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(54) **Roller screen device**

(57) Described herein is a roller screen device constituted by a fixed sectional element (10) and a mobile sectional element (11) that is able to move parallel to the fixed sectional element inside a frame contained in which is a screen (13), the mobile sectional element (11) bearing a roller (12) inside it, wound on which is the screen (13), which, at the other end, is anchored to the fixed sectional element (10). Guide elements (14 and 24) for guiding the mobile sectional element (11) are positioned at the top and at the bottom of the screen (13) and fixed at one end of their own to the mobile sectional element (11), whilst the other ends of the guide elements (14) slide into the fixed sectional element (10). Moreover provided is a system for tensioning the guides (14 and 24), which acts during the steps of opening and closing of the screen (13). The tensioning system consists of a thread (20), which extends starting from the end (21) of the top guide (14) that slides in the fixed sectional element (10) towards and around a bottom roller (22) and from here to the end (23) of the bottom guide (24), which slides in the fixed sectional element (10), to proceed to and around a top roller (25) and from here to the end (21) of the top guide (14) so closing to form a loop.

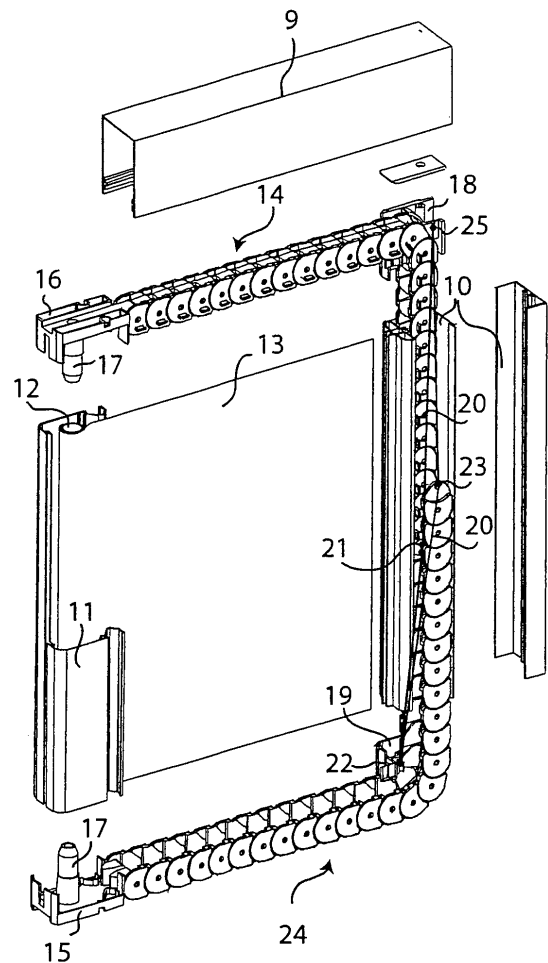


Fig. 1

Description

[0001] Roller screen devices, in which the screen is, for example, a mosquito net, are devices in which the screen is wound on a roller carried by a vertical sectional element fixed to the frame and is fixed, at its free end, to the sectional element, which slides by being pulled manually for opening and closing the screen itself.

[0002] In addition, the systems for guiding the screen so that it opens and closes slide inside the other sectional element, the one that is translated manually to open and close the screen.

[0003] A typical example of the above embodiment is represented by the screen described in the patent No. EP-1,333,148.

[0004] The present invention proposes a solution in which, instead, set in the mobile sectional element is the roller around which the screen winds, and sliding in the fixed sectional element are the systems for guiding the screen.

[0005] One of the advantages of the above solution lies in the fact that, in this way, it is possible to set and move conveniently in the fixed sectional element all the sliding systems of the screen in so far as the screen, when it is wound up, comes to occupy, with extremely limited encumbrance, the sectional element that slides when pulled manually.

[0006] It is evident that a solution in which the movement systems are located in a fixed part of the device, whilst the roller for winding the screen can even remain conveniently in the sliding sectional element proves to be very reliable, with the further advantage that the latter sectional element, since it carries the winding roller and not the movement system, is of very small overall dimensions with consequent advantages also from an aesthetic point of view. Furthermore, thanks to the fact that the winding roller is mounted in the mobile sectional element, the device according to the invention enables provision of assembly kits that can be easily used even by non-skilled persons, such as, for example, the end user, who in an extremely simple way will be able to construct the screen with the desired dimensions or to replace a screen that has worn out without any difficulty.

[0007] For the above and further purposes that will be understood more fully hereinafter, the purpose of the invention is to provide a roller screen device constituted by a fixed sectional element and a mobile sectional element that is able to move parallel to the fixed sectional element inside a frame contained in which is a screen, the mobile sectional element bearing a roller inside it, wound on which is the screen, which, at the other end, is anchored to the fixed sectional element; elements for guiding the mobile sectional element are positioned at the top and at the bottom of the screen and fixed at one end of their own to the mobile sectional element, whilst the other ends of the guide elements slide into the fixed sectional element; moreover provided is a system for tensioning the guides, which acts during the steps of opening

and closing of the screen; the device is characterized in that the tensioning system consists of a thread, which extends starting from the end of the top guide that slides in the fixed sectional element towards and around a bottom roller and from here to the end of the bottom guide, which slides in the fixed sectional element, to proceed to and around a top roller and from here to the end of the top guide so closing to form a loop.

[0008] The invention will now be described with reference to the attached plates of drawings, in which:

- Figures 1 and 2 are, respectively, an exploded perspective view and an exploded front view of the device according to the invention;
- Figures 3 and 4 each illustrate in two different views two details of the device according to the invention; and
- Figures 5 and 6 illustrate two variant embodiments of details of the device according to the invention.

[0009] The screen has a fixed sectional element 10 and a mobile sectional element 11. The latter bears an internal roller 12, wound on which is the screen 13, which, at the other end, is anchored to the fixed sectional element 10.

[0010] Guide elements 14 and 24 are positioned at the top and at the bottom and fixed at one end of their own to respective end pieces 15 and 16, which are provided with pins 17, which slide with interference into the bottom and top ends of the roller 12. The other ends of the guide elements 14 pass through the end pieces 18 and 19 of the fixed sectional element 10 and slide into the latter.

[0011] The guides 14 slide in a guide 9 carried by the frame and are sized in such a way that they slide into one another in order to reduce further the overall dimensions.

[0012] Each top guide element 14 and bottom guide element 24 (see Figures 3 and 4) is made up of bodies 30 hinged to one another and formed by side walls 31 joined by cross members 32.

[0013] According to a variant embodiment illustrated in Figure 5, the inside of the top guide 9 within which the bodies 30 slide is provided with lateral brushes 40 and top brushes 41. The lateral ones, which press against the walls 31 of the bodies 30 have the task of maintaining the latter in a rectilinear position during sliding during opening and closing of the mosquito net, whilst the top one 41 has the task of preventing any sticking of the bodies 30 against the guide 9 once again during sliding.

[0014] Moreover provided is a system for tensioning the guides 14 and 24, which acts during the steps of opening and closing of the screen 13.

[0015] The above system consists of a thread 20, entirely contained in the fixed sectional element 10, which extends starting from the end 21 of the top guide 14 towards and around a bottom roller 22 of the end piece 19 and from here to the end 23 of the bottom guide 24, and then proceeds towards and around a top roller 25 of the

end piece 18 and from here to the end 21 of the top guide 14, so closing to form a loop.

[0016] In this way, the assembly proves extremely compact and functional. It may be noted, in particular, that the hinges on the rollers 22 and 25 are made one, in 22, inside between the guides 14 and 24 and the screen 13, whilst the other, in 25, is immediately outside of the guide 14 but within the vertical overall dimensions of the guide 24. This determines a high compactness of the tensioning system to advantage of the reduced dimensions of the sectional element 10 in which the system is located.

[0017] According to a first embodiment illustrated in Figure 4, the bottom guide 24 is advantageously provided with brushes that extend inwards penetrating into the meshes of the screen to prevent the latter from coming out of the guide itself in the case of wind or excessive pressure exerted on the screen 13 itself.

[0018] The brushes will be applied to the ends of appendages 33 set in front of one another of the elements 30 that form the bottom guide so that the bottom of the screen will be set inserted between the screens of the entire guide.

[0019] According to a variant embodiment illustrated in Figure 6, the bottom guide 34 is even more advantageously provided with coaxial rigid stalklike projections 42, which extend inwards from the elements 30 that form the bottom guide 24 so as to slide into the meshes of the screen in order to prevent the latter from coming out of the guide itself in the case of wind or excessive pressure exerted on the screen 13 itself.

[0020] The solution provided by the stalklike projections 42 has proven more valid than that of the brushes in so far as it is more rigid and more solid and hence more resistant even in the case of quite a strong wind.

[0021] Since the end pieces 16 and 15 are readily removable and the screen 13 is simply slid into the purposely provided seat of the roller 12, it is very simple to detach the top end piece 16 and slide out the roller 12 with the screen 13, after disengaging the latter from its constraint to the fixed sectional element 10. In this way the screen can be readily replaced with a new one.

[0022] The assembly kit will envisage the sectional element 11 with the roller 12 and the screen 13 wound on the roller.

[0023] The manufacturer will not even have to provide screens 13 of various sizes since the task of cutting the screen 13 to the right size in height according to the dimensions of the device on which it is to be mounted will be left to the user or the installer. The rest of the operation, i.e., remounting of the end piece 16, is extremely simple and within the reach of any person.

[0024] In this way, it is simple to provide assembly kits proper, and anybody can use them without any difficulty.

[0025] Finally, given the complete modularity of the device, the latter may even not be fixed to a wall but can slide from one part to the other within a window opening of large dimensions. In addition, it can be coupled to other

mosquito nets of the same type to form a set of a number of mosquito nets that can all slide within a large window opening.

Claims

1. A roller screen device constituted by a fixed sectional element (10) and a mobile sectional element (11) that is able to move parallel to the fixed sectional element inside a frame contained in which is a screen (13); the mobile sectional element (11) bearing a roller (12) inside it, wound on which is the screen (13), which, at the other end, is anchored to the fixed sectional element (10); guide elements (14 and 24) for guiding the mobile sectional element (11) being positioned at the top and at the bottom of the screen (13) and fixed at one end of their own to the mobile sectional element (11), whilst the other ends of the guide elements (14) slide into the fixed sectional element (10); there being moreover provided a system for tensioning the guides (14 and 24), which acts during the steps of opening and closing of the screen (13); said device being **characterized in that** the tensioning system consists of a thread, which extends starting from the end (21) of the top guide (14) that slides in the fixed sectional element (13) towards and around a bottom roller (22) and from here to the end (23) of the bottom guide (24), which slides in the fixed sectional element (10), to proceed to and around a top roller (25) and from here to the end (21) of the top guide (14) so closing to form a loop.
2. The device according to Claim 1, **characterized in that** guide elements (14 and 24) are fixed at one end of their own to the mobile sectional element (11) in so far as they are fixed to respective end pieces (15 and 16) provided with pins (17) that slide with interference in the top and bottom ends of the roller (12).
3. The device according to Claim 1, **characterized in that** each guide element is made up of bodies (30) hinged to one another and made up of lateral walls (31) joined by cross members (32).
4. The device according to Claim 1, **characterized in that** the guides (14 and 24) are sized in such a way that they slide inside one another in the fixed sectional element (10).
5. The device according to Claim 2, **characterized in that** the hinges on the rollers (22 and 25) are provided one, in (22), on the inside between the guides (14 and 24) and the screen (13), whilst the other, in (25), is immediately outside of the guides (14 and 24).
6. The device according to Claim 1, **characterized in**

that the bottom guide (24) is provided with brushes that extend inwards penetrating into the meshes of the screen to prevent the latter from possibly coming out of the guide itself.

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7. The device according to Claim 1, **characterized in that** the bottom guide (24) is provided with coaxial rigid stalklike projections (42), which extend inwards from the bodies (30) that form the bottom guide (24) so as to slide into the meshes of the screen to prevent the latter from coming out of the guide itself.

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8. The device according to any one of Claims 1 to 3, **characterized in that** the bodies (30) of the top guide (14) slide within a fixed sectional element (9), which is provided inside with lateral brushes (40) and a top brush (41), where the lateral ones press against the walls (31) of the bodies (30), whilst the top one (41) presses at the top on the bodies (30).

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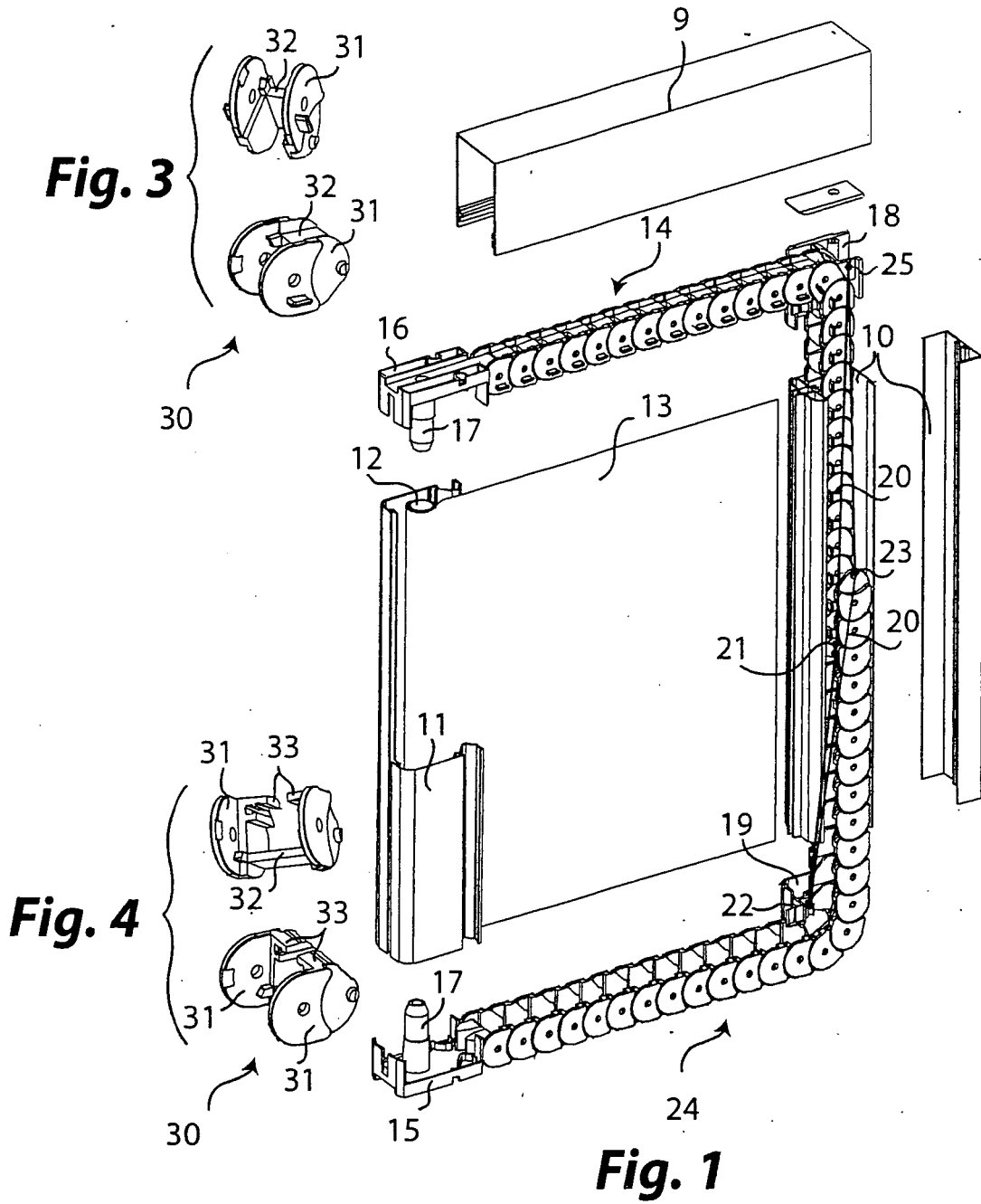
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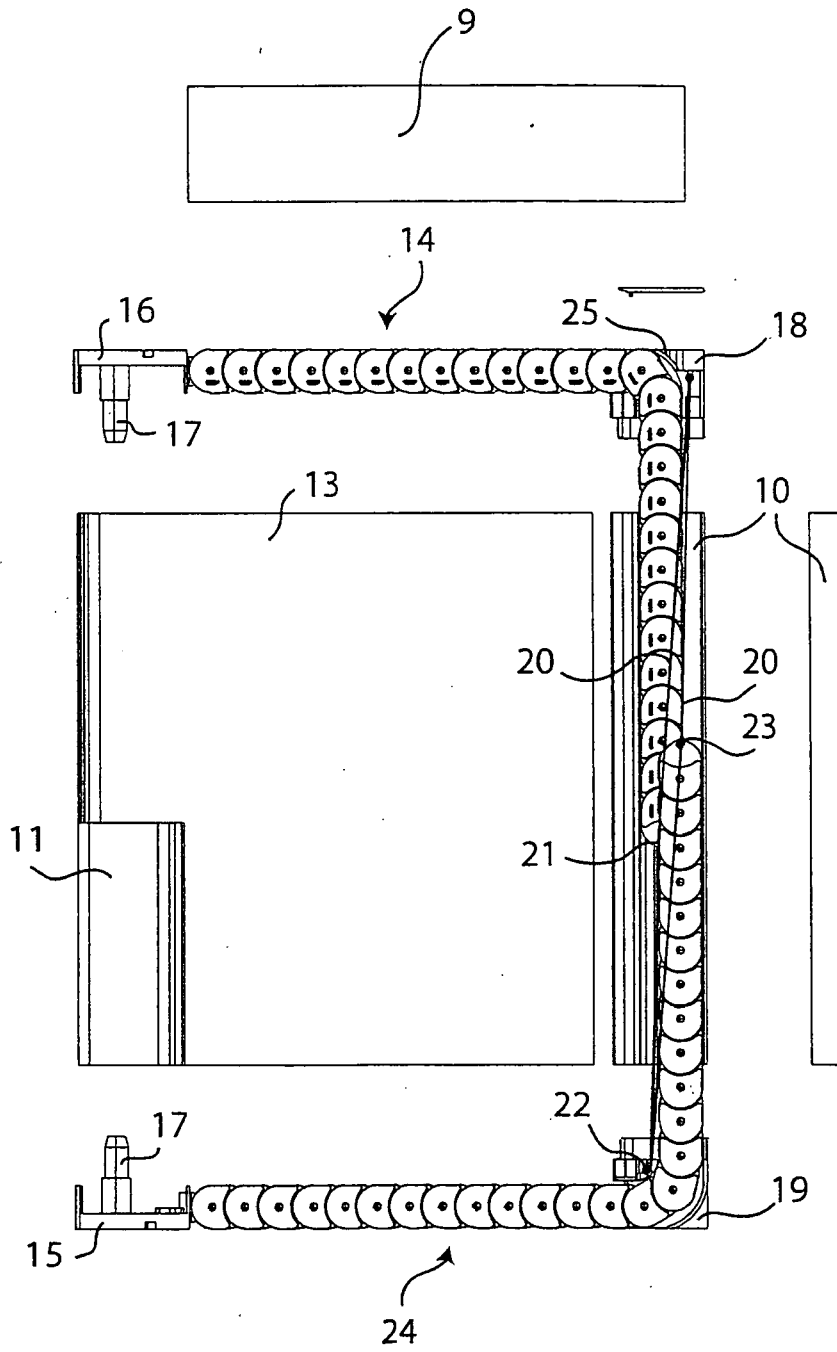


Fig. 2

Fig 5

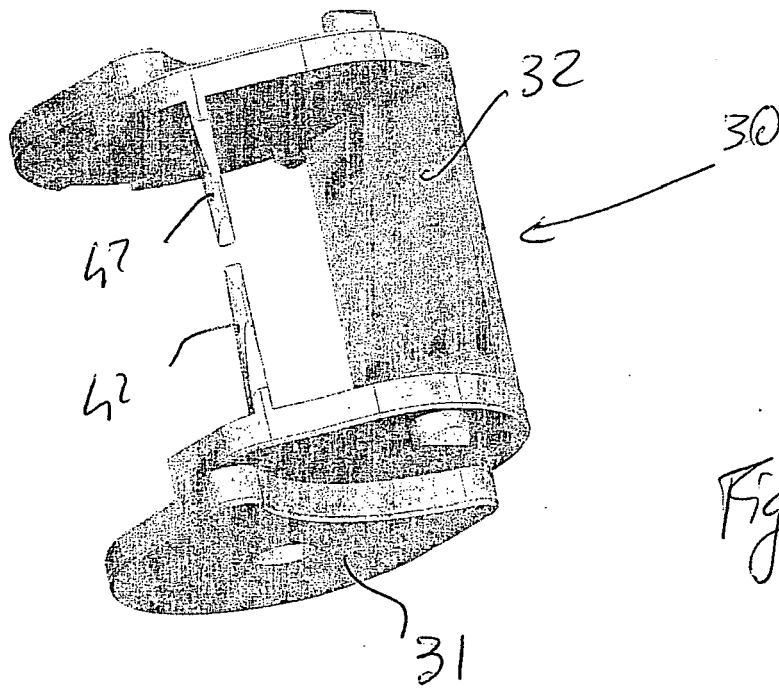
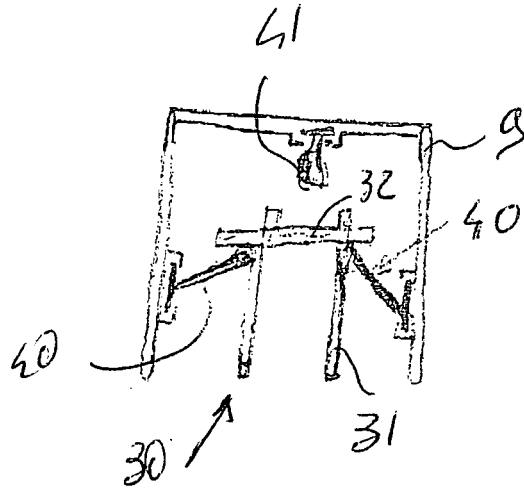


Fig 6

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP 1333148 A [0003]