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(54) **TOOL-FREE RAPID
ASSEMBLY/DISASSEMBLY SLIDE RAIL
DEVICE**

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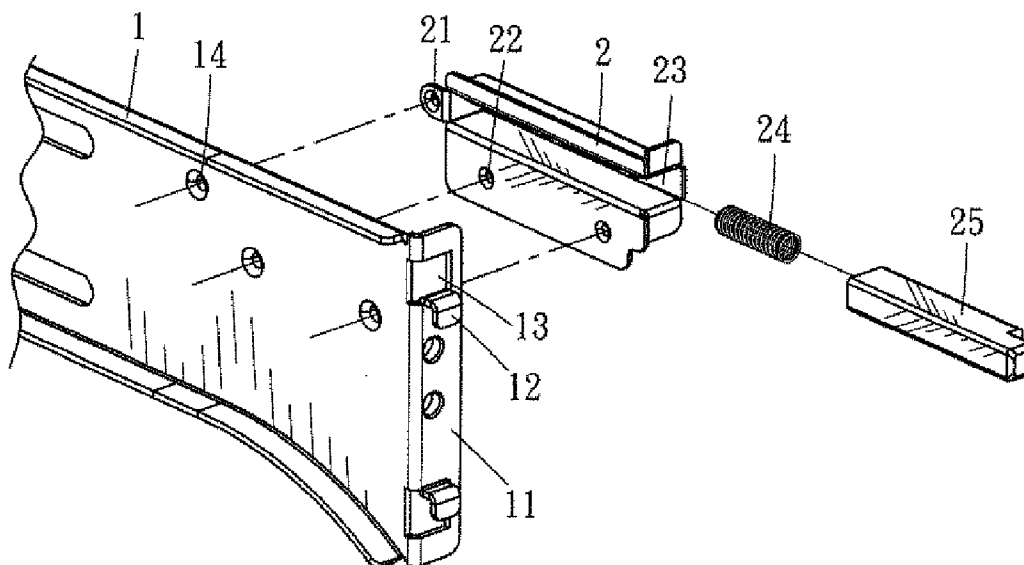
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(57) **ABSTRACT**

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A tool-free rapid assembly/disassembly slide rail device is characterized in that a slide rail has an end provided with a bent section formed with a plurality of hooks and a plurality of openings, each of the openings being adjacent to a corresponding one of the hooks, and the slide rail further has a resilient slide pin located corresponding to one of the openings of the slide rail. Engagement of the hooks and locking and unlocking of the slide pin allow tool-free rapid assembly and disassembly of the slide rail device.

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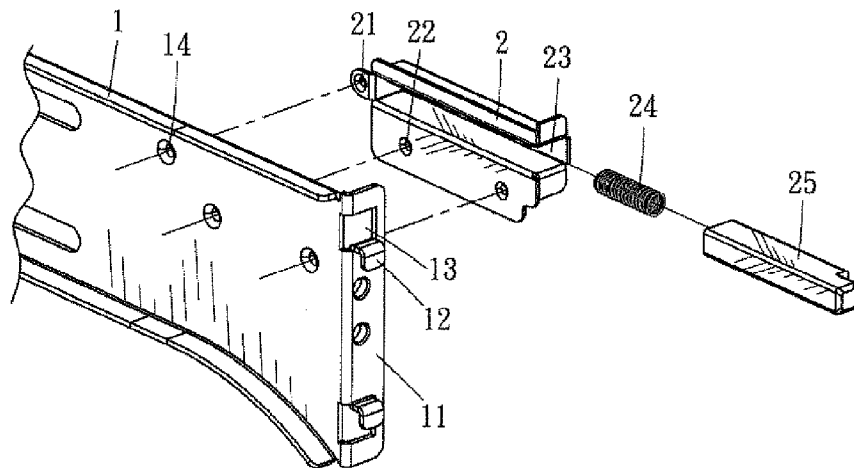


Fig. 1

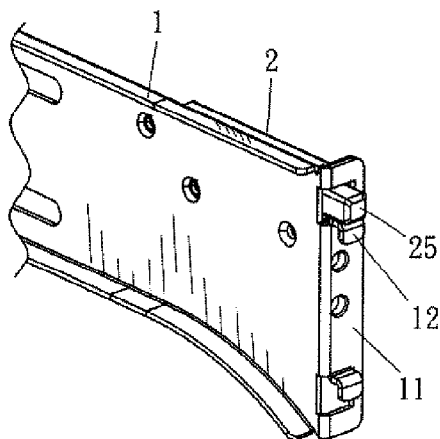


Fig. 2

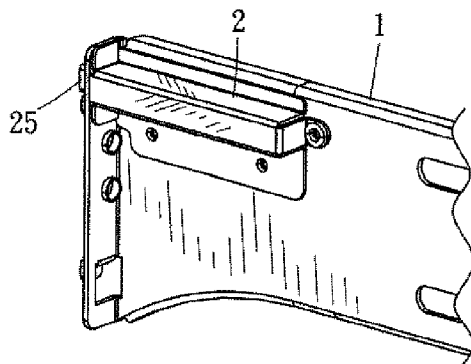


Fig. 3

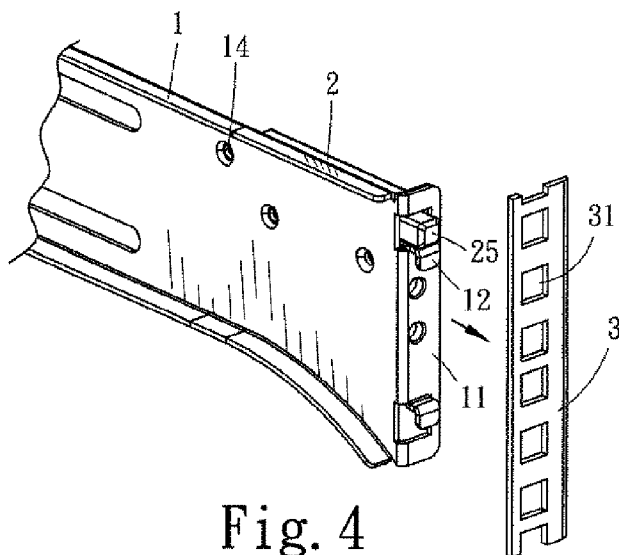


Fig. 4

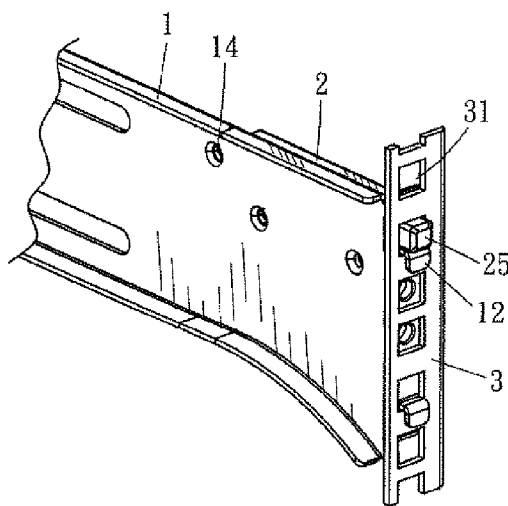


Fig. 5

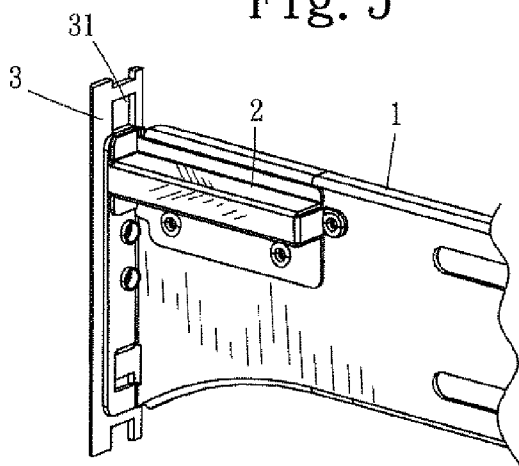


Fig. 6

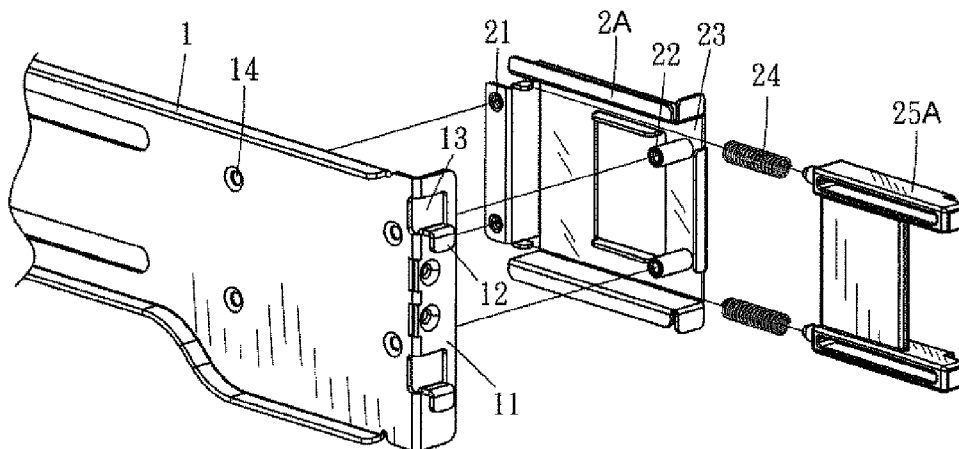


Fig. 7

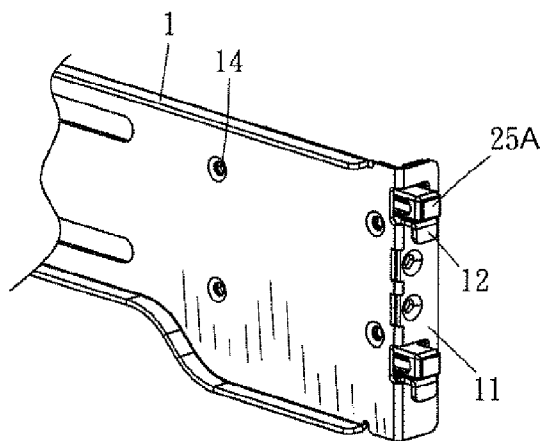


Fig. 8

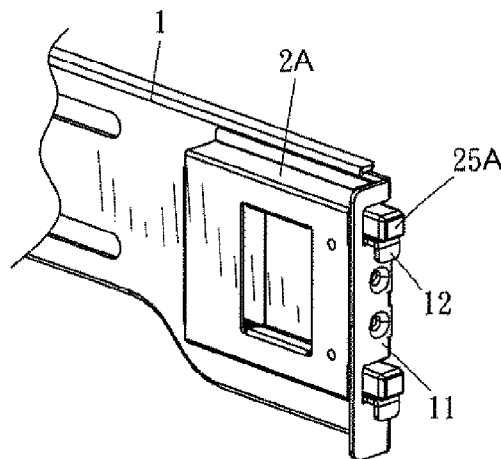


Fig. 9

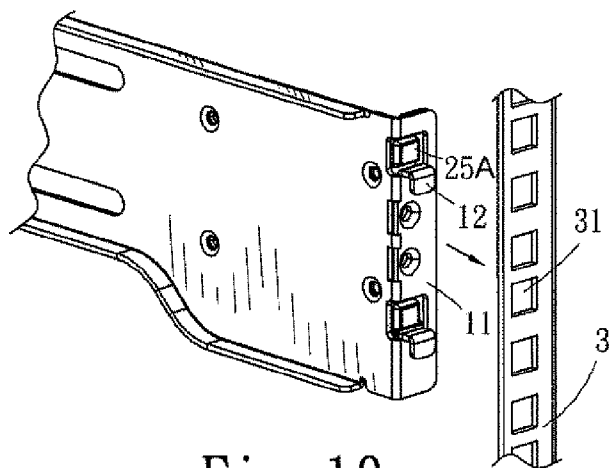


Fig. 10

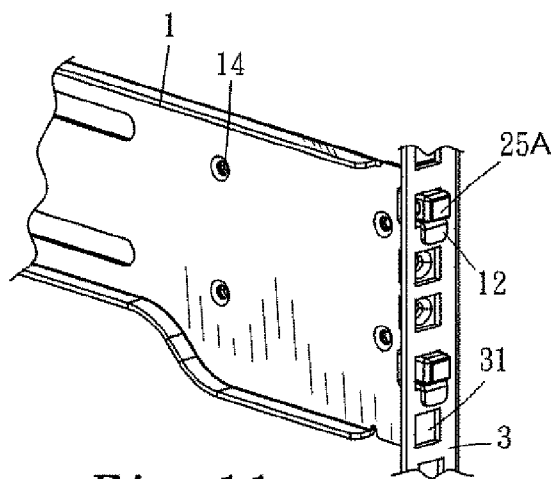


Fig. 11

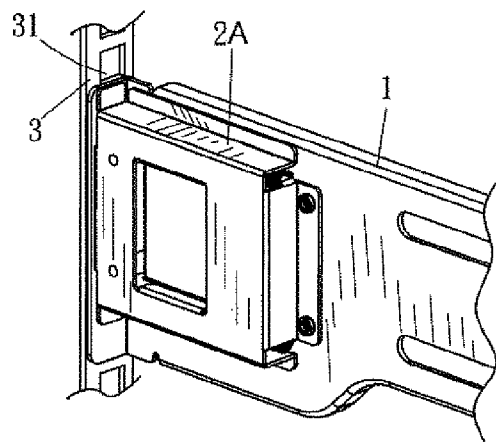


Fig. 12

**TOOL-FREE RAPID
ASSEMBLY/DISASSEMBLY SLIDE RAIL
DEVICE**

BACKGROUND OF THE INVENTION

[0001] 1. Technical Field

[0002] The present invention relates to a slide rail device, and more particularly, to a tool-free rapid assembly/disassembly slide rail device, wherein a slide rail has an end provided with a bent section formed with a plurality of hooks and a plurality of openings, each of the openings being adjacent to a corresponding one of the hooks, and the slide rail further has a resilient slide pin located corresponding to one of the openings of the slide rail, so that engagement of the hooks and locking and unlocking of the slide pin allow tool-free rapid assembly and disassembly of the slide rail device.

[0003] 2. Description of Related Art

[0004] Slide rails can be used in numerous situations and with various devices. More particularly, slide rails are used to couple different devices into a same chassis, so that the devices can be easily drawn out from the chassis for maintenance, expansion, or replacement of the devices themselves or components thereof. Typically, slide rails are used with computer equipment, such as the server chassis of an industrial computer, and with audio equipment, such as the main chassis of an audio system. Besides, slide rails are also used with electrical and medical equipment to facilitate drawing out of related devices.

[0005] Taking the conventional slide rails for a computer server or an industrial computer for example, the slide rails generally comprise a set of length-adjustable inner and outer slide rails, each having a bent section formed at an outer end thereof. The slide rails are fixed on a front slide rail post and a rear slide rail post of a chassis, respectively, via the bent sections. In addition, the inner slide rail has an inner side formed with a slide groove for receiving a corresponding slide plate fixed bilaterally on the industrial computer, so that the industrial computer can be slid into and drawn out of the chassis along the slide rails.

[0006] The conventional slide rails for use with computer equipment are fixed on the two slide rail posts of the computer chassis by placing the bent sections adjacent to the slide rail posts and then using screws and nuts to secure the slide rails onto the posts. Therefore, assembly and disassembly of such slide rails is a time-consuming and laborious operation that cannot be done without tools.

BRIEF SUMMARY OF THE INVENTION

[0007] A primary objective of the present invention is to provide a tool-free rapid assembly/disassembly slide rail device characterized in that a user can assemble and disassemble the slide rail device rapidly without using tools.

[0008] To achieve this end, the present invention provides a tool-free rapid assembly/disassembly slide rail device suitable for use in a chassis of computer equipment, electric equipment or medical equipment. The slide rail device is characterized in that a slide rail has an end provided with a bent section formed with a plurality of hooks and a plurality of openings, each of the openings being adjacent to a corresponding one of the hooks, and the slide rail further has a resilient slide pin located corresponding to one of the openings of the slide rail. The hooks can be engaged with rectangular positioning holes on a slide rail post of a chassis, while

the resilient slide pin extends into, and occupies the remaining space of, the corresponding rectangular positioning hole, thereby allowing tool-free rapid assembly and disassembly of the slide rail device.

BRIEF DESCRIPTION OF THE SEVERAL
VIEWS OF THE DRAWINGS

[0009] The invention as well as a preferred mode of use, further objectives and advantages thereof will best be understood by reference to the following detailed description of illustrative embodiments when read in conjunction with the accompanying drawings, wherein:

[0010] FIG. 1 is an exploded perspective view of a first embodiment of the present invention;

[0011] FIG. 2 is a perspective view of the first embodiment of the present invention;

[0012] FIG. 3 is a perspective view of the first embodiment of the present invention from another angle;

[0013] FIG. 4 is a perspective view showing the first embodiment of the present invention not yet connected with a slide rail post having rectangular positioning holes;

[0014] FIG. 5 is a perspective view showing the first embodiment of the present invention connected with the slide rail post having the rectangular positioning holes;

[0015] FIG. 6 is another perspective view showing the first embodiment of the present invention connected with the slide rail post having the rectangular positioning holes;

[0016] FIG. 7 is an exploded perspective view of a second embodiment of the present invention;

[0017] FIG. 8 is a perspective view of the second embodiment of present invention;

[0018] FIG. 9 is a perspective view of the second embodiment of the present invention from another angle;

[0019] FIG. 10 is a perspective view showing the second embodiment of the present invention not yet connected with a slide rail post having rectangular positioning holes;

[0020] FIG. 11 is a perspective view showing the second embodiment of the present invention connected with the slide rail post having the rectangular positioning holes; and

[0021] FIG. 12 is another perspective view showing the second embodiment of the present invention connected with the slide rail post having the rectangular positioning holes.

DETAILED DESCRIPTION OF THE INVENTION

[0022] Referring to FIGS. 1 to 3, a tool-free rapid assembly/disassembly slide rail device according to an embodiment of the present invention comprises a slide rail 1 having an end provided with a bent section 11. The bent section 11 is formed with a plurality of hooks 12 and a plurality of openings 13, each of the openings 13 being adjacent to a corresponding one of the hooks 12.

[0023] The slide rail 1 further has a slide pin base 2 located corresponding to one of the openings 13, wherein the slide pin base 2 is formed with screw holes 21 and 22, so that the slide pin base 2 can be fixed on the slide rail 1 by screws or rivets which pass through the screw holes 21 and 22 and corresponding screw holes 14 on the slide rail 1.

[0024] In addition, the slide pin base 2 has an inner side formed with a receiving groove 23 for accommodating a spring 24 and a slide pin 25 therein. When the slide pin base 2 is fixed on the slide rail 1, an end of the slide pin 25 extends into the corresponding opening 13, which is adjacent to a corresponding hook 12.

[0025] Referring to FIGS. 4 to 6, in order to assemble the slide rail 1 having the slide pin base 2 fixed thereon to a slide rail post 3 having rectangular positioning holes 31, a user can push the slide pin 25 inwards, insert the hooks 12 into corresponding ones of the rectangular positioning holes 31 on the slide rail post 3, and then pull the hooks 12 downwards, so that the slide rail 1 is engaged with the slide rail post 3. Then, by releasing the slide pin 25, the end of the slide pin 25 extends into and fills up the corresponding rectangular positioning hole 31 on the slide rail post 3, thereby preventing the hooks 12 from getting loose.

[0026] When it is desired to detach the slide rail 1 from the slide rail post 3, the user can do so by pushing the slide pin 25 back, so that the slide pin 25 is outside the rectangular positioning hole 31, and then lifting the slide rail 1 up to disengage the hooks 12 from the rectangular positioning holes 31.

[0027] Referring to FIGS. 7 to 12, the slide pin base 2 can be made according to a load-bearing capacity of the slide rail 1 into a parallel connected slide pin base 2A comprising a parallel connected slide pin 25A, so as to provide a proper engaging and positioning effect when the slide rail 1 is under a heavier load.

1. A tool-free rapid assembly/disassembly slide rail device, comprising;

a slide rail having an end provided with a bent section formed with a plurality of hooks, each engageable with a corresponding one of rectangular positioning holes on a slide rail post, and a plurality of openings, each being adjacent to a corresponding one of the hooks;

a slide pin base fixed on the slide rail by a screw or rivet at a location corresponding to one of the openings of the slide rail, wherein the slide pin base has an inner side formed with a receiving groove for accommodating a spring and a slide pin therein, and the slide pin has an end extending into the corresponding opening, which is adjacent to a corresponding one of the hooks.

2. The tool-free rapid assembly/disassembly slide rail device, wherein the slide pin base is made into a parallel connected slide pin base comprising a parallel connected slide pin, so as to provide a proper engaging and positioning effect when the slide rail is under a heavier load.

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