bottom lath, prevents this tension rope or tension strip or tension cable from running at an angle and thus chafing or from running off a wheel (guide wheels, reversing wheel) on which it is provided.

[0019] Such a guide of the tensioning system may, more specifically, be an abovementioned lath guide. In this way, the assembly of guide profiles (lath guides, guides of the tensioning system, screen guides, etc.) and the blocking profile which together extend along a lateral side of the screen can be kept compact. Also, with regard to production and consumption of material, it is more advantageous to use the same profile of such a screen device for several purposes.

[0020] The positioning element of the tensioning system is preferably provided at an end of the bottom lath, between the fastening element of the tensioning system and the rest of the bottom lath. In this way, the tension strip or tension rope or tension cable will run next to the guide of the tensioning system so that the latter cannot be obstructed thereby.

[0021] The positioning element of the tensioning system could, in the longitudinal direction of the bottom lath, for example, also be provided turned away from the fastening element of the tensioning system and the bottom lath. However, if the screen is also provided with flexible thickenings which are guided in lateral guides on its lateral sides, this results in a less compact assembly. Nevertheless, such an arrangement can also result in a compact assembly if the lateral sides of the screen are not guided in lateral guides in such a manner, so that the tensioning system can adjoin the screen roller more closely.

[0022] The fastening element of the tensioning system could, for example, also be provided at the same or a smaller distance with respect to the end of the bottom lath as the positioning element of the tensioning system.

[0023] The positioning element of the tensioning system is preferably fixedly arranged with respect to the fastening element of the tensioning system, in which case the positioning element of the tensioning system and the fastening element of the tensioning system are then preferably arranged so as to be displaceable in longitudinal direction of the bottom lath with respect to this bottom lath. In this way, the positioning element of the tensioning system can, just like the lath guide elements, be displaced with respect to the bottom lath if the lath guides have not been arranged parallel to one another or if the guides of the tensioning system have not been arranged parallel to the lath guides. As the fastening element of the tensioning system is fixedly arranged with respect to the positioning element of the tensioning system, the tension strip or tension rope or tension cable will therefore always run at a fixed distance from and parallel to the guides of the tensioning system.

[0024] The tension cable or tension rope or tension cable of such a screen device is preferably arranged next to the one or more guides of the tensioning system.

[0025] In a particular embodiment of such a screen device, the positioning element of the tensioning system is designed as a running wheel which is arranged in the one or more guides of the tensioning system so that it can roll. This running wheel as positioning element is in this case preferably guided in the one or more lath guides along two opposite sides. By guiding this running wheel along two opposite sides, the risk of this running wheel derailing is limited still further.

[0026] Alternatively, the positioning element of the tensioning system can be designed as a sliding piece which is displaceably arranged in the one or more guides of the tensioning system in order to guide the positioning element of the tensioning system in the guides of the tensioning system.

[0027] More specifically, the positioning element of the tensioning system may also be designed as a lath guide element. Such an embodiment with the positioning element of the tensioning system as lath guide element can be used with screen devices which only have to span a limited surface. In the case of limited surfaces, such running wheels can absorb the forces to which they are subjected without significant problems. In such situations, where the running wheels can absorb the forces which occur without significant problems, it is therefore also advantageous, with regard to production and consumption of material, to use a running wheel both as lath guide element and as positioning element of the tensioning system. However, if relatively large (torsional) forces act on these wheels, these wheels would wear too quickly. In these cases, it is then more advantageous to provide separate wheels which can absorb separately acting forces and are adapted to this end. Then, it is preferable to fit the running wheel as positioning element of the tensioning system on the end of the bottom lath between the running wheels which have been provided as lath guide elements.

[0028] More specifically, each blocking element may be provided at an end of the bottom lath, between a fastening element of the tensioning system and one or more lath guide elements, in which case the one or more lath guide elements are provided between said blocking element and the rest of the bottom lath.

[0029] It is, in addition, for example also possible to provide the blocking element on an end of the bottom lath, in which case the fastening element of the tensioning system and one or more lath guide elements are situated between this blocking element and the rest of the bottom lath.

[0030] In a particular embodiment of a screen device

according to the present invention, the at least one blocking element is designed as a blocking lip which extends substantially at right angles to the bottom lath and which extends substantially along the longitudinal direction of the blocking profile.

[0031] Alternatively, the at least one blocking element can be designed as a disc which is fitted on a shaft which extends substantially along the longitudinal direction of the lath guide.

[0032] In this case, said disc can be fitted on the shaft of a running wheel as positioning element of the tensioning system.

[0033] A screen device according to the present invention furthermore preferably comprises one or more screen guides for guiding the lateral sides of the screen during the roll-up and roll-down movement thereof.

[0034] In order to guide the lateral sides of the screen in screen guides during the roll-up and roll-down movement thereof, the lateral sides of the screen which are guided in these screen guides preferably have a thickening, in which case each of these thickenings is provided in a respective guide profile in order to retain and guide the screen in the screen guides.

[0035] One such guide profile which is provided with such a thickening can then for example be arranged in the screen guides with a tolerance. In this case, tolerance is preferably provided in the plane of the screen. When forces act on the screen, such as for example in the case of gusts of wind or when precipitation hits the screen, etc. this screen can then deflect slightly due to said tolerance, without the thickenings becoming detached from the guide profiles and without the screen becoming damaged. The guide profiles can in this case also be pushed away from the screen into the screen guides by means of resilient material, so that the screen ends up in a direction transversely to the roll-up and roll-down direction thereof under a resilient prestress.

[0036] Said thickenings have to be sufficiently flexible in order to be able to roll up and down the screen roller quickly together with the screen. To this end, these thickenings may, for example, be designed as half zips. Such a half zip can be attached in its entirety to a lateral side of the screen by, for example, sewing or melting or welding it thereon, in which case it can extend (essentially) along the entire longitudinal direction of the screen.

[0037] When the lateral sides of the screen of such a screen device are guided in screen guides, the screen guides and the lath guides which are situated on the same side of the screen, viewed in a direction at right angles to the screen, are preferably arranged one behind the other.

[0038] The present invention will now be explained in more detail with reference to the following detailed description of some preferred screen devices according to the present invention. The sole intention of this description is to give illustrative examples and to indicate further advantages and features of these screen devices and can therefore by no means be interpreted as a limitation of the area of application of the invention or of the patent rights defined in the claims.

[0039] Reference numerals are used in this detailed description to refer to the attached drawings, in which:

- ***Fig. 1*** shows a detail of a first embodiment of a screen device according to the invention in cross section, comprising an end of the bottom lath, a lath guide wheel which also acts as a guide wheel for the tensioning system, a blocking lip and a lateral guide, comprising a screen guide, a lath guide, which also acts as a guide for the tensioning system, and a blocking profile;
- ***Fig. 2*** shows a detail of a second embodiment of a screen device according to the invention in cross section, comprising an end of the bottom lath, a lath guide wheel which also acts as a guide wheel for the tensioning system, a blocking disc and a lateral guide, comprising a screen guide, a lath guide, which also acts as a guide for the tensioning system, and a blocking profile;
- ***Fig. 3*** shows a detail of a third embodiment of a screen device according to the invention in cross section, comprising an end of the bottom lath, a lath guide wheel which also acts as a guide wheel for the tensioning system, a blocking disc and a lateral guide, comprising a screen guide, a lath guide, which also acts as a guide for the tensioning system, and a blocking profile which forms part of the lath guide.

[0040] A screen device according to the present invention, as illustrated in Figs. 1, 2 and 3 comprises a screen roller and a screen which can be rolled up onto and rolled down from this screen roller. This screen roller and the screen have not been illustrated in the figures as this part of a screen device is already well known from the prior art.

[0041] Said screen is provided with a bottom lath (1) on a side opposite the side where the screen is rolled up and rolled down. Furthermore, this screen device comprises two lateral guides (2) in which the ends of the screen and the bottom lath (1) are guided when the screen is rolled up and rolled down. In Figs. 1, 2 and 3, in each case one of the two lateral guides (2) of the screen device has been illustrated. The illustrated lateral guide (2) comprises a screen guide (4), a lath guide (3) which also serves as a guide (3) of the tensioning system, and a blocking profile (5).

[0042] On each end of the bottom lath (1) two running wheels are fitted so that they can roll in the lath guide (3) for guiding the movement of the bottom lath (1) when the screen is rolled up and rolled down. These running wheels are fitted so as to be displaceable in the longitudinal direction of the bottom lath (1) with respect to the bottom lath (1). In this way, the running wheels can readily be displaced with respect to the bottom lath (1). This is advantageous in those cases where the lath guides (3), during fitting, cannot be arranged completely parallel to one another and the running wheels can thus absorb the

tolerance in distance between the lath guides (3). In order to fit these running wheels so as to be displaceable with respect to the bottom lath (1), these running wheels may each, for example, be displaceably fitted on a shaft which is fixedly attached to the bottom lath (1). Between the two running wheels which serve as lath guide elements, a third running wheel (6) is fitted on a third shaft. This third running wheel (6) is illustrated in the figures. This third running wheel (6) is also fitted so that it can roll in the corresponding lath guide (3). The third shaft extends further with respect to the running wheel (6) and is provided with an edge or slot or constriction at its end as a fastening element (8) of the tensioning system in order to attach a tension strip thereto.

[0043] This tension strip, which has not been shown, forms part of the tensioning system of the screen device. This tensioning system is designed to tension the screen in the roll-up and roll-down direction. The one end of the tension strip runs on a wheel which is fitted on the end of the screen roller. When the screen is rolled up, the tension strip rolls down this wheel. When the screen is rolled down, the tension strip rolls up this wheel. Furthermore, the tension strip is guided via guide wheels and a reversing wheel and is attached to the bottom lath (1), on said end (8) of the third shaft, by its other end. The tension strip is tensioned, for example, by means of a spring system.

[0044] Said third running wheel (6) is not fitted on the third shaft so as to be displaceable, so that the distance between this third running wheel (6) and the tension strip always remains the same. Due to the fact that the third running wheel (6) also runs in the lath guide (3), which in this case also serves as a guide (3) of the tensioning system, the tension strip is therefore also always guided in the lateral guide (2) at the same distance with respect to this lath guide (3). In order to make it possible for this third running wheel (6) to also diverge with respect to the bottom lath (1) when the lath guide (3), which also serves as a guide (3) for the tensioning system, is not arranged parallel to the lath guide(s) (3) on the opposite side (not shown) of the screen, the third shaft may itself, for example, be fitted displaceably in the bottom lath (1). This may, for example, be achieved by means of sliding bearing bushes or ball bearings.

[0045] Such an arrangement of a third running wheel (6) for positioning the fastening element (8) of the tensioning system and therefore also of the tension strip which is arranged thereon, between the running wheels for guiding the bottom lath (1), can be used in cases where relatively significant (torsional) forces act on the running wheels (6). When no such significant (torsional) forces occur, it is equally possible to use one of the running wheels (6) for guiding the bottom lath (1) and also additionally for positioning the tension strip, in which case the shaft on which this running wheel (6) is fitted is extended next to the running wheel (6), in order to attach the tension strip.

[0046] Instead of running wheels (6), the screen device could also be provided with sliding pieces as guide and/or positioning elements (6) for positioning the fastening element (8) of the tension strip and/or for guiding the bottom lath (1) during the roll-up and roll-down movement of the screen.

[0047] In order to tension the screen between the screen guides (4) which are situated on either side of the screen, these screen guides (4) comprise guide profiles (9) which extend in the longitudinal direction in the screen guides (4), with these guide profiles (9) being fitted in the screen guides (4) with a tolerance. This tolerance is provided in a direction at right angles to said longitudinal direction. Furthermore, the lateral sides of the screen which extend in said same longitudinal direction comprise a thickening which is configured as a half zip. Each half zip is arranged in a respective guide profile (9) in order to hold and guide the screen securely in the screen guides (4) during the roll-up and roll-down movement of the screen. The guide profiles (9) are pushed in a direction away from the screen into the screen guides (4) by means of resilient elements (10), so that the screen is under resilient prestress.

[0048] In order to prevent the bottom lath (1) of the screen device from becoming detached when the tension on one side of the screen drops, the screen device is provided with a blocking element (7) on one end or on both ends of the bottom lath (1). Furthermore, a blocking profile (5) is provided in the lateral guide (2) to this end. The blocking element (7) and the blocking profile (5) are arranged with respect to one another in such a manner that, upon an angular rotation of the bottom lath with respect to a perpendicular position with respect to the blocking profile (5) which is smaller than a predetermined blocking angle, the blocking element (7) can be moved past the blocking profile (5) during the roll-up and roll-down movement of the screen. However, as soon as the angular rotation exceeds this blocking angle, the blocking element (7) blocks the bottom lath (1) with respect to the blocking profile (5).

[0049] When the tension of the tensioning system then also drops on one side of the screen, for example due to (a part of) the tensioning system failing or due to the tension strip snapping, then this blocking element (7) and the blocking profile (5) ensure that a sudden blocking of the bottom lath (1) with respect to the blocking profile (5) occurs. The screen device furthermore comprises a motor for driving the roll-up and roll-down movement of the screen. This motor is provided with a protection component which ensures that the screen stops or stops and rolls back up again when the motor protection component detects a sudden change in load on its output shaft. Due to the blocking element and the blocking profile, a sudden blocking of the bottom lath (1) with respect to the blocking profile (5) will occur when the tension of the tensioning system on one side of the screen drops, which results in a significant increase in load on the output shaft of the motor and will be recognized as an obstruction by the motor protection component. The motor protection com-

ponent will issue a stop command to the motor or a stop command followed by an 'up' command. The screen will therefore also stop or stop and be rolled back up onto the screen roller.

[0050] The embodiment of a screen device as illustrated in Fig. 1 comprises a blocking lip (7) as blocking element (7). This blocking lip (7) forms part of an end piece which is attached to the end of the bottom lath (1), extends substantially at right angles to the rest of the bottom lath (1) and extends substantially along the longitudinal direction of the blocking profile (5). In this way, the screen device can be kept particularly compact. With this screen device, the blocking profile (5) forms part of a gutter (12) which also serves to drain off precipitation water from the screen. In this way, the lateral guide (2) can be kept particularly compact.

[0051] The embodiment of a screen device as illustrated in Fig. 2 comprises a blocking disc (7) as blocking element (7). This blocking disc (7) is fitted on the end of the shaft of the running wheel (6) which serves as positioning element (6) of the tensioning system. Due to the fact that this blocking disc (7) does not now form part of the bottom lath (1), the screen device is overall of a less compact design than the screen device from Fig. 1. With such an arrangement of the blocking element (7), the lateral guide (2) also has to be provided with a separate blocking profile (5). This also results in the lateral guide (2) being less compact than in the embodiment from Fig. 1.

[0052] The embodiment of a screen device illustrated in Fig. 3 also comprises a blocking disc (7) as blocking element (7). This blocking disc (7) is likewise fitted on the shaft of the running wheel (6) which serves as positioning element (6) of the tensioning system, but now between the fastening element (8) of the tensioning system and the running wheel (6). In this way, the blocking profile (5) can now form part of the lath guide (3). Thus, the lateral guide (2) can again be of a more compact design than is the case in the embodiment from Fig. 2, but it is still less compact than the embodiment from Fig. 1, as the blocking element (7) does not form part of the bottom lath (1).

[0053] The lath guide (3) and the screen guide (4) are provided one behind the other in the lateral guide (2), viewed in a direction at right angles to the plane of the screen, in order to arrange these in as compact a way as possible with respect to each other. In order not to increase the height of the lateral guide (2) unnecessarily, the tension strip is then arranged next to the lath guide (3), it usually being positioned in the prior art at the location of the running wheels (6) as lath guide elements or between the running wheels (6) and the bottom lath (1). As a result of this arrangement of the guide elements in the lateral guide (2), said lateral guide (2) can be of a particularly compact design.

[0054] In the illustrated embodiments, due to its compact lateral guide (2), the screen device can be arranged between girders (11) of, for example, a terrace covering, in which case this screen device stays within the height of the girders (11) and the lateral guide (2) still has a limited width.

Claims

1. Screen device, comprising:

- a screen roller;
- a screen which can be rolled up onto and rolled down from this screen roller;
- a motor for driving the roll-up and roll-down movement of the screen;
- a bottom lath (1) which is provided on the side of the screen opposite the side where the screen can be rolled up and rolled down;
- one or more lath guides (3) which extend at least partly along the lateral sides of the screen for guiding the movement of the bottom lath (1) when the screen is being rolled up and rolled down;
- one or more lath guide elements which are provided at the ends of the bottom lath (1) and which are arranged in the one or more lath guides (3) so as to be displaceable in order to guide the movement of the bottom lath (1) when the screen is being rolled up and down;
- a tensioning system to tension the screen in the roll-up and roll-down direction;
- at least one blocking element (7) which is provided at an end of the bottom lath (1); and
- at least one blocking profile (5) which extends at least partly along a lateral side of the screen, in which the blocking element (7) and the blocking profile (5) are arranged with respect to one another in such a manner that, at an angular rotation of the bottom lath (1) with respect to a perpendicular position with respect to the blocking profile (5) which remains smaller than a predetermined blocking angle, the blocking element (7) can be moved past the blocking profile (5) when the screen is being rolled up and rolled down and that, when the angular rotation exceeds this blocking angle, the blocking element (7) blocks the bottom lath (1) with respect to the blocking profile (5), **characterized in that** the motor comprises a motor protection component which ensures that the screen stops or stops and rolls back up again when the motor protection component detects a sudden change in load on the output shaft of the motor and **in that** the one or more lath guide elements are designed to be displaceable with respect to the bottom lath (1) in the longitudinal direction of said bottom lath (1).

2. Screen device according to Claim 1, **characterized**

in that the screen device comprises a blocking element (7) at each end of the bottom lath (1) and at least one blocking profile (5) on each lateral side of the screen.

3. Screen device according to Claim 2, **characterized in that** each blocking profile (5) forms part of said lath guide (3).

4. Screen device according to one of the preceding claims, **characterized in that** the one or more lath guide elements are designed as running wheels, which are guided in the one or more lath guides (3) along two opposite sides.

5. Screen device according to one of the preceding claims, **characterized in that** each blocking element (7) is provided at an end of the bottom lath (1), between one or more lath guide elements (6) and the rest of the bottom lath (1).

6. Screen device according to one of the preceding claims, **characterized in that** the tensioning system, on either side of the screen, comprises a tension strip or a tension rope or a tension cable which is attached, at its one end, to a fastening element (8) of the tensioning system which is provided on the corresponding end of the bottom lath (1).

7. Screen device according to Claim 6, **characterized in that** the screen device comprises one or more guides (3) of the tensioning system and **in that** the fastening element (8) of the tensioning system is provided with a positioning element (6) of the tensioning system which is fitted in the one or more guides (3) of the tensioning system so as to be displaceable for positioning the fastening element (8) of the tensioning system with respect to the one or more guides (3) of the tensioning system when the screen is being rolled up and rolled down.

8. Screen device according to Claim 7, **characterized in that** said lath guide (3) is a guide (3) of the tensioning system.

9. Screen device according to Claim 7 or 8, **characterized in that** the positioning element (6) of the tensioning system is provided at an end of the bottom lath (1), between the fastening element (8) of the tensioning system and the rest of the bottom lath (1).

10. Screen device according to one of Claims 7 to 9, **characterized in that** the positioning element (6) of the tensioning system is designed as a running wheel (6) which is arranged in the one or more guides (3) of the tensioning system so that it can roll.

11. Screen device according to Claim 10, **characterized in that** the running wheel (6) as positioning element is guided in the one or more lath guides (3) along two opposite sides.

12. Screen device according to one of Claims 6 to 11, **characterized in that** each blocking element (7) is provided at an end of the bottom lath (1), between a fastening element (8) of the tensioning system and one or more lath guide elements, with the one or more lath guide elements being provided between said blocking element (7) and the rest of the bottom lath (1).

13. Screen device according to one of the preceding claims, **characterized in that** the at least one blocking element (7) is designed as a blocking lip (7) which extends substantially at right angles to the bottom lath (1) and which extends substantially along the longitudinal direction of the blocking profile (5).

14. Screen device according to one of Claims 1 to 12, **characterized in that** the at least one blocking element (7) is designed as a disc (7) which is fitted on a shaft which extends substantially along the longitudinal direction of the lath guide (3).

15. Screen device according to Claim 10 and 14, **characterized in that** said disc (7) is fitted on the shaft of the running wheel (6) as positioning element of the tensioning system.

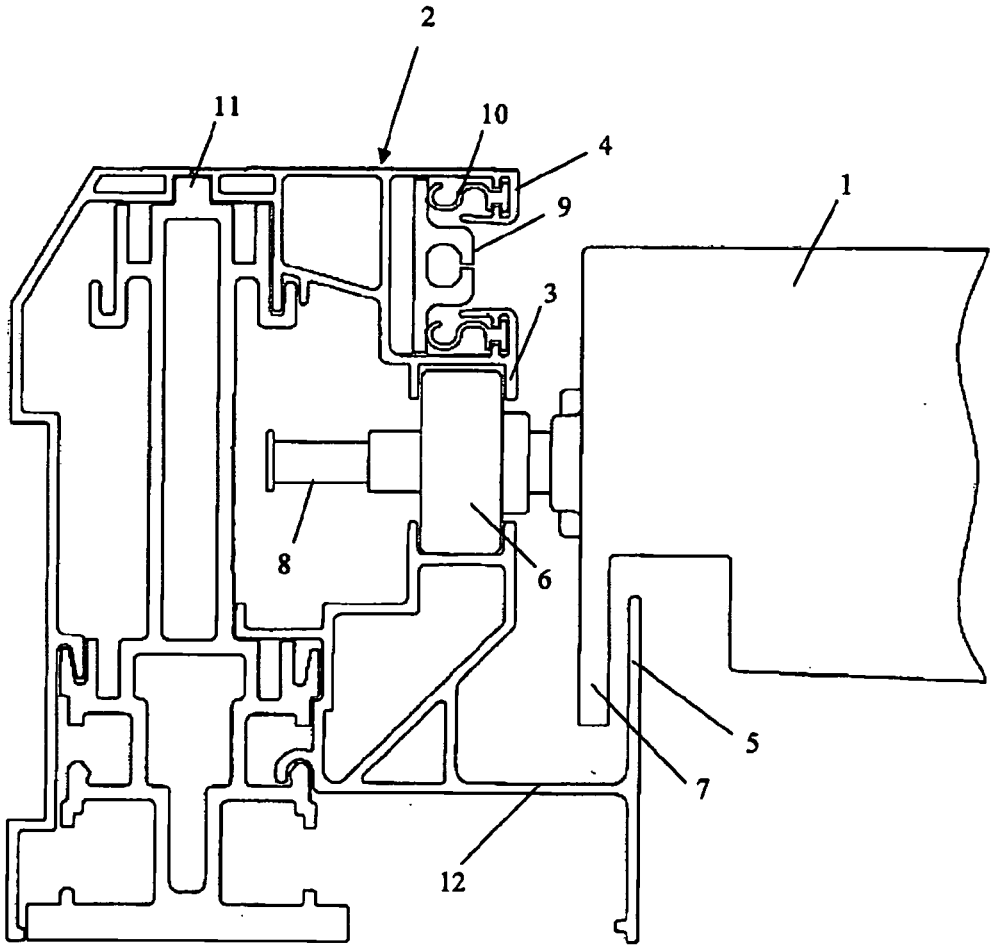

FIG. 1

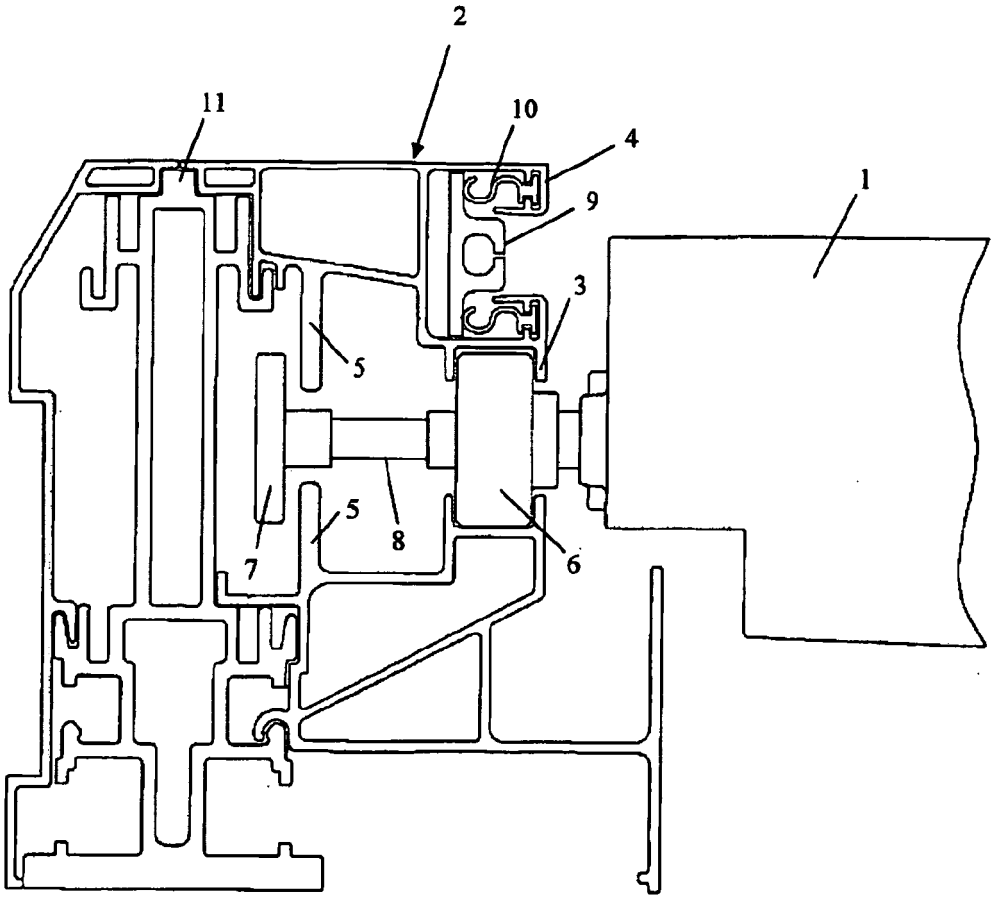

FIG. 2

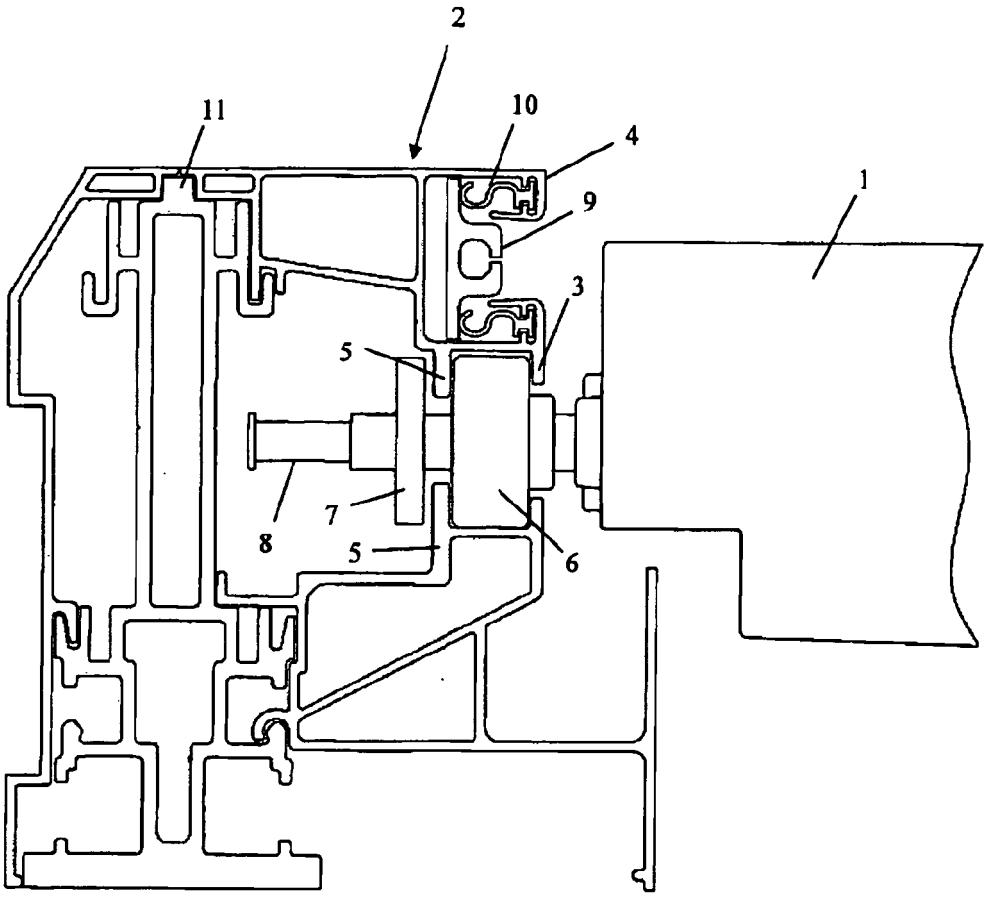

FIG. 3

REFERENCES CITED IN THE DESCRIPTION

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