(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 2 299 047 A2**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
**23.03.2011 Bulletin 2011/12**

(51) Int Cl.:
***E06B 9/54*** *(2006.01)*

(21) Application number: **10175924.9**

(22) Date of filing: **09.09.2010**

(84) Designated Contracting States:
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR**
Designated Extension States:
**BA ME RS**

(30) Priority: **10.09.2009 IT FI20090196**

(71) Applicant: **FAP S.r.l.**
**50142 Firenze (IT)**

(72) Inventor: **Ermini, Massimo**
**50139 Firenze (IT)**

(74) Representative: **Gervasi, Gemma et al**
**Notarbartolo & Gervasi S.p.A.**
**Corso di Porta Vittoria 9**
**20122 Milano (IT)**

(54) **Sliding guide for horizontal sliding screens**

(57) There is described a guide that allows sliding of foldable/unfoldable horizontal screens guaranteeing the rigidity required.

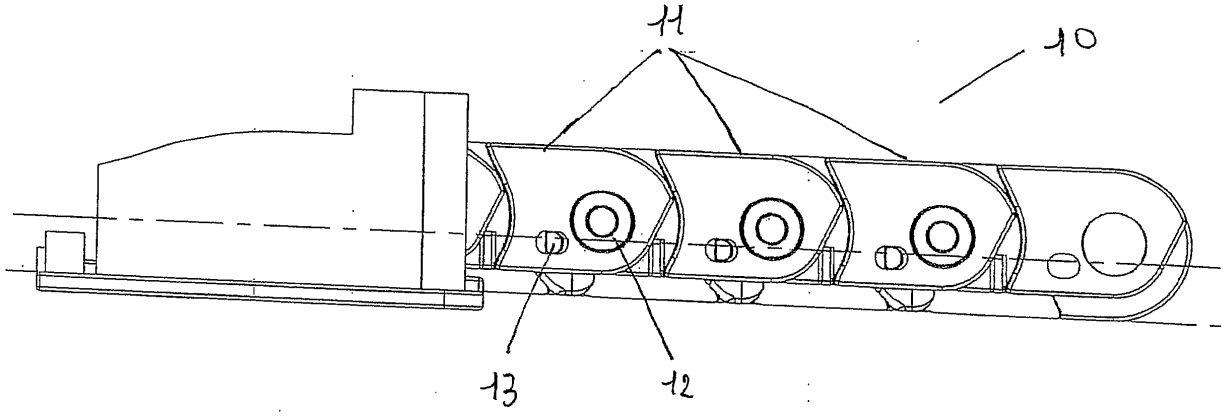



Fig. 1

EP 2 299 047 A2

## Description

### FIELD OF THE INVENTION

**[0001]** The present invention relates to the field of sliding screens.

### STATE OF THE ART

**[0002]** For closing doors or window there are often used screens consisting essentially of a frame (which is fitted to the opening to be protected by means of appropriate fastening means, optionally removable) and of a curtain capable of sliding from one side to the other of the frame through appropriate tension and return means present in or on this frame, closing the opening.

**[0003]** A typical example of screens of this type are insect screens in which the curtain consists of a fabric (or similar material) with a very dense weave which is thus capable of preventing insects from entering through the door or window to which the screen is fitted.

**[0004]** Sliding of the curtain can take place either vertically (from the top downward and vice versa) or horizontally (from right to left or vice versa), normally the curtain is pleated in a manner such as to minimize the overall dimension in the closing step. Recently, "foldable/unfoldable" horizontal sliding screens of the aforesaid type have become available, in which the frame consists of two parallel uprights joined to each other through two flexible rails which in closed position are housed inside one of the two uprights positioned side by side, while in open position they consist of the other two sides of the frame; the curtain is connected to the uprights with two of its parallel sides while the other two sides can slide in the groove of the rails.

**[0005]** Said flexible rails consist of a plurality of rigid bodies placed in sequence one behind the other and in which one rigid body partially overlaps the adjacent body; said rigid bodies are capable of rotating partially with respect to one another, being endowed of a pin placed in the front part capable of engaging in a respective slot arranged in the back part of each rigid body in a manner such as to allow said partial upward or downward rotation of two adjacent bodies (see, for example, EP 999335).

**[0006]** This solution is very practical as it permits the curtain to be kept correctly tensioned without requiring to install fixed guides and/or rails, which would get in the way when the screen is retracted; however, they have the drawback of not being sufficiently rigid and therefore are not completely satisfactory.

### SUMMARY OF THE INVENTION

**[0007]** The present invention relates to a horizontally sliding screen in which the sliding guide remains rigid during the step to open or close the screen.

### BRIEF DESCRIPTION OF THE FIGURES

**[0008]**

Fig. 1 schematically shows a guide according to the invention.

Fig. 2 shows in particular a unit constituting the guide according to Fig. 1.

Fig. 3 shows the operation of freeing the units forming the guide.

### DETAILED DESCRIPTION OF THE INVENTION

**[0009]** The present invention overcomes the aforesaid problems through a sliding guide for horizontal sliding screens consisting of a plurality of rigid bodies presenting engaging means that permit reciprocal engaging and locking.

**[0010]** As can be seen in Fig. 1, a guide according to the invention consists of a plurality of rigid bodies 11 which present an engaging means that allows at least partial reciprocal rotation thereof, and a second engaging means which, when active, blocks any movement between said rigid bodies.

**[0011]** Said rigid bodies (see Fig. 2) consist of two parallel walls 14, the front and back of which is essentially round, said walls 14 being joined between each other by a plane 15 perpendicular to said walls.

**[0012]** Each of the two walls 14 is formed by two surfaces 16, 17 joined between each other by a concave step 18; therefore, two portions of surface will be nearer to each other and two more removed from each other (according to the height of the step 18).

**[0013]** The surfaces 16 (the ones nearer to each other) present a circular bulge 19 and one of said surfaces 16 also has a portion 20 capable of elastically moving towards the inside, under the action of a suitable pushing means, and endowed of a pin 21 placed ahead the circular bulge (19).

**[0014]** The surfaces 17 (those more removed from each other) present a circular hole 22 capable of engaging pivoting with the circular bulge 19 of the adjacent rigid body 11, and the surface 17 placed on the same side of the surface 16 presenting the pin 21 also has a second hole 23 capable of engaging in a fixed manner with the pin 21 of the adjacent rigid body and therefore capable of preventing (when inserted) any movement between the rigid bodies; moreover, this surface 17 also presents an external wing 17' capable of sliding for a length along the step 18. The plane 15 of each rigid body 11 presents a step 24, placed in correspondence of the step 18, on which rests the plane 15 of the adjacent rigid body 11.

**[0015]** As can be seen from Fig. 1, the rigid bodies 11 thus interlock in each other reciprocally engaging the bulges 19 and the pins 21 of the one respectively with the holes 22 and 23 of the subsequent rigid body 11.

**[0016]** This forms a rigid chain which, when in tension, cannot bend either upwards or downwards and which

therefore forms an ideal rail for vertical support of the curtain of the screen. Said chain can instead bend when the engaging pin 21 is made free, permitting partial reciprocal rotation of two adjacent rigid bodies 21 around the bulges 19.

**[0017]** For this purpose, on the frame that houses and encloses the closed screen, close to the point of entrance/exit of the chain, a fixed thickness 25 will be present, capable of acting laterally on the pin 21, making it free from the corresponding engaging hole 23, due to the elasticity of the portion 20 with respect to the rest of the surface 16, and permitting bending of the chain; once the pushing action of the thickness 25 ceases, the portion 20 will return to the initial position, engaging the pin 21 once again with the corresponding hole 23.

**[0018]** It is noted in this regard that the presence of the step 18 and of the wing 17' permits rotation of the rigid bodies in only one direction and therefore bending of the chain in its entirety only to one side which offers a further guarantee of rigidity for the screen.

**[0019]** Operation of the guide according to the invention is self evident: by pulling the free upright of the screen towards the outside (or pushing it towards the inside), the chain can respectively exit from or enter the upright that houses it due to the disengaging of the thickness 25 from the various rigid bodies 11 which can thus rotate permitting bending of the chain at the point of entrance/exit of the upright that houses it; once the rigid bodies 11 have moved past the point of the thickness 25 they can once again engage with each other, guaranteeing the chain the rigidity required.

## Claims

1. Sliding guide for horizontal sliding foldable/unfoldable screen, consisting of a plurality of rigid bodies (11) capable of rotating reciprocally, at least partially, and presenting engaging means that, when active, allow the reciprocal engage of said rigid bodies preventing any reciprocal rotation wherein said rigid bodies (11) consist of two parallel walls (14), the front and back of which is essentially round, said walls (14) being joined between each other by a plane (15) perpendicular to said walls and being formed by two surfaces (16, 17) joined between each other by a concave step (18) **characterised in that** said surfaces (16), which are the ones nearer to each other, present a circular bulge (19), and one of said surfaces (16) has a portion (20) capable of elastically moving towards the inside, under the action of a suitable pushing means, and equipped with a pin (21) placed ahead of the circular bulge (19).

2. Sliding guide according to claim 1 wherein the surfaces (17), which are those more removed from each other, present a circular hole (22) capable of engaging pivoting with the bulge (19) of the adjacent rigid body (11), and the surface (17) placed on the same side of the surface (16) presenting the pin (21) has a second hole (23) capable of engaging with said pin (21).

3. Sliding guide according to Claim 2 wherein the plane (15) presents a step (24), placed in correspondence of the step (18), on which rests the plane (15) of the adjacent rigid body (11).

4. Sliding foldable/unfoldable screen comprising a guide according to Claims 1 - 3 wherein the upright housing the curtain, near to the entrance of the guide, is present a fixed thickness (25), capable of acting on the pin (21) making it free from the corresponding engaging hole (23) and permitting rotation of two adjacent rigid bodies and consequently bending of the guide.

5. Sliding foldable/unfoldable screen according to Claim 4 wherein said screen is an insect screen.

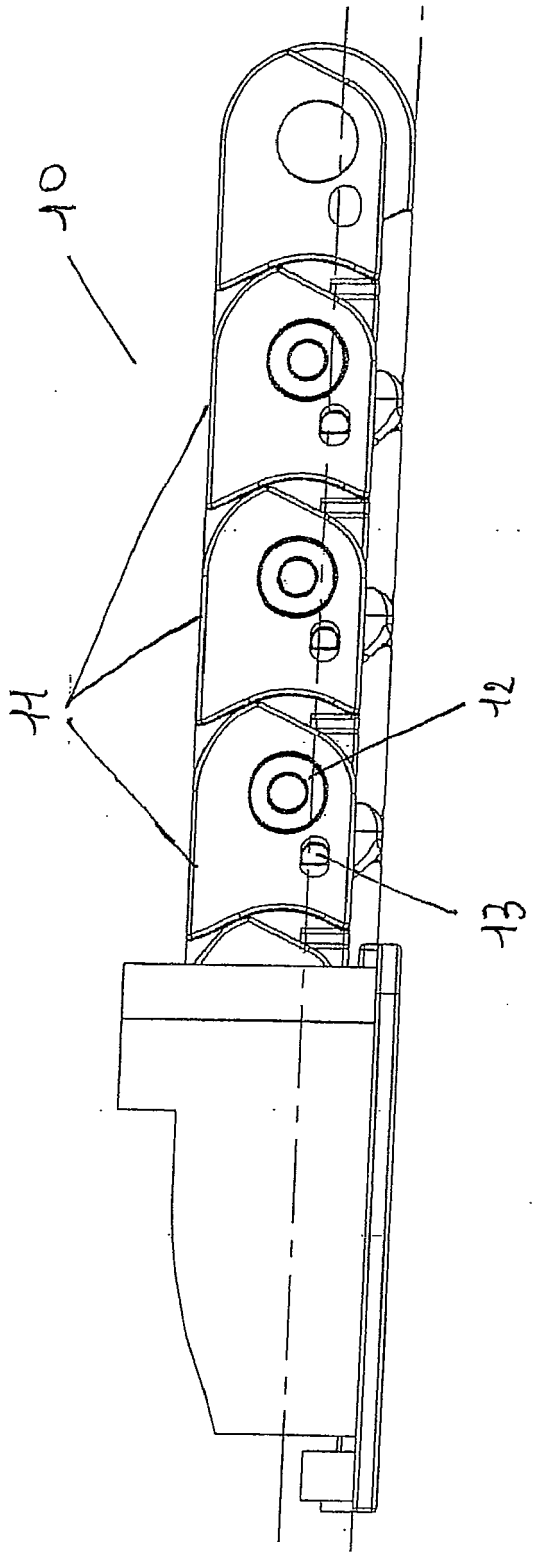
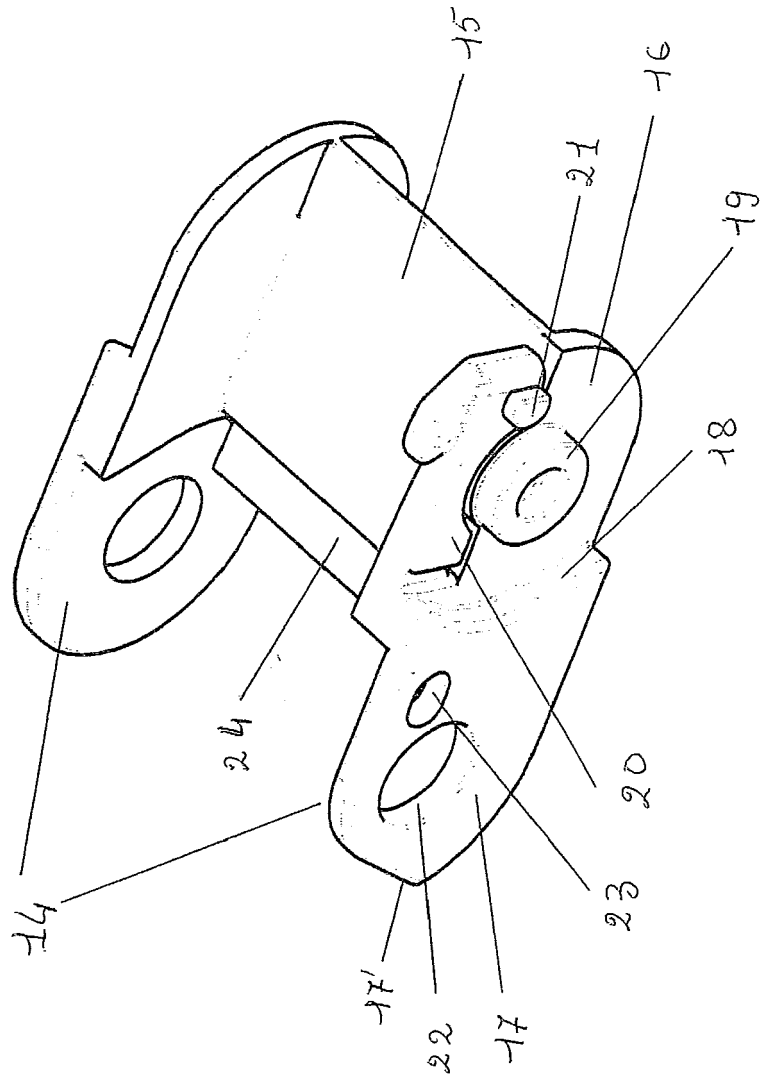



Fig. 1

Fig. 2



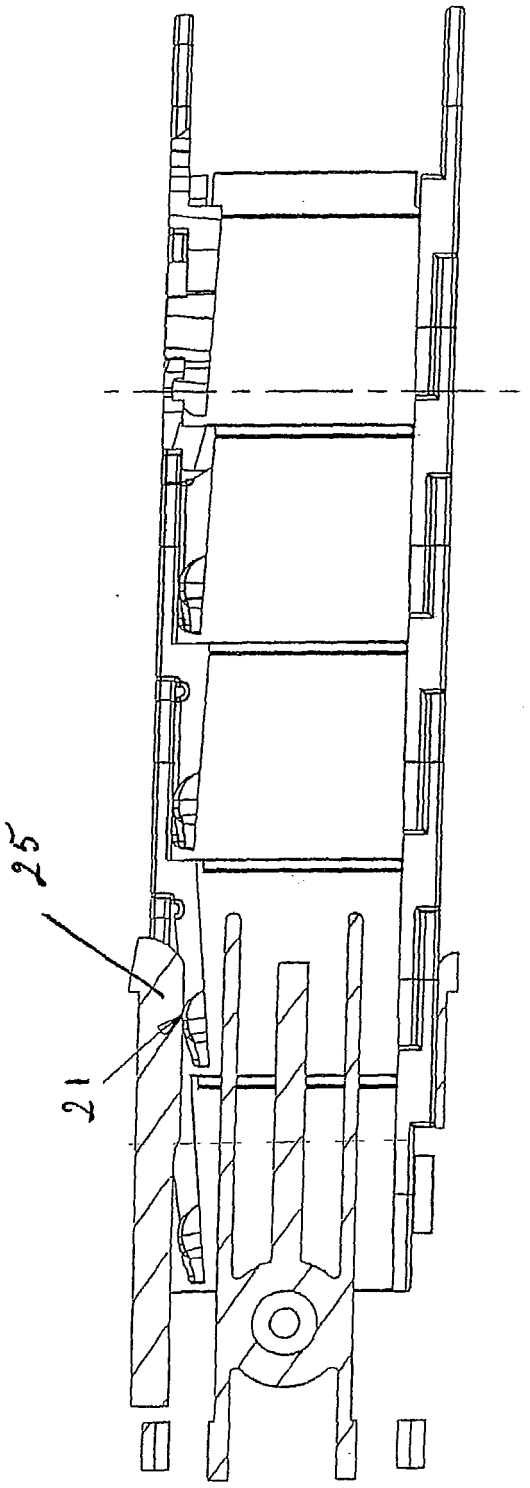



Fig. 3

## REFERENCES CITED IN THE DESCRIPTION

*This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.*

### Patent documents cited in the description


- EP 999335 A **[0005]**