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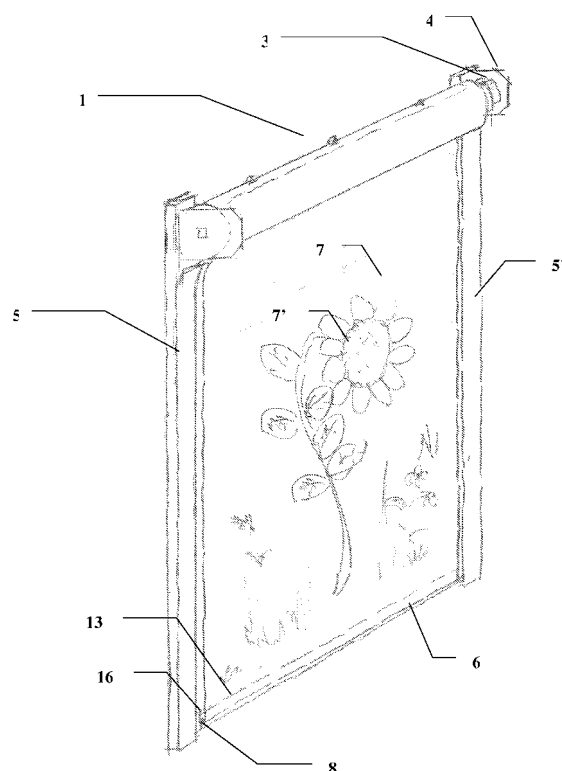
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(54) **Screen for a building opening**

(57) A system for screening and decorating a building opening, preferably a largely vertically oriented window, the system including a screen (2) formed of an array of cohering longitudinal lamellae (11) which can be rolled up about a core (3) at the top side of the building opening and which in the extended condition have an extension adapted for covering the building opening, and a foldable or rollable sheet (7) provided with a decorative element and which in the extended state has an extension which at least partially covers the screen (2), at which between the sheet (7) and the screen (2) there is a mutual connection (6) at the upper and lower edge areas of the sheet when in use, and at which the sheet (7) and the screen (2) in the extended state are arranged as two superposed surfaces such that the sheet at the lower mutual connection (6) forms a suspended fold (15) extending under the mutual connection, and that a horizontal weight means (14) is provided in the fold (15) or is fastened to the sheet in immediate vicinity of the mutual connection (6).



Figur 2

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Description

Field of the Invention

[0001] The present invention concerns a system for screening and decorating a building opening, preferably a largely vertically oriented window, the system including a screen formed of an array of cohering longitudinal lamellae which can be rolled up about a core at the top side of the building opening and which in the extended condition have an extension adapted for covering the building opening.

[0002] The system includes a foldable or rollable sheet provided with a decorative element and which in the extended state has an extension which at least partially covers the screen. Besides, it includes two guide rails, each with a guide groove for receiving the edge areas of the screen and two bearing brackets for supporting the core. Between the sheet and the screen, at a lower edge area of the sheet in use there is a mutual connection between the sheet and the screen. The sheet and the screen are provided as two superposed surface in the outstretched condition.

Background of the Invention

[0003] Roller shutters are known from furniture, and the principle of a screen consisting of joined lamellae or mullions are known from patent literature, e.g. from US 4,433,714, which discloses a method for joining several longitudinal lamellae with curving side pieces such that a rollable door or screen for a window or generally for an opening in a building or a vehicle, as e.g. a lorry or a train carriage, is formed. Traditionally, information or decoration has been painted on the lamellae themselves, making it difficult to change the decoration or information.

[0004] Also, there exist a plurality of advertising or decoration devices and methods for displaying such in connection with e.g. curtains. As an example of a roller blind on which is fastened decorative images, reference is made to the patent US 6,374,896 describing a roller blind which is disposed at the top of a window frame, and on which there are attached up to several decorative images which may be rolled up together with the curtain, and in this case be suspended vertically down from e.g. a sloping window. This roller blind acts exclusively as a screening against inflow of light.

[0005] The combination of an electric roller door and a separate rolling device for a fabric curtain applied advertising material is known e.g. from US 2007/0186454 in which is described a roller unit which is separate to the advertisement and located at the upper edge of the roller door. The drawback here is that two installations are required, taking up space.

[0006] The combination of safety roller blinds consisting of joined lamellae and a separate roller device for a fabric curtain is known from US 2004/0128880, in which is described a display apparatus for a shutting device,

which is **characterised in that** a sheet is placed at the surface of a vertically movable screen in such a way that the sheet follows the screen when it is rolled out as a vertical surface and also rolled together when it is rolled up.

[0007] The combination is **characterised in that** at the bottom of the sheet there is fitted a mechanical pulling unit which by a spring keeps the sheet stretched when the screen is unrolled. This pull unit is a mechanical unit having the risk of failure and which additionally is disadvantageous as it makes it impossible to roll the screen up completely and into a box used for covering the device in the rolled up condition. Moreover, it is necessary that the sheet at least partially is formed of an elastic material in order to ensure it is kept outstretched.

Object of the Invention

[0008] The object of the present invention is to indicate a system that may function as a safety roller blind with decorative effect, which is a technically simple design ensuring that the decorative sheet is suspended outstretched when the screen is unrolled, without need for technical means for tensioning the sheet. Moreover, the object is to ensure that the entire device in the rolled up state can be concealed by a hiding box or bracket.

Description of the Invention

[0009] According to the present invention, this is achieved by a system of the type mentioned in the introduction which is peculiar in that the sheet at the lower mutual connection forms a suspended fold extending under the mutual connection, and that a horizontal weight means is provided in the fold or is fastened to the sheet in immediate vicinity of the mutual connection.

[0010] By such a system, a plurality of sheets, without requiring elasticity in the longitudinal direction, may appear in the outstretched condition when the screen is rolled down, and the screen and the sheet may be rolled up completely or be packed into a cover. Besides, by the device it is easy to change sheets and thereby decoration.

[0011] The invention may find application in situations where a so-called safety roller blind is disposed in front of a window or a door which is substantially transparent. In such cases it is desirable that there is a need for placing information material, advertising material or decorations at the outer side, meaning the side facing the opening of the screen.

[0012] However, the invention is also very usable with the sheet disposed towards the interior of the building. As a rule, lamellae will be curving with a largely C-shaped cross-section, where the broken surface formed by the opening of the C is facing inwardly into the building. The sheet may thus provide an aesthetically agreeable element in rooms where traditionally safety grating will be avoided due to the less aesthetical back side.

[0013] The screen is mounted on a flat web carrying the information in the form of figures, decorations or text. These are **characterised in that** the web, which is preferably a sheet, can be rolled together with the screen and also be rolled out together with the screen. Furthermore, it is a characteristic that the sheet in the unrolled condition is kept outstretched by means of the force of gravity in order to compensate for differences in length between the extension of the lamellae in the packed or collapsed condition and in the unfolded condition due to production tolerances and elasticity in the sheet.

[0014] At the lower mutual connection, the sheet forms a suspended fold extending under the mutual connection, and a horizontal weight means is provided in the fold or is fastened to the sheet in immediate vicinity of the mutual connection.

[0015] The weight means will typically have the shape of a rod or a pipe which again typically has a circular cross-section. The material is typically metal as e.g. steel.

[0016] The weight means is typically fastened to the sheet in that a rod pocket or a hemstitch, the hole size of which fitting the weight means, is provided in the sheet. The weight means may, however, also be attached to the sheet by applying eyes to the sheet.

[0017] In a preferred embodiment, the weight means mounted on the sheet has a cross-section which is less than the inner cross-section of the section of each lamella in the screen itself. The weight means may hereby by a device in immediate vicinity of the roller be rolled with it in without the thickness of the lamella in which the weight means is situated is different from the thickness of the other lamellae that are rolled up around the roller.

[0018] An advantage of using one or more weight means that by means of gravity keep the sheet outstretched is that the influence from variations in the elasticity of the sheet is reduced. If the material is entirely unstretchable, the weight means will extend the sheet to a certain length, and if the material is elastic in longitudinal direction, the weight means will extend the sheet to another length without requiring any adjustment of springs or of moving any devices for extending the sheet.

[0019] The sheet is rolled together around the sheet which again is often packed or concealed such that the device will not interfere with the outward or inward view. It is therefore an essential advantage if the screen can be completely concealed, and if the attached sheet also can be hidden. The fact that the weight rod fastened on the sheet together with the screen profile has a thickness which is less than the thickness of the inlet for the bracket for the screen causes that the screen and the sheet may be completely concealed in the rolled up condition in a box at the top of the building opening at which the screen is used.

[0020] The system for screening and decoration has the important effect that the material used for decoration or information in the form of pictures and/or text should be capable of being rolled up or folded together. The preferred materials are either paper, cotton fabric, or fab-

ric of polyester or vinyl. Irrespective of the choice of material, they are often given a finishing treatment with UV varnish or other kind of treatment providing that make the sheet resist direct light, repel water and dirt and be cleaned.

[0021] The previously mentioned materials with coatings may also be rolled together around rollers with a core diameter used to hold the screen without the information or decoration being damaged by crackles.

[0022] Even though rolling around a roller is the preferred method of packing and storing screen as well as decoration sheet, the screen may by design be of the pleated curtain type, by which is meant that the screen consists of lamellae that are fastened together such that they may be folded together in layers. Also, the in this case the sheet is prepared with a folder, the length of which being adapted to the lamella length such that the sheet and the screen may be folded together. Screen as well as sheet with decoration are here both laid pleated as two overlaid S-curves which are pressed together in vertical direction.

[0023] Above are described systems where the screen and the sheet are parked together. However, there is nothing to prevent that the sheet is mounted on the screen at the bottom as described, and that the screen and the sheet instead are packed separately at the top. Screens as well as sheets, respectively, may be rolled or folded into separate devices. In each combination, however, there is applied a weight means ensuring that the sheet is stretched out by means of gravity in the unrolled or unfolded condition.

[0024] Regarding the weight device itself, the preferred implementation is one where the sheet has a rod pocket for a circular metal rod. The rod pocket may be located at the inner side, i.e. between the sheet and the screen, or at the outer side. The rod pocket may freely be provided in various ways. Either by sewing the sheet together or by mounting the rod pocket on the sheet.

[0025] Finally, the sheet may be perforated and possibly be applied eyes or provided with hemstitch. These may be used as rod pocket for the weight means, like a rod, or separate weight means may be fitted in each single perforation.

[0026] The lamellae can be perforated in various patterns and with various degrees of opening in order to allow more or less translucency. The system may hereby also be used as sun screen.

[0027] The sheet with information or decoration may of course be mounted on an arbitrarily selected side of the screen or at both sides. At the inner side, there will typically be a decoration, and at the outer side typically an advertisement, either in the form of a text message or a picture.

55 Description of the Drawing

[0028] The invention will be explained in more detail below with reference to the accompanying drawings,

where:

- Fig. 1 shows an isometric view of a system consisting of a roller blind for screening;
- Fig. 2 shows an isometric view of a screen system and a decorative sheet extended by means of a weight device;
- Fig. 3 shows an isometric view of a system for screening and displaying decoration fitted on a window frame;
- Fig. 4 shows a cross-section of the system with roller blind for screening and a sheet stretched by means of the weight means;
- Fig. 5 shows an enlarged detail of a core with lamellae partly rolled up; and
- Fig. 6 shows a cross-section through a guide rail.

[0029] In the explanation of the Figures, identical or corresponding elements will be provided with the same designations in different Figures. Therefore, no explanation of all details will be given in connection with each single embodiment indicated in a Figure.

Detailed Description of Embodiments of the Invention

[0030] Fig. 1 shows an isometric view of a system 1 for screening and decoration. The system consists of the screen 2 itself, which is a roller blind that is rolled up around a roller core 3 mounted on two bearing brackets 4. The screen 2 has side edges 2' that are guided by two guide rails 5, 5' and is finished by a bottom profile or a bottom lamella 6. A sheet 7 for decoration is shown in Fig. 2.

[0031] Fig. 2 shows an isometric view of the system 1 for screening and decorating as the one shown in Fig. 1, but mounted with a sheet 7 with a decoration 7'. The sheet 7 is connected with the screen at the lower edge 16 of the sheet in use (see Fig. 4) via a connection 13 (see Fig. 4). It appears that a fold 8 is present at the lower edge 16 of the sheet in immediate vicinity of the bottom profile or bottom lamella 6 of the screen.

[0032] Fig. 3 shows an isometric view of the system 1 shown in Figs. 1 and 2 provided on a window frame 9, where the guide rails 5, 5' fit tightly 10 to the window frame, whereby the frame becomes more insulating.

[0033] Fig. 4 shows an enlarged cross-section of the system 1 shown in Fig 2, clearly showing that the screen 2 consists of joined lamellae 11. The lower edge 16 of the sheet 7' is connected with the screen 2 via the connection 13. The weight means 14 forms the fold 8 whereby the sheet 7 is stretched and lies in parallel with and tightly against the side face of the screen. The weight means 14 is here provided loosely at the bottom 15 of the fold. The weight means 14 is formed as a circular pipe, but may alternatively be a solid rod. Due to its circular cross-section, the pipe will simply roll down to the bottom 15 and keep the sheet 7 in tension only by means

of the force of gravity.

[0034] Fig. 5 shows a small number of lamellae 11 and how they fit around the roller core 3, which is here designed as a circular tube 17. The lamellae 11 are characterised by engaging 18 each other in a simple way in that the end pieces 19, 19' of the lamellae 11 are designed to engage each other and at the same time act as rotational core. Moreover, each lamella 11, which is like a compressed C-profile in cross-section, is seen to form a cavity 20 produced between the internal surface 21 of the lamella 11 and the outer periphery 22 of the circular tube 17. Moreover, there is shown a detail of an inner curtain 25 which is disposed at the same side of the lamellae 11 relative to the roller core 3, and an outer curtain 26 which is disposed at the opposite side of the lamellae 11 relative to the roller core 3. Usually, a curtain will only be provided at one side, but there may also be provided curtains at each their side of the lamellae 11, such as illustrated.

[0035] Fig. 6 shows the profile of one guide rail 5 of the guide rails 5, 5', having a guide groove 23. The profile shows that in connection to the opening where the lamellae are provided, a profiling 24, 24' is provided where felt discs or other means can be located for establishing a sound attenuation when rolling up and down and for providing a sealing against air flows.

[0036] The system according to the invention may thus also contribute to an insulating effect as between the system and a glass pane or door there is established an enclosure with stagnant air.

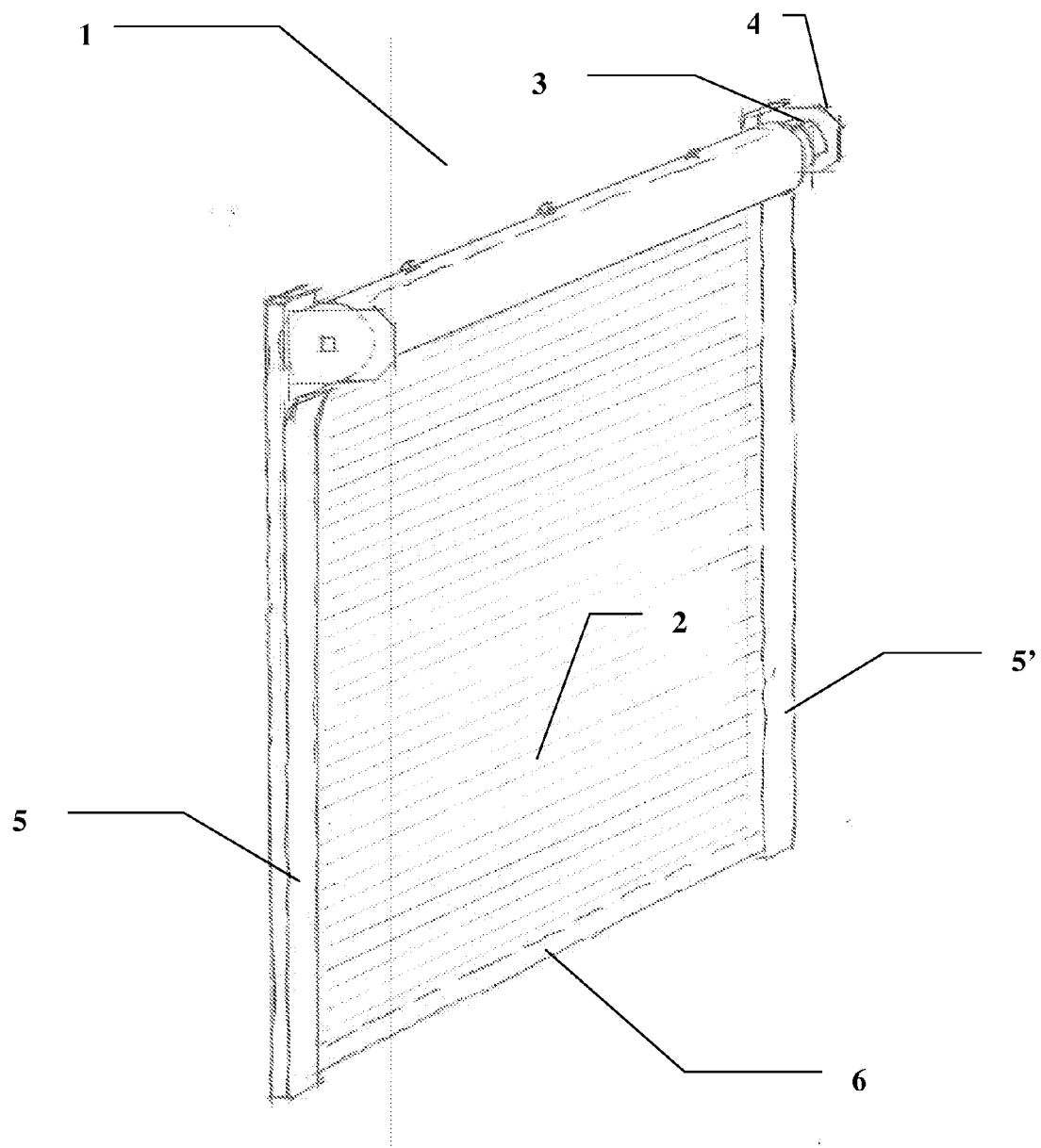
Claims

1. A system for screening and decorating a building opening, preferably a largely vertically oriented window, the system including:
 - a screen formed of an array of cohering longitudinal lamellae which can be rolled up about a core at the top side of the building opening, and which in the extended condition have an extension adapted for covering the building opening;
 - a foldable or rollable sheet provided with a decorative element and which in the extended state has an extension which at least partially covers the screen;
 - two guide rails, each with a guide groove for receiving the edge areas of the screen;
 - two bearing brackets for supporting the core;

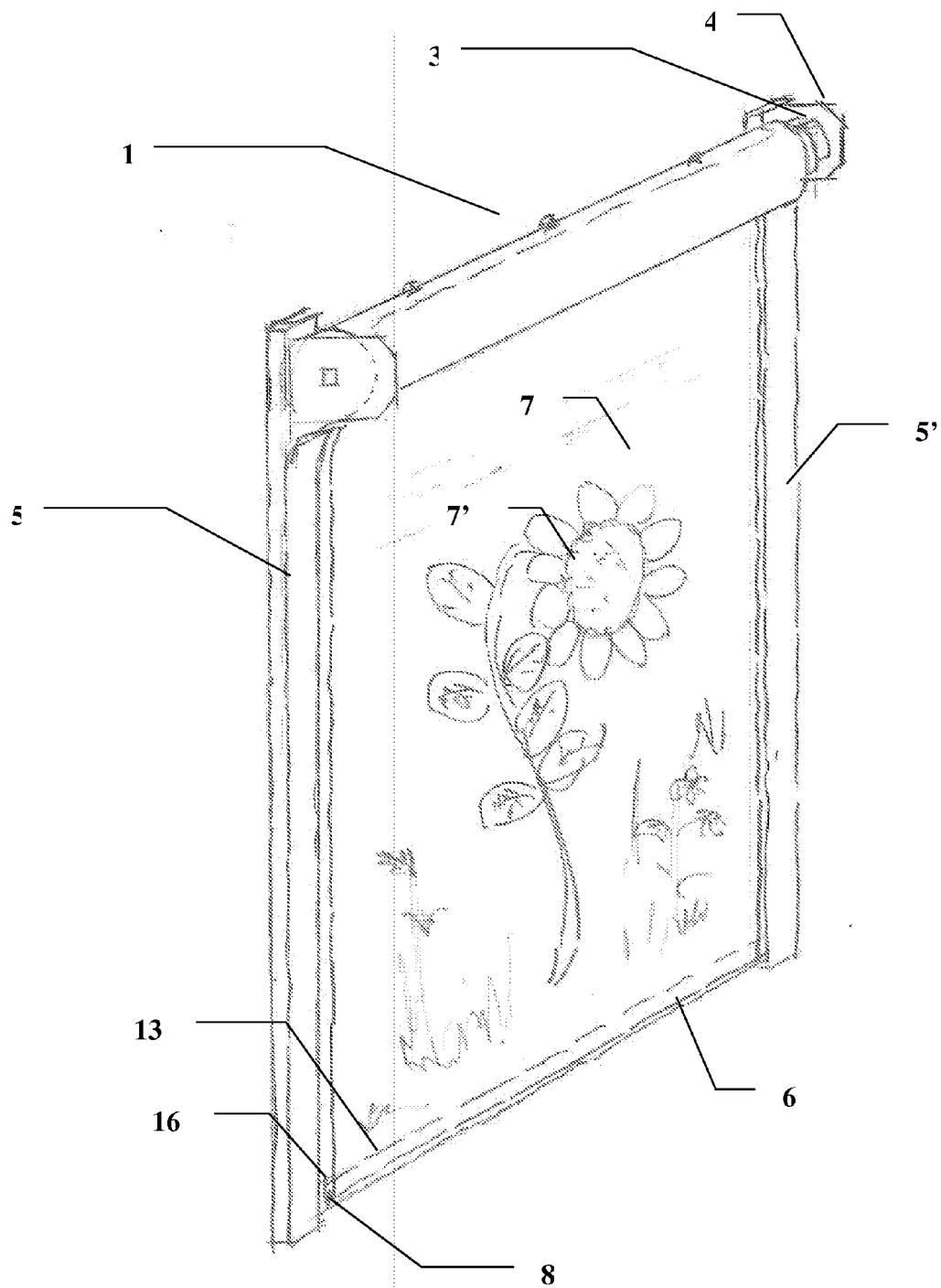
at which between the sheet and the screen there is at least one mutual connection at the lower edge areas of the sheet when in use, and at which the sheet and the screen in the extended state are arranged as two superposed surfaces, **characterised in that** the sheet at the lower mutual connection forms a suspended fold extending under the mutual

connection, and that a horizontal weight means is provided in the fold or is fastened to the sheet in immediate vicinity of the mutual connection.

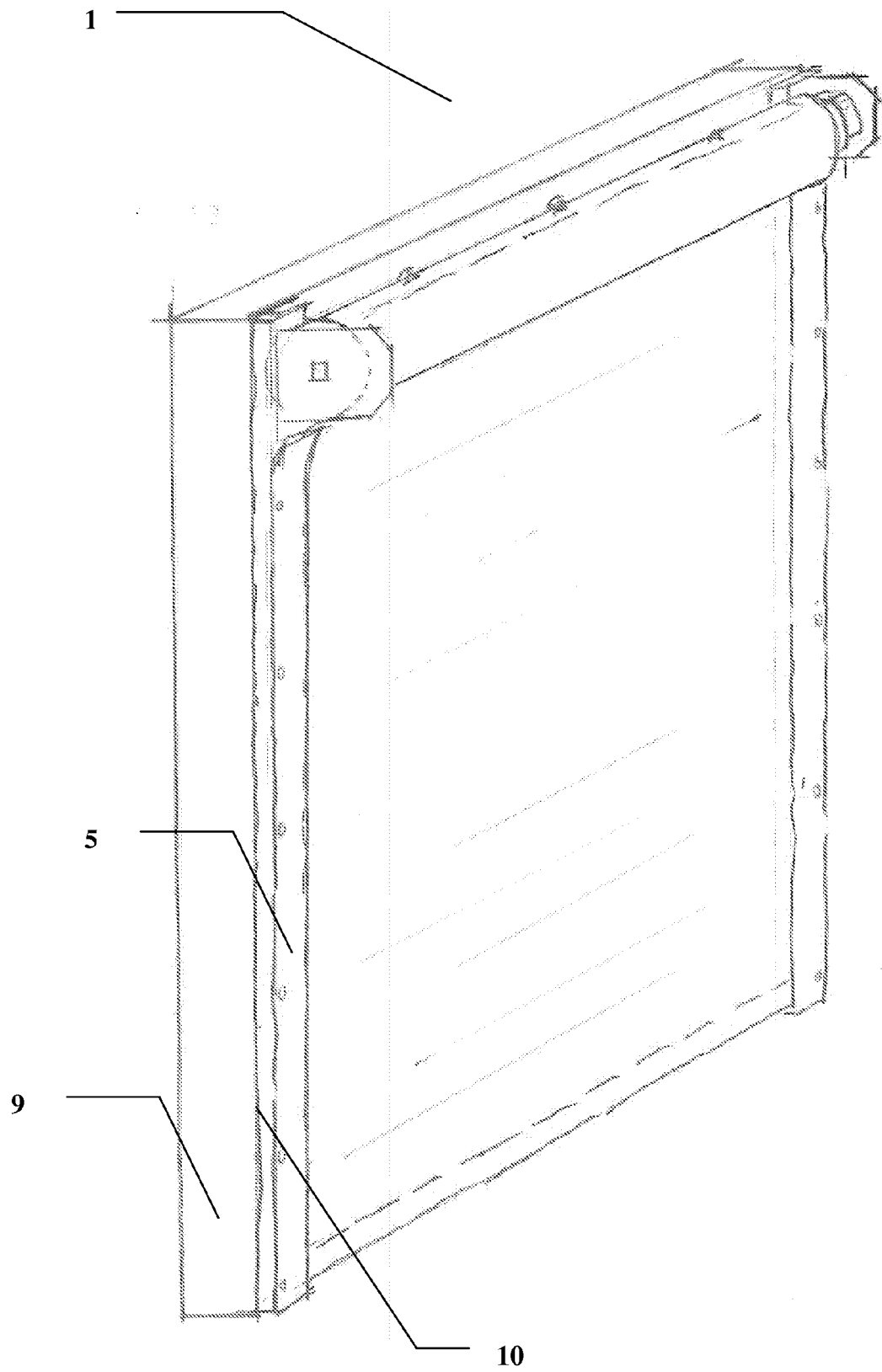
2. System for screening and decorating a building opening according to claim 1, **characterised in that** at least one lamella close to the lower mutual connection has a transverse cutout facing the sheet, with a length and a cross-section which is greater than the length and the cross-section of the weight means fitted on the sheet. 5
10
3. System for screening and decorating a building opening according to claim 1 or 2, **characterised in that** it further includes a box containing the bearing brackets and having an inlet slot which extends between the two bearing brackets and which is aligned with the guide grooves of the guide rails. 15
4. System for screening and decorating a building opening according to any preceding claim, **characterised in that** the upper edge area of the sheet is connected with the screen such that it is rolled up on the core together with the screen. 20
25
5. System for screening and decorating a building opening according to any preceding claim, **characterised in that** the sheet is formed of a material which is substantially inelastic in a direction perpendicular to the lamellae. 30
6. System for screening and decorating a building opening according to any preceding claim, **characterised in that** the sheet has a width which is less than the mutual distance between the two guide rails. 35
7. System for screening and decorating a building opening according to any preceding claim, **characterised in that** a mutual connection is also provided between the sheet and the screen at the upper edge area of the sheet when in use such that the sheet is rolled up on the core together with the sheet. 40
8. System for screening and decorating a building opening according to any of preceding claim 1-6, **characterised in that that** at its upper edge area, the sheet is fastened as rolled up or folded in a bracket separate from the box. 45
9. System for screening and decorating a building opening according to any preceding claim, **characterised in that** the horizontal weight means is formed of a plurality of separate weight means. 50
10. System for screening and decorating a building opening according to any preceding claim, **characterised in that** the horizontal weight means is provided as a cylindric rod disposed loosely in the fold. 55



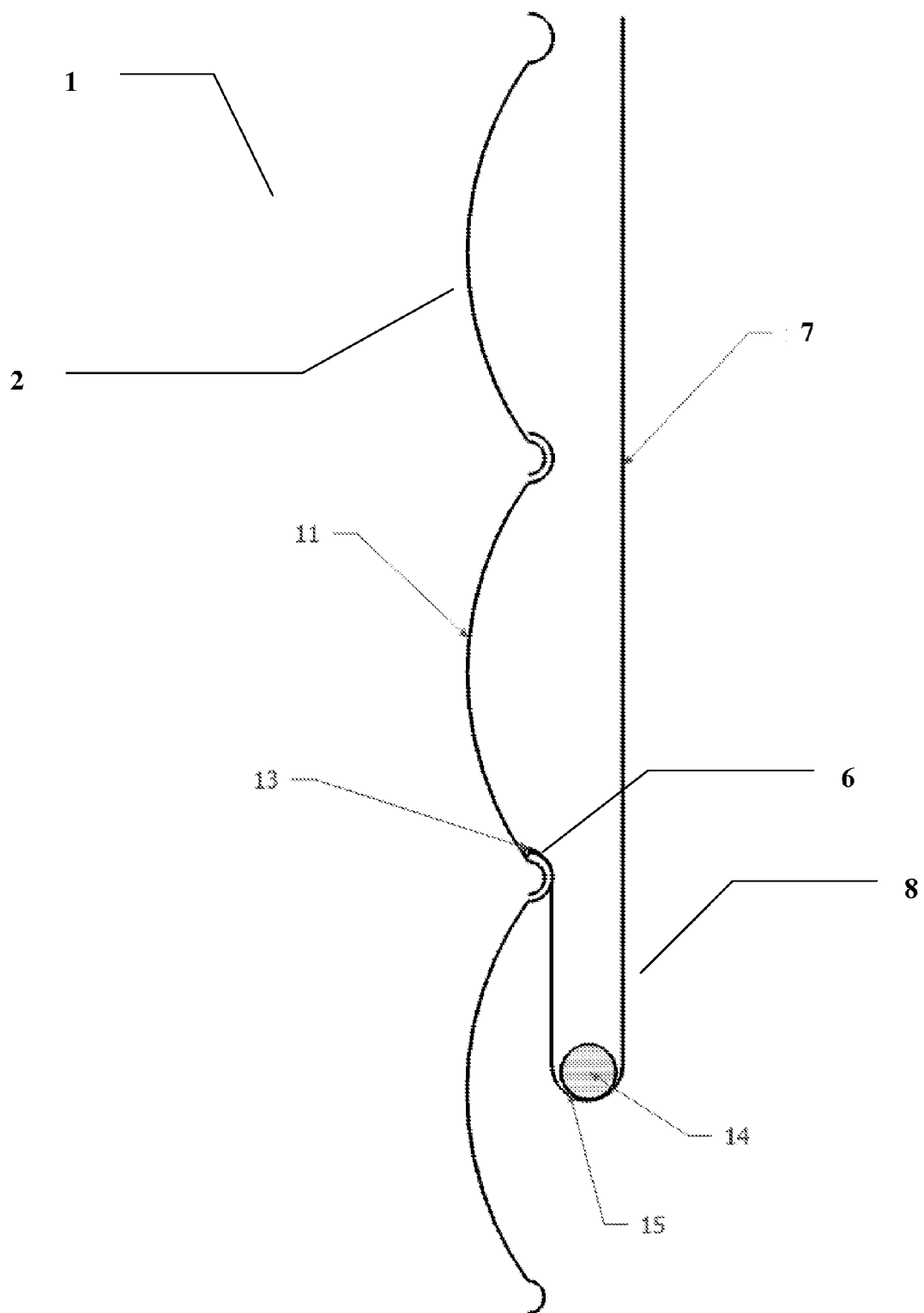
Figur 1



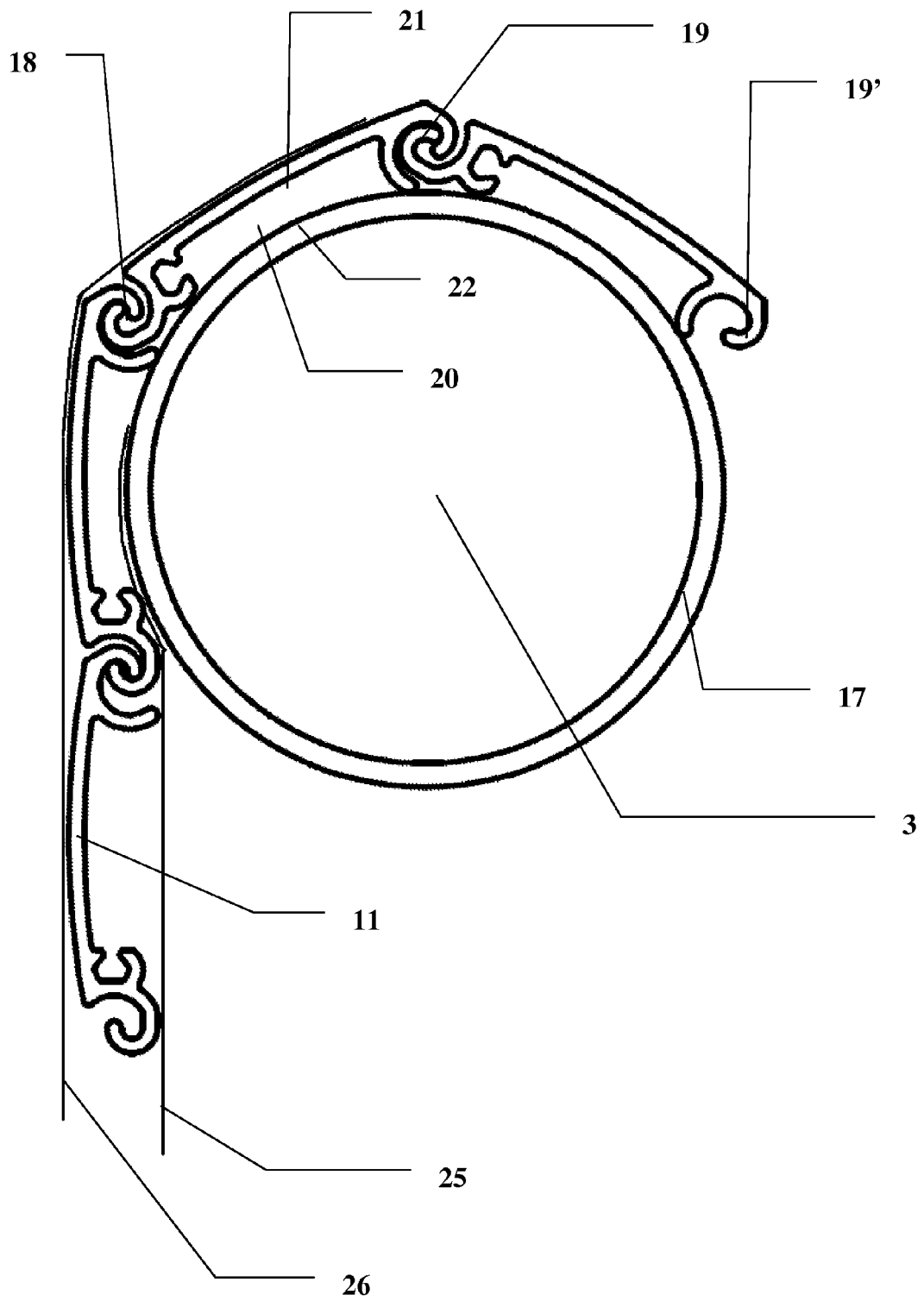
Figur 2



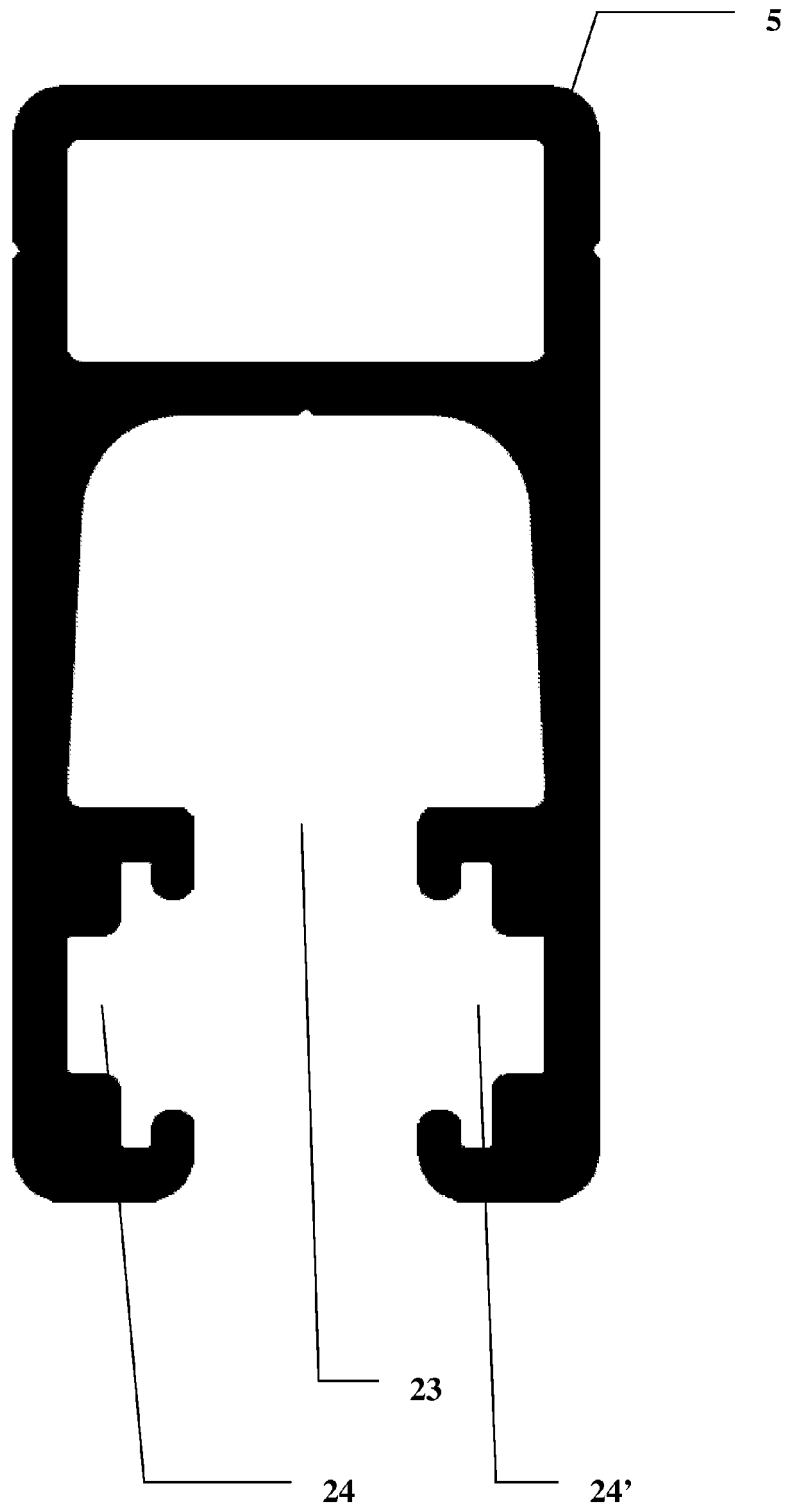
Figur 3



Figur 4



Figur 5



Figur 6

REFERENCES CITED IN THE DESCRIPTION

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