US 20080036347A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0036347 A1**

Liang (43) **Pub. Date: Feb. 14, 2008**

(54) **RAIL DEVICE FOR EXTRACTING COMPUTER EQUIPMENT**

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(21) Appl. No.: **11/501,013**

(22) Filed: **Aug. 9, 2006**

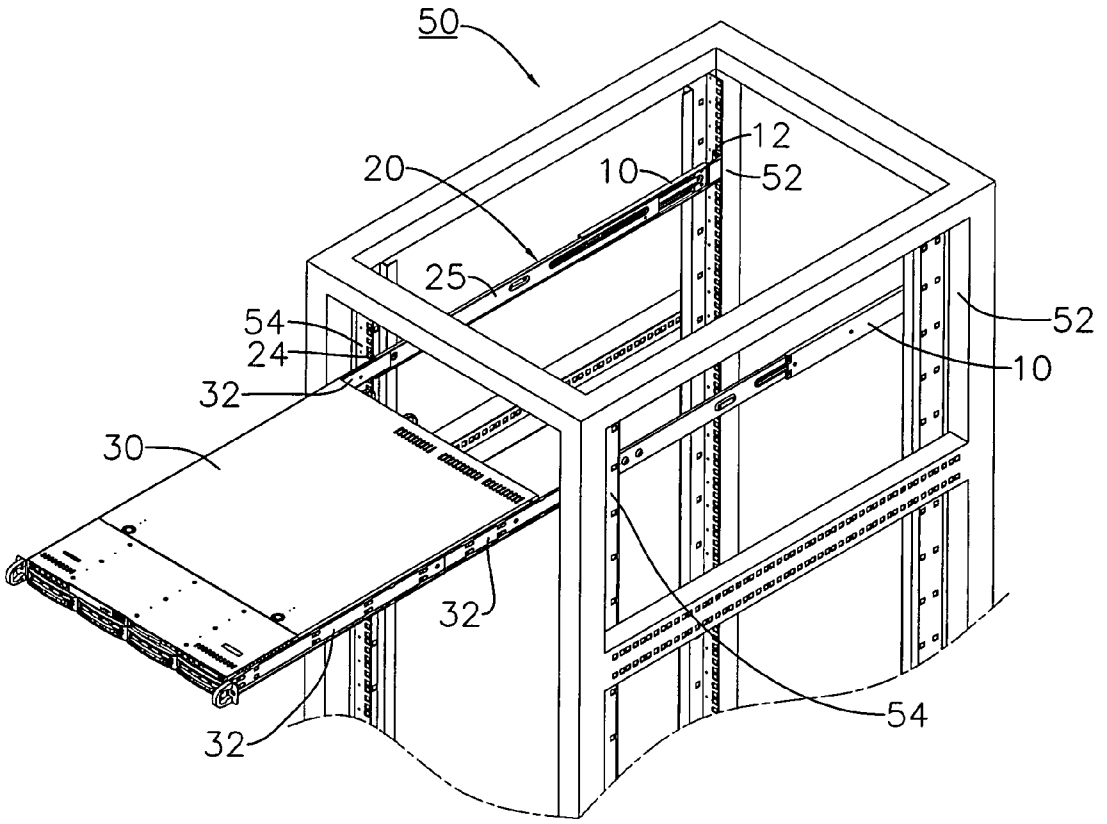
Publication Classification

(51) **Int. Cl.**
A47B 88/00 (2006.01)

(52) **U.S. Cl.** **312/334.5**

(57) **ABSTRACT**

A rail device for extracting computer equipment is composed of an outer rail, an outer end of which is provided with a front fixing part; and an inner rail, which is a long plate, a rear end of which is provided with a rear fixing part, and which is glidingly transfixed into a main slot of outer rail. The inner rail is glidingly displaced in the main slot, such that the inner rail and the outer rail can be quickly and conveniently installed on a rack assembly.



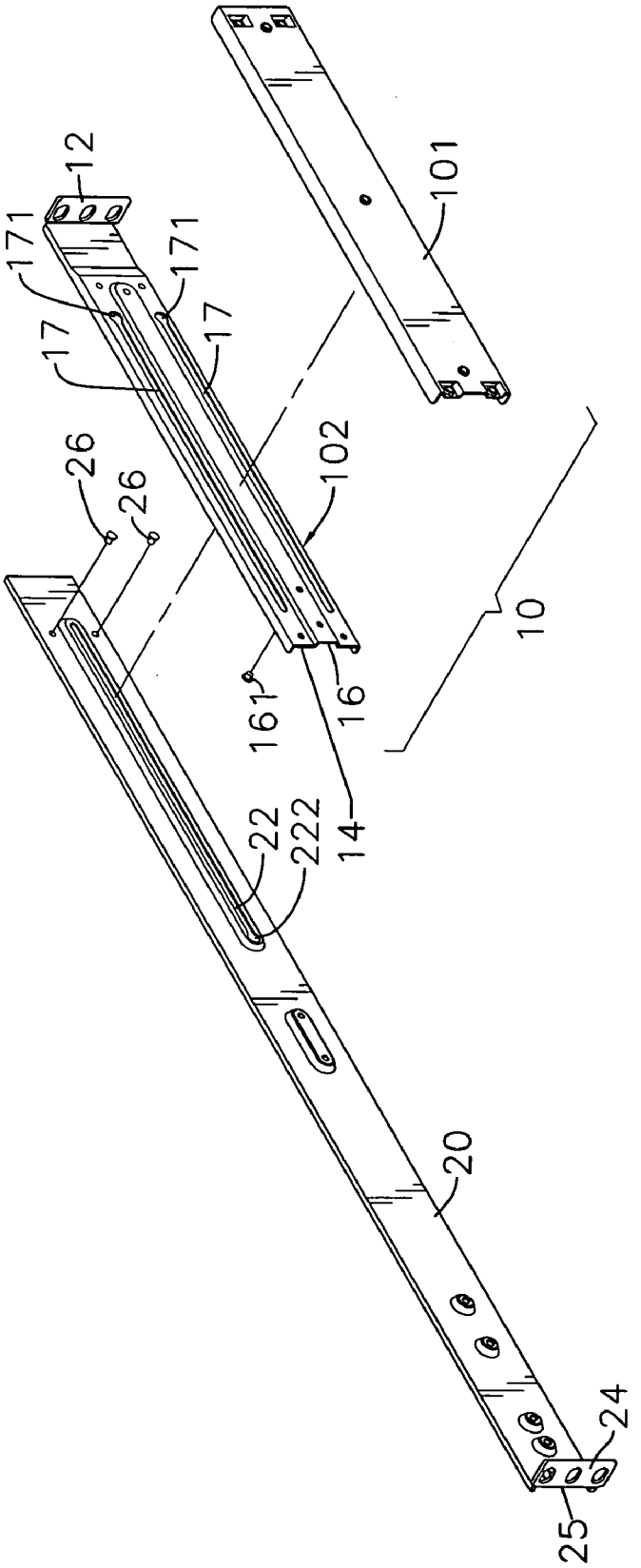


FIG.1

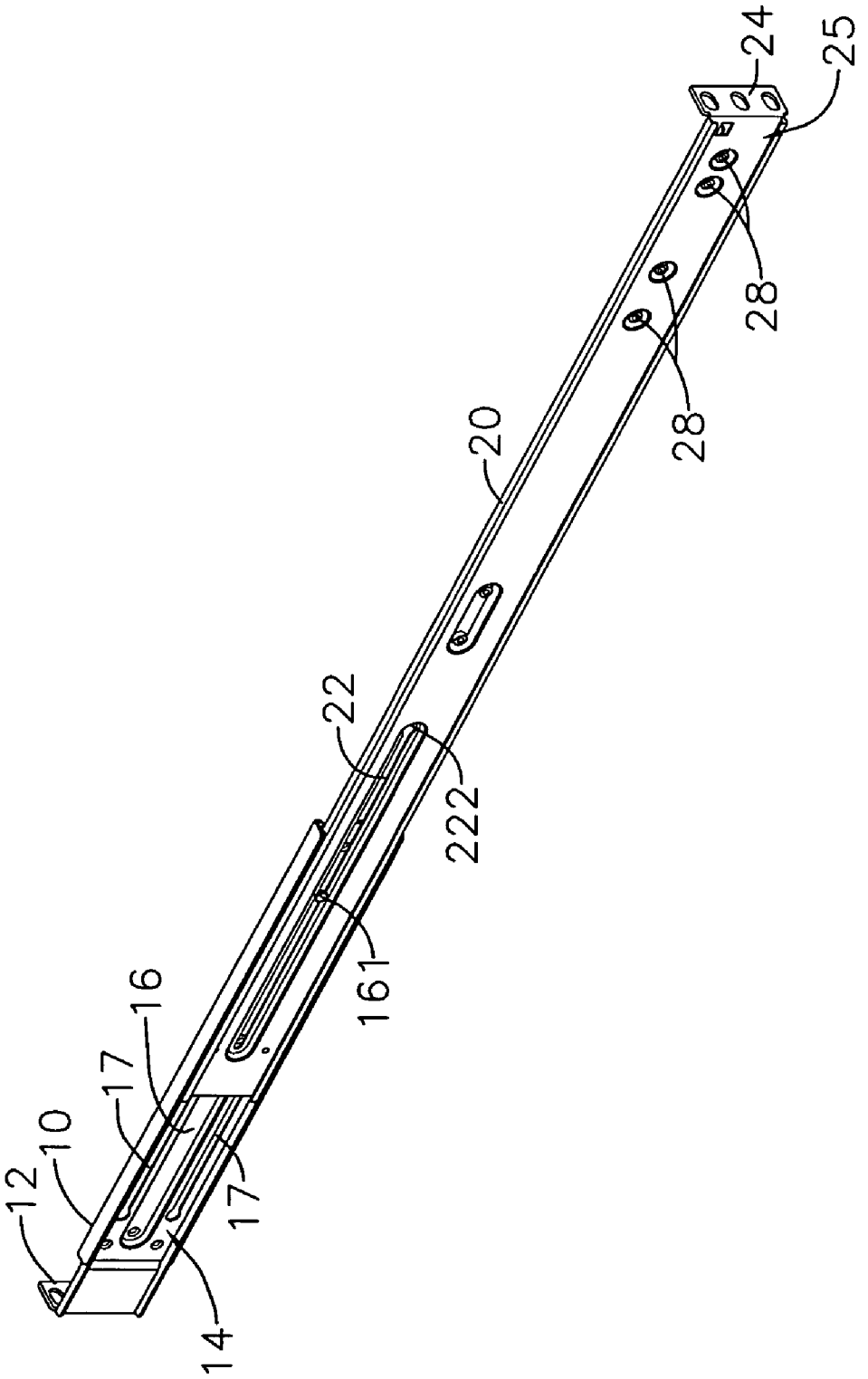


FIG.2

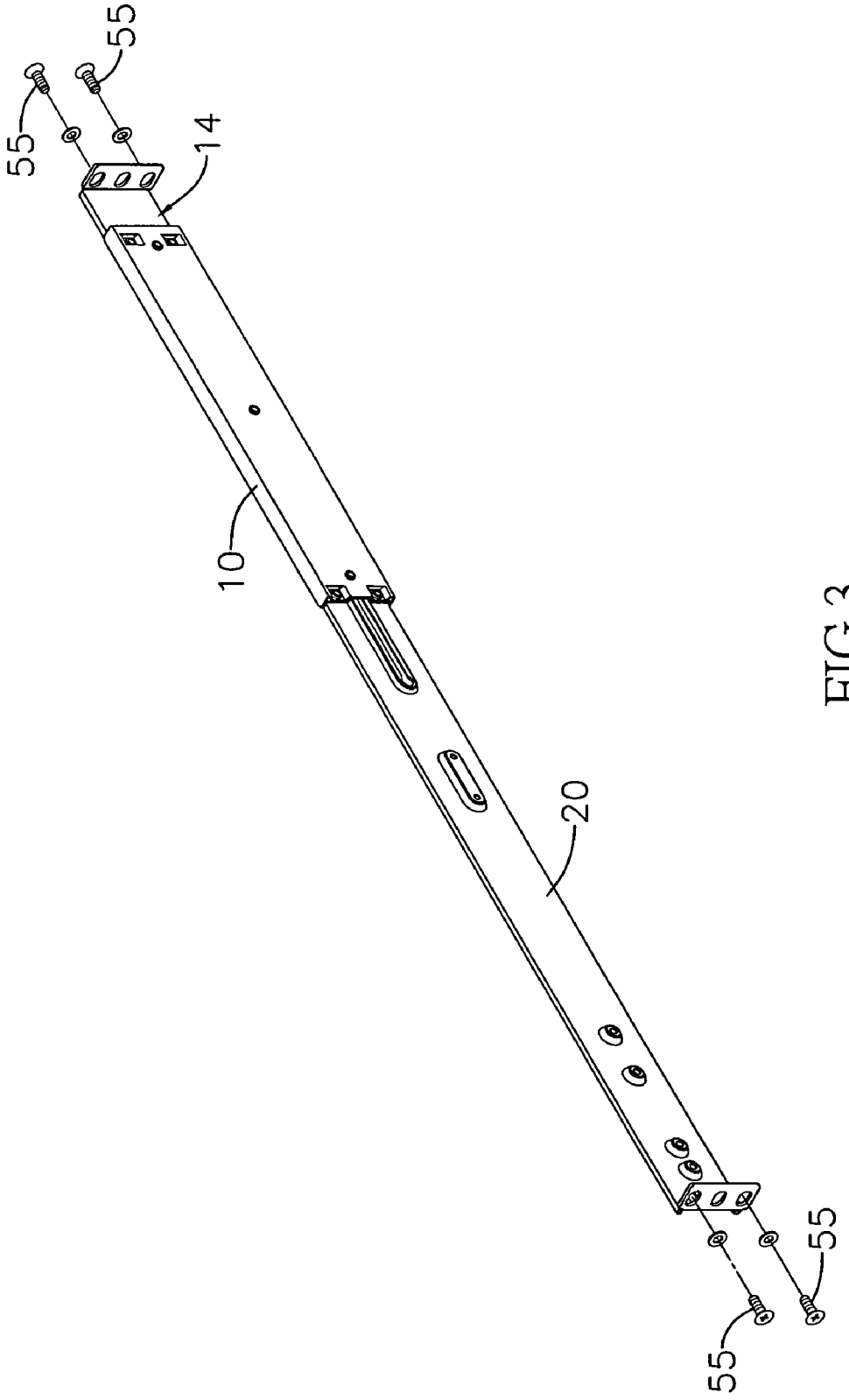


FIG.3

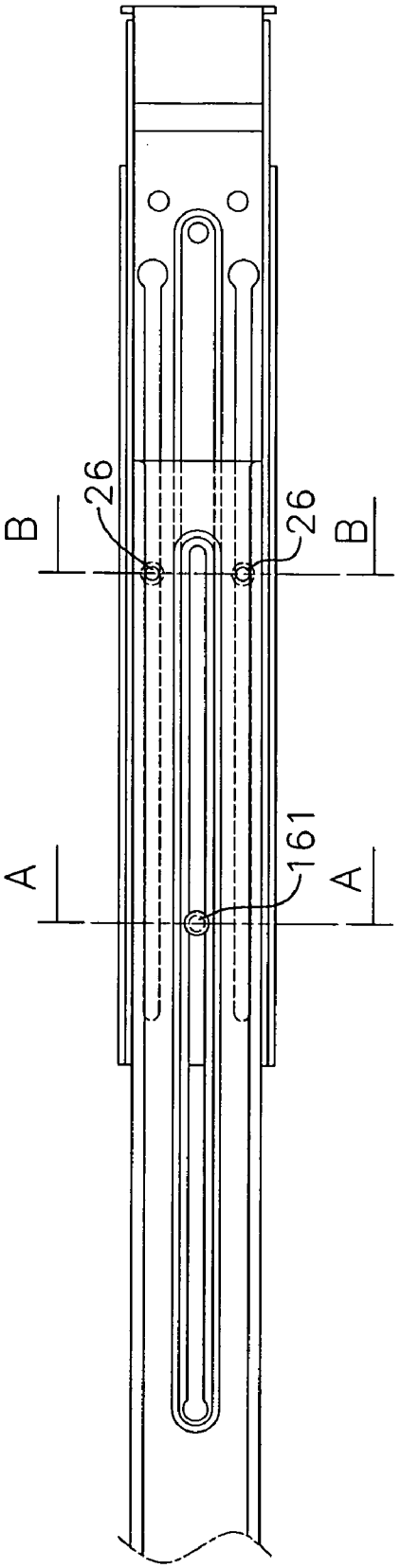


FIG.4

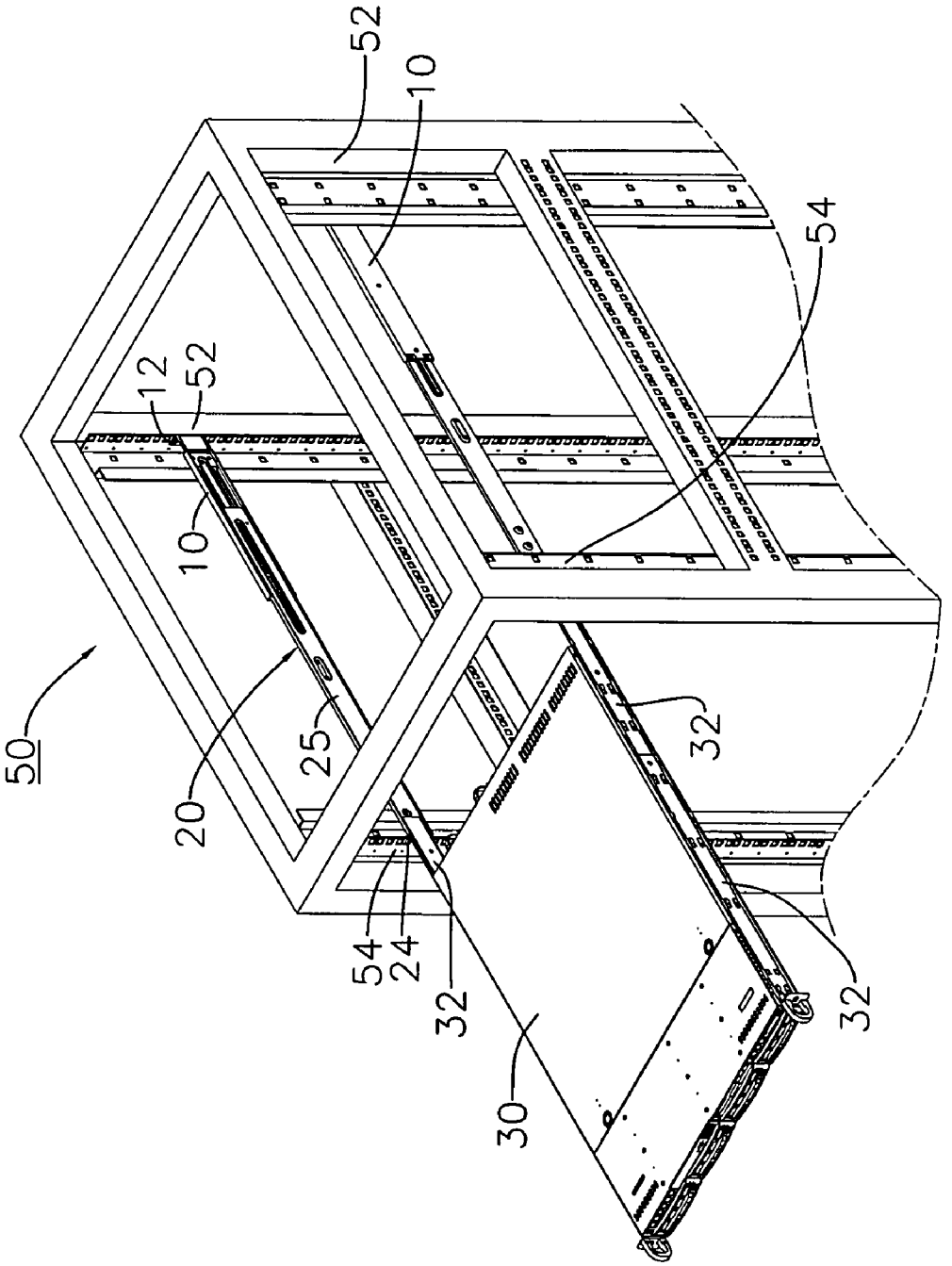


FIG.5

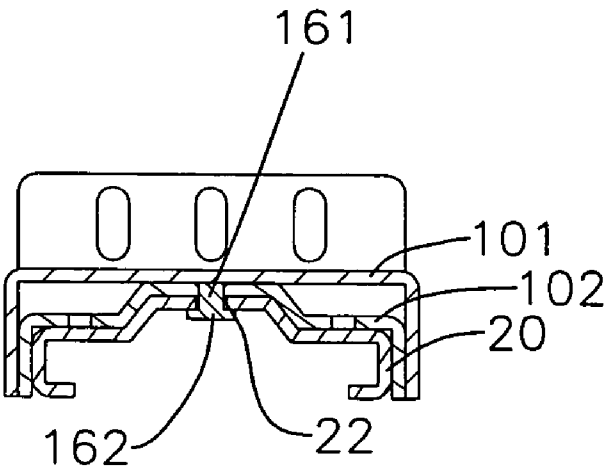


FIG.6

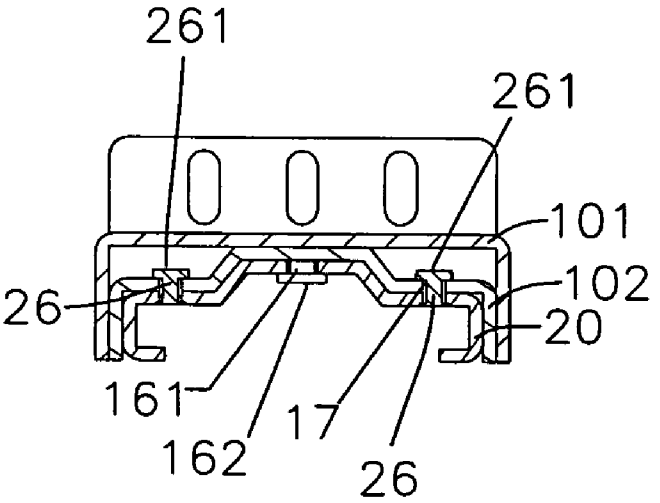


FIG.7

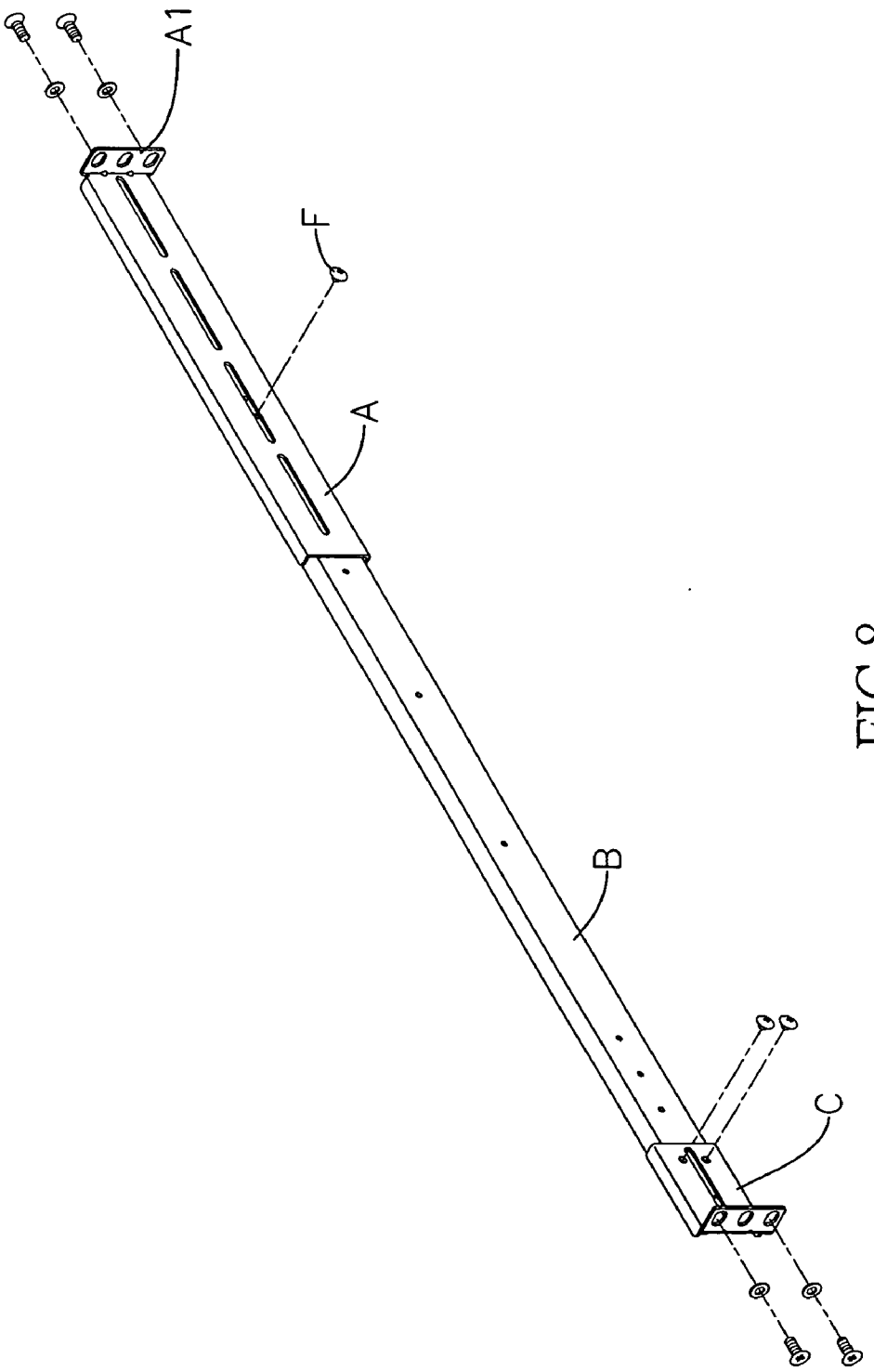


FIG.8
(Prior Art)

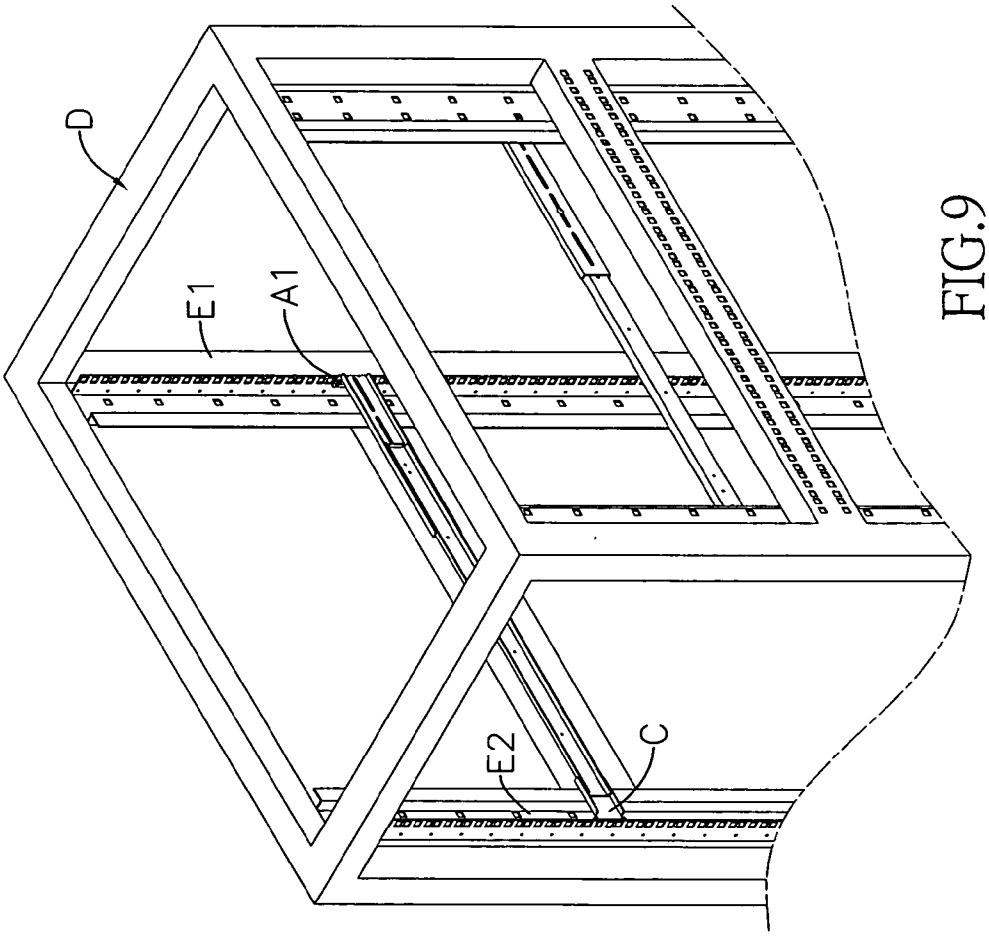


FIG.9
(Prior Art)

RAIL DEVICE FOR EXTRACTING COMPUTER EQUIPMENT

BACKGROUND OF THE INVENTION

[0001] (a) Field of the Invention

[0002] The present invention relates to a rail device for extracting computer equipment, and more particularly to a rail device, an interior and an exterior of which can be gliding, such that it can be quickly and conveniently fixed on a rack assembly of different specification.

[0003] (b) Description of the Prior Art

[0004] Referring to FIG. **8**, a typical example of a conventional rail device for extracting computer equipment is composed of an outer rail A which is glidingly connected with an inner rail B. The inner rail B is then screwed with a fixing member C. Referring to FIG. **9**, a size of distance between a front and a rear vertical racks E**1**, E**2** of a rack assembly D is measured first, and then the outer rail A, the inner rail B, and the fixing member C are pre-assembled according to the correctly measured size, such that the assembly length of outer rail A, inner rail B, and fixing member C is equal to the distance between the front and rear vertical racks E**1**, E**2**. Next, after accomplishing the assembling, a fixing end A**1** of the outer rail A is fixed on the front vertical rack E**1**, and the fixing member C is fixed on the rear vertical rack E**2**. This conventional technique is provided with the following shortcomings in implementation:

[0005] (1) The size of distance between the front and rear vertical racks E**1**, E**2** should be measured, and the outer rail A, the inner rail B, and the fixing member C should be pre-assembled exterior to the rack assembly D before being installed on the front and rear vertical racks E**1**, E**2**, thereby wasting a lot of implementation time and causing an inconvenience in implementation.

[0006] (2) As the extraction rail is assembled from the outer rail A, the inner rail B, and the fixing member C, a lot of assembly parts are required, and mechanical strength is inferior.

[0007] (3) There is only a pillar F between the outer rail A and the inner rail B for supporting. Therefore, when the inner rail B is gliding with respect to the outer rail A, stability, mobility, and mechanical strength of horizontal displacement are inferior.

SUMMARY OF THE INVENTION

[0008] The primary object of present invention is to provide a rail device for extracting computer equipment, such that an assembly member of an inner rail and an outer rail can be quickly and conveniently installed on a rack assembly.

[0009] Another object of the present invention is to provide a rail device for extracting computer equipment, such that an entire assembly member of the inner rail and the outer rail is provided with enhanced mechanical strength.

[0010] To enable a further understanding of the said objectives and the technological methods of the invention herein, the brief description of the drawings below is followed by the detailed description of the preferred embodiments.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] FIG. **1** shows an exploded view of parts of the present invention.

[0012] FIG. **2** shows a perspective view of an assembly of the present invention.

[0013] FIG. **3** shows another perspective view of an assembly of the present invention.

[0014] FIG. **4** shows a plan view of a motion of the present invention.

[0015] FIG. **5** shows a schematic view of an embodient of the present invention.

[0016] FIG. **6** shows a cutaway view along an A-A line of FIG. **4**.

[0017] FIG. **7** shows a cutaway view along a B-B line of FIG. **4**.

[0018] FIG. **8** shows a perspective view of an assembly of conventional inner and outer rails for extracting computer equipment.

[0019] FIG. **9** shows a perspective view of conventional inner and outer rails for extracting computer equipment, which are installed on a rack assembly.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0020] Referring to FIGS. **1** to **3**, the present invention is to provide a rail device for extracting computer equipment, including an outer rail **10**, an outer end of which is provided with a front fixing part **12**, and an interior of which is formed with a main slot **14** having a central indentation **16** in a middle of bottom thereof, with a fixing pillar **161** being located at the central indentation **16**, and with gliding slots **17** being formed at sides of the central indentation **16**; and an inner rail **20**, which is a long plate, a rear end of which is provided with a rear fixing part **24**, and an interior of which is formed with a main slot **25** having a long through-hole **22** on a bottom surface thereof, with a rear stopping part **222** being located on the long through-hole **22**, with at least more than one pillar **26** being fixed on a back surface of the inner rail **20** to be glidingly transfixed into the gliding slots **17** of outer rail **10**, and with the fixing pillar **161** on the outer rail **10** being glidingly transfixed into the long through-hole **22**.

[0021] The inner rail **20** can be glidingly displaced in the main slot **14**, the long through-hole **22** is glidingly displaced with the fixing pillar **161** as a guiding rod, the rear stopping part **222** is abutted (stopped) on the fixing pillar **161**, and the pillars **26** on the inner rail **20** can be glidingly displaced in the gliding slots **17**.

[0022] Referring to FIG. **1**, the outer rail **10** is formed into an integral body by riveting an outer casing **101** and an inner casing **102**, and the gliding slots **17**, the front fixing part **12**, and the central indentation **16** are installed on the inner casing **102**, wherein an end of the gliding slot **17** is provided with a stopping part **171**, and the fixing pillar **161** is fixed on the central indentation **16**.

[0023] Referring to FIG. **5**, the front fixing parts **12** of the two outer rails **10** are fixed on two rear beams **52** of a rack assembly **50**, respectively; whereas, the rear fixing parts **24** of the inner rails **20** are fixed on two front beams **54** of the rack assembly **50**, respectively.

[0024] Referring to FIG. **5**, the main slots **25** of inner rails **20** are glidingly connected with inner gliding plates **32** which are fixed at two sides of computer equipment **30** respectively, and can be glidingly displaced in the main slots **25** of inner rails **20**.

[0025] Referring to FIG. **6** and FIG. **7**, top rings **261**, **162** of larger outer diameters are located above the pillars **26** fixed on the inner rails **20**, and above the pillars **161** of outer rails **10**.

[0026] Referring to FIG. **1**, an outer rail **10** is formed by riveting an outer casing **101** and an inner casing **102**; therefore its entire mechanical strength can be enhanced. Two pillars **26** are shuttling in gliding slots **17** at two sides. Referring to FIG. **7**, top rings **261** are located on wall surfaces of the gliding slots **17**; therefore when an inner rail **20** is glidingly displaced in a main slot **14**, two pillars **26** are gliding along the two parallel gliding slots **17**. Referring to FIG. **6**, the other fixing pillar **161** can be gliding relatively to a long through-hole **22**; therefore when the inner rail **20** is gliding on the outer rail **10**, a gliding motion can be more stable, an agility of the gliding can be improved, and mechanical strength can be enhanced, with a support of three pillars **161**, **26** (as shown in FIG. **4**).

[0027] Referring to FIG. **6**, the fixing pillar **161** is provided with the top ring **162** of larger outer diameter. The top ring **162** is located at a rim of the long through-hole **22**, such that there will be no left and right displacements between the inner rail **20** and the outer rail **10**; that is, when the inner rail **20** is glidingly displaced in the main slot **14**, a larger gap will not be formed.

[0028] Referring to FIG. **7**, the two pillars **26** are provided with the top rings **261** larger outer diameters. The two top rings **261** are located on wall surfaces of the two gliding slots **17**, which will further reduce the gliding gap between the inner rail **20** and the outer rail **10**; that is, when the inner rail **20** is glidingly displaced in the main slot **14**, a larger gap will not be formed, thereby increasing a closeness of gliding between the inner rail **20** and the outer rail **10**.

[0029] Referring to FIG. **5**, in implementation, the glidingly assembled inner rail **20** and outer rail **10** are adjusted for a straight distance between a front beam **54** and a rear beam **52**, such that the front fixing part **12** can be easily contacted with the rear beam **52**, and the rear fixing part **23** can be easily contacted with the front beam **54**. Next, by locking with bolts **55** (as shown in FIG. **3**), the assembly member of outer rail **10** and inner rail **20** can be quickly fixed on a rack assembly **50**. Computer equipment **30** can be a computer host or a server, and the inner gliding plates **32** fixed at two sides thereof can be glidingly transfixed into the main slots **25** of inner rails **20**. By pulling or pushing the computer equipment **30**, the two gliding plates **32** can be gliding in the main slots **25**, and the computer equipment **30** can be pulled out of or pushed into the rack assembly **50**. At this time, three pillars **161**, **26** are supported and positioned into the two gliding slots **17** and the long through-hole **22**, respectively. Therefore, the inner rail **20** can be firmly assembled with the outer rail **10**, which can be sustained with larger moment of force.

[0030] Accordingly, in the present invention, there is no need to measure the distance between the front beam **54** and the rear beam **52**, and the inner rail **20** and the outer rail **10** can be quickly locked and positioned.

[0031] It is of course to be understood that the embodiments described herein is merely illustrative of the principles of the invention and that a wide variety of modifications thereto may be effected by persons skilled in the art without departing from the spirit and scope of the invention as set forth in the following claims.

What is claimed is:

1. A rail device for extracting computer equipment, comprising:

an outer rail, an outer end of which is provided with a front fixing part, and an interior of which is formed with a main slot having a central indentation in a middle of bottom thereof, with a fixing pillar being located in the central indentation, and with gliding slots being located along two sides of the central indentation; and an inner rail, which is a long plate, a rear end of which is provided with a rear fixing part, and an interior of which is formed with a main slot having a long through-hole at a bottom surface thereof, with a rear stopping part being located at the long through-hole, with at least more than one pillar being fixed on a back surface of the inner rail, with the pillars being glidingly transfixed into the gliding slots of outer rail, and with the fixing pillar of outer rail being glidingly transfixed into the long through-hole; the inner rail being able to be glidingly displaced in the main slot, the long through-hole being glidingly displaced with the fixing pillar as a guiding rod, the rear stopping part being abutted on the fixing pillar, and the pillars on inner rail being glidingly displaced in the gliding slots.

2. The rail device for extracting computer equipment according to claim **1**, wherein the outer rail is formed into an integral body by riveting an outer casing and an inner casing, the gliding slots, front fixing part, and central indentation are located on the inner casing, an end of the gliding slot is provided with a stopping part, and the fixing pillar is fixed on the central indentation.

3. The rail device for extracting computer equipment according to claim **1**, wherein the front fixing parts of two outer rails are fixed on two rear beams of a rack assembly respectively, and the rear fixing parts of inner rails are fixed on two front beams of the rack assembly respectively.

4. The rail device for extracting computer equipment according to claim **1**, wherein the main slots of inner rails are glidingly connected with inner gliding plates which are fixed and assembled at two sides of computer equipment respectively, and can be glidingly displaced on the main slots of inner rails.

5. The rail device for extracting computer equipment according to claim **1**, wherein top rings of larger outer diameters are located above the pillars fixed on the inner rails, and above the pillars of outer rails.

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