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(54) **DRAWER SLIDE CLOSING DEVICE**

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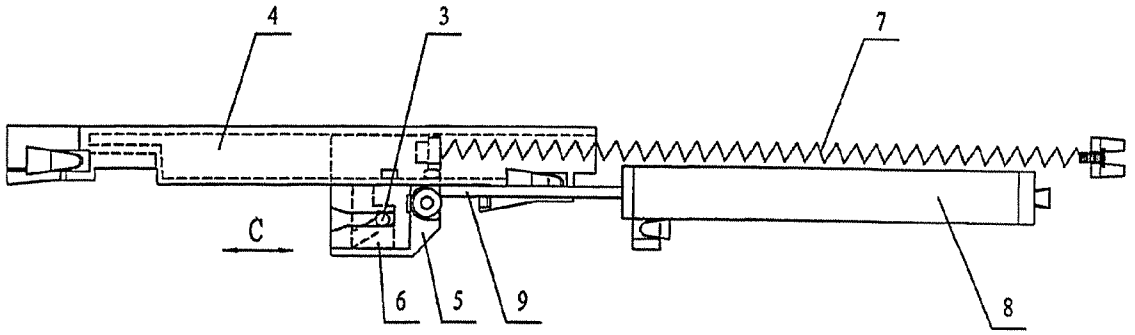
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(57) **ABSTRACT**

A closing device for drawer slide includes a fixed rail with a sliding member having an open slot, for attachment to a furniture body, and a sliding rail with a pin member, for attachment to a drawer. The sliding member is connected with an end of a spring and another end of the spring is fastened to the fixed rail or its supporting bracket. The sliding member further includes a sliding slot which intersects with the open slot. A latch functioning as a switch is allocated within the sliding slot, and is movable together with the sliding member. The latch includes a guiding channel that intersects with the open slot at the position of the guiding channel. The supporting bracket includes a straight sliding groove, wherein the sliding member rides over the straight sliding groove for a linear movement. The guiding channel is obliquely opened, wherein one inner side wall of the guiding channel is straight, and another inner side wall is provided with a positioning pit. When the drawer is closed into the furniture body, the closing device reduces the noise generated by the impact of the drawer against the furniture body, and thereby reduces the impact on the surrounding.



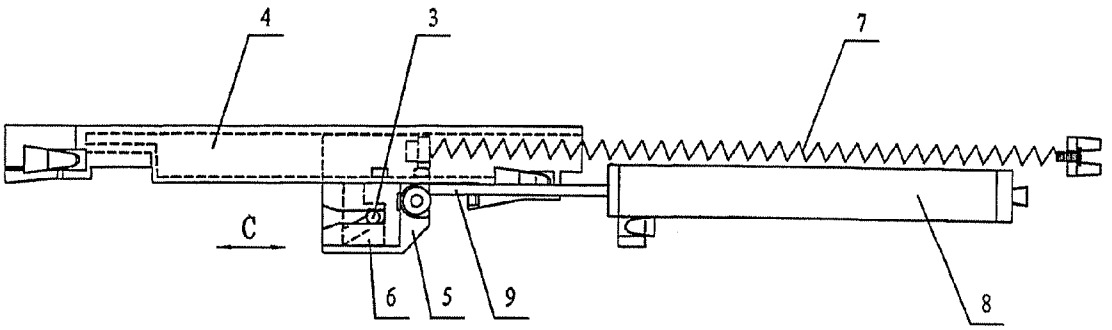


Fig. 1

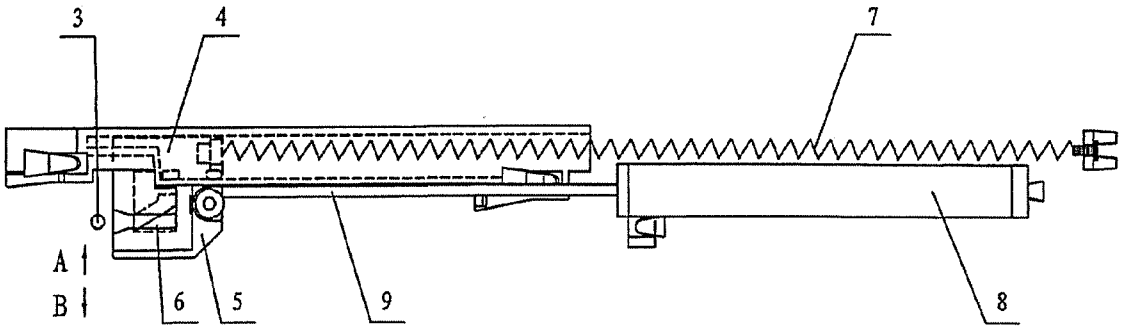


Fig. 2

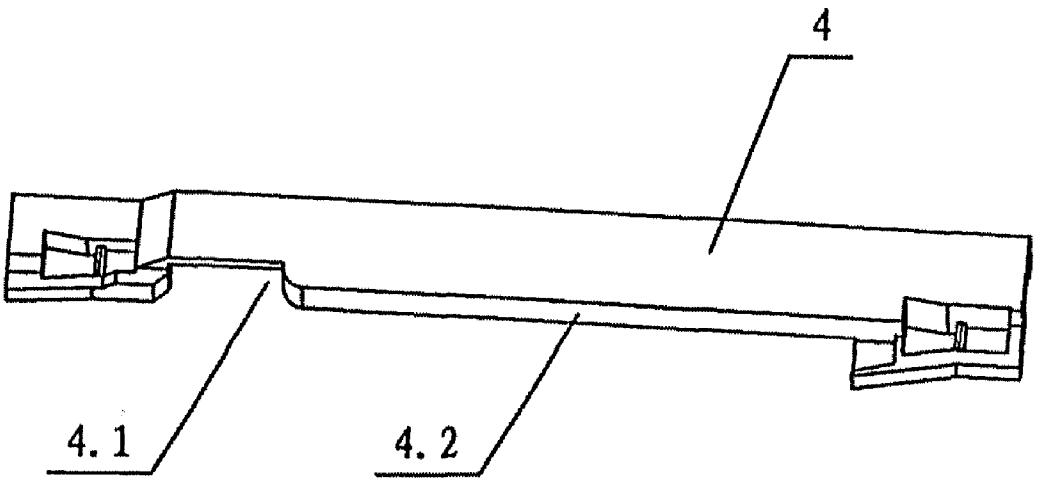


Fig. 3

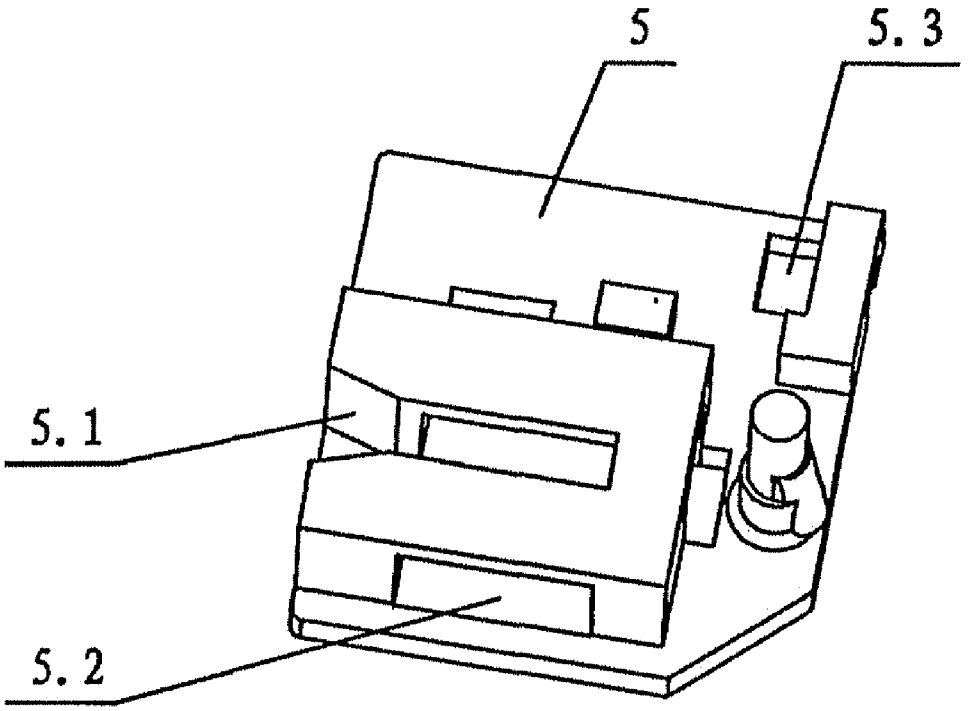


Fig. 4

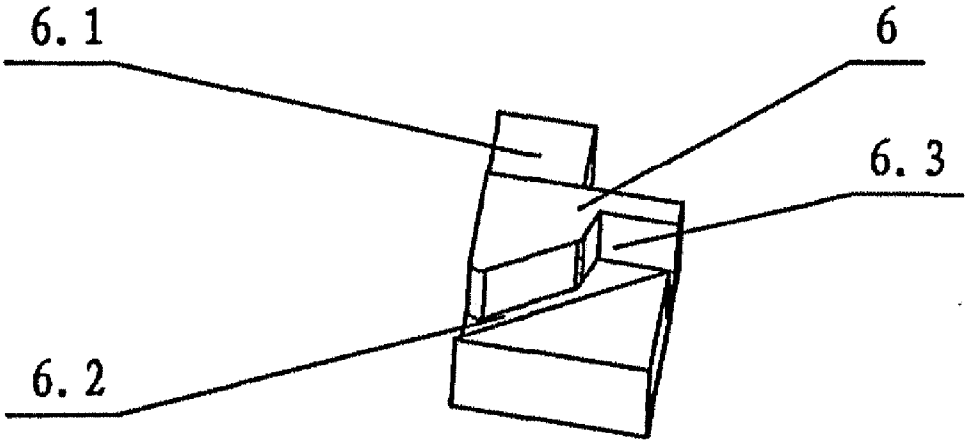


Fig. 5

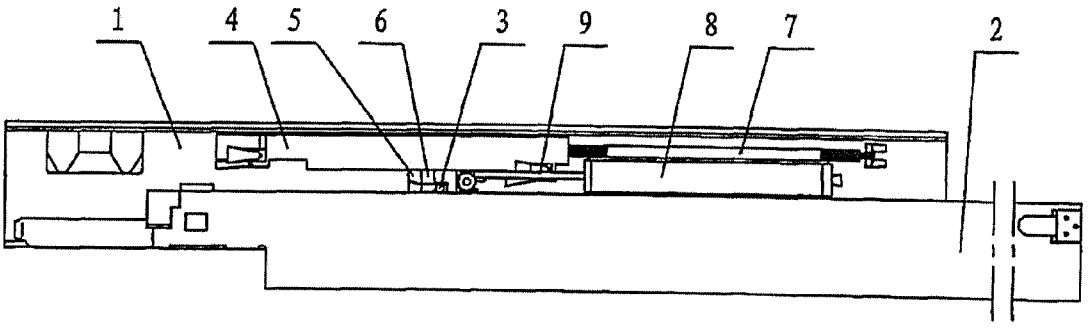


Fig. 6

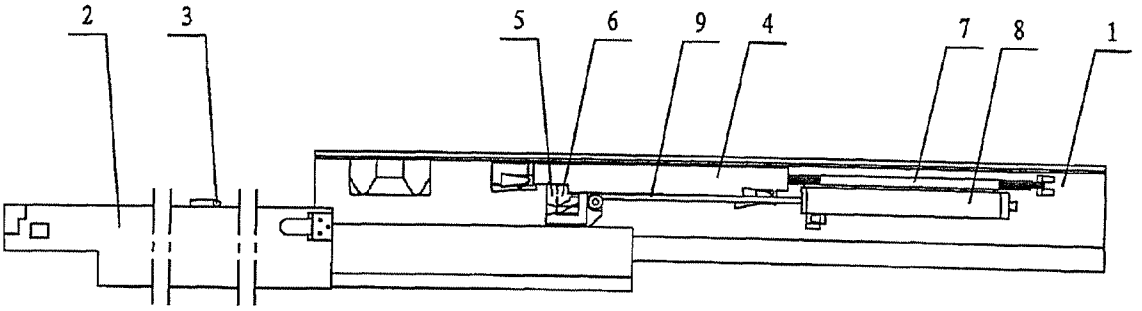


Fig. 7

DRAWER SLIDE CLOSING DEVICE

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims priority to Chinese Utility Model Application 200820045010.7, filed on 13 Mar. 2008, the entirety of which is incorporated by reference herein for all purposes.

TECHNICAL FIELD

[0002] The present invention relates to a drawer slide closing device.

BACKGROUND OF THE INVENTION

[0003] A closing device for a drawer is disclosed in European patent specification 0,391,221, wherein there is provided a pull-out rail which is mounted on the drawer side wall, and a supporting rail which is mounted on the furniture body side wall. Various rollers and/or balls are provided between such rails to facilitate smooth movement of the drawer, and to provide the function of bearing the load of the drawer. The closing device comprises a tiltable member which is connected with a spring and is mounted on the furniture body side wall. The closing device further comprises a pin member which is directly fastened to the drawer side wall. When the drawer is opened, the pin member engages with the tiltable member and pulls it forwardly and linearly along a guide track of the pull-out guide assemblies. The guide track includes a backwardly positioned and relatively long rectilinear portion and a forwardly located arcuate portion diverging laterally from the path of rectilinear portion. Thus, the tiltable member is displaceable relative to the furniture body in a forward direction. This relative movement continues until a predetermined relative position determined by the arcuate portion. When the tiletable member is moved into this arcuate position, it tilts about an axis determined by the curvature of the arcuate portion. The pin member withdraws from a slot of the tiltable member. Therefore, the tiltable member is locked in the tilted forward position.

[0004] When the drawer then is to be inserted into the furniture body, it is moved backwardly until the pin member again engages in the slot of tiltable member. The movement of the pin member backwardly into slot releases the tiltable member from its locked position in arcuate portion. As soon as the tiltable member substantially returns to rectilinear portion of guide track, the force of spring thereby pulls the tiltable member backwardly.

[0005] It has been found that the operation of the closing device of EP 0,391,221 is complicated. Also, if a drawer is moved in direction into the furniture body, noise may occur, particularly when the drawer bumps against the base portion of the furniture body.

SUMMARY OF THE INVENTION

[0006] With the above discussion in mind, the present invention provides a drawer slide closing device which is in simple structure and the operation is stable, whereby it is possible to overcome the disadvantages of the prior art.

[0007] The above objects are achieved in accordance with the present invention by providing a closing device, for use in an article of furniture having furniture components including a furniture body and a drawer slidable in opposite directions into and out of the furniture body. The closing device for drawer slide includes a fixed rail for mounting the drawer slide to a furniture body, and a sliding rail for mounting the drawer slide to a drawer. The sliding rail comprises a pin member, and the fixed rail comprises a supporting bracket that further includes a sliding member. The sliding member is connected with an end of a spring, and another end of the spring is fastened to the fixed rail or the supporting bracket. The sliding member comprises an open slot. The closing device of the present invention is characterized in that the sliding member comprises a sliding slot that intersects with the open slot. A latch functioned as a switch is provided within the sliding slot and is moveable together with the sliding slot. The latch comprises a guiding channel that intersects with the open slot too. The supporting bracket comprises a straight guiding groove wherein the sliding member rides over the straight guiding groove for a linear movement. Both the sliding member and the latch are driven by the pin member.

[0008] When the drawer is pulled out of the furniture body, the latch is moved into an opening or a dent of the supporting bracket, the latch moves along a direction perpendicular to a direction of pulling out of the drawer by means of the pin member.

[0009] When the drawer is pushed into the furniture body, the pin member drives the guiding channel of the latch, thus withdraws the latch from the opening or the dent of supporting bracket, then the sliding member is urged by the force of spring back to a closed position.

[0010] Preferably, the guiding channel is obliquely opened, wherein one inner side wall of the guiding channel is straight, and another inner side wall is provided with a positioning pit.

[0011] Preferably, the latch comprises a projection on a side thereof that faces the supporting bracket, and the dent that corresponds to the projection is provided at the top portion of the supporting bracket.

[0012] Preferably, a bevel or arc smooth edge is provided between the projection and the dent.

[0013] Preferably, the open slot is horizontally opened.

[0014] Preferably, the sliding member comprises a positioning hole or positioning slot that is connected with an end of the spring.

[0015] Preferably, the fixed rail further comprises a damper, and the damper is fastened to the fixed rail. A rod of the damper is connected with a side surface of the sliding member and is displaceable together with the sliding member.

[0016] In accordance with the present invention, when the drawer is closed into the furniture body, the closing device for drawer slide may effectively reduce the noise generated by the impact of the drawer against the furniture body, therefore, may substantially reduce the impact on the surrounding.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] Other objects, features and advantages of the present invention will be apparent from the following detailed description of preferred embodiments thereof, with reference to the accompanying drawings, wherein:

[0018] FIG. **1** is a schematic view illustrating an embodiment in accordance with the present invention, in a closed state.

[0019] FIG. **2** is a schematic view illustrating the embodiment of FIG. **1** in accordance with the present invention, in an opened state.

[0020] FIG. **3** is a perspective view, on an enlarged scale, of the supporting bracket.

[0021] FIG. **4** is a perspective view, on an enlarged scale, of the sliding member.

[0022] FIG. **5** is a perspective view, on an enlarged scale, of the latch.

[0023] FIG. **6** is a schematic view illustrating an embodiment in operation in accordance with the present invention, in a closed state.

[0024] FIG. **7** is a schematic view illustrating an embodiment in operation of FIG. **6** in accordance with the present invention, in an opened state.

DRAWING LEGEND

[0025] **1** Fixed rail
[0026] **2** Sliding rail
[0027] **3** Pin member
[0028] **4** Supporting bracket
[0029] **4.1** Dent
[0030] **4.2** Guiding groove
[0031] **5** Sliding member
[0032] **5.1** Open slot
[0033] **5.2** Sliding slot
[0034] **5.3** Positioning slot
[0035] **6** Latch
[0036] **6.1** Projection
[0037] **6.2** Guiding channel
[0038] **6.3** Positioning pit
[0039] **7** Spring
[0040] **8** Damper
[0041] **9** Damper rod

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT OF THE INVENTION

[0042] With reference to FIGS. **1-2** and FIGS. **6-7**, an embodiment of the present invention will be described. The sliding device for drawer slide includes a fixed rail **1** for mounting the drawer slide to a furniture body, and a sliding rail **2** for mounting the drawer slide to a drawer. The fixed rail **1** includes a supporting bracket **4** that includes a straight guiding groove **4.2**. The sliding member **5** rides over the straight guiding groove for a linear movement. According to FIG. **4**, the supporting bracket **4** includes a sliding member **5** that includes a positioning slot **5.3**. One end of a spring **7** is connected with the sliding member **5** at the positioning slot **5.3**, and another end of the spring **7** is fastened to the supporting bracket **4**. The sliding member **5** comprises a horizontally opened slot **5.1**. The sliding rail **2** includes a pin member **3**. The sliding member **5** further comprises a sliding slot **5.2** that intersects the horizontally opened slot **5.1**. According to FIG. **5**, a latch **6** functioned as a switch is provided within the sliding slot **5.2**. The latch **6** comprises a beveled guiding channel **6.2**, wherein one inner side wall of the guiding channel **6.2** is straight and another inner side wall is provided with a positioning pit **6.3**. The beveled guiding channel **6.2** intersects with the open slot **5.1**. According to FIG. **3**, the latch **6** includes a projection **6.1** on a side thereof that faces the supporting bracket **4**. A dent **4.1** which corresponds to the projection **6.1** is provided at the top portion of the supporting of the supporting bracket **4**. A bevel or arc smooth edge is provided between the projection **6.1** and the dent **4.1**. The fixed rail **1** further includes a damper **8**, and a rod **9** of damper **8** is connected with a side wall of the sliding member **5**.

[0043] With reference to FIGS. **1** and **6**, when the drawer is to be closed, the pin member **3** fastened to the sliding rail **2** moves toward right and enters into the open slot **5.1** of the sliding member **5**. Due to the intersection between the open slot **5.1** and the guiding channel **6.2** of the latch **6**, the pin member **3** may enter into the guiding channel **6.2**. With the closing of the drawer, the sliding member **5** continues to move toward right, and in the meantime causes the latch **6** to move toward right. Thus, the projection **6.1** of latch **6** is released from the dent **4.1** of supporting bracket **4**. Therefore, the latch **6** moves outwardly along the sliding member **3**. Due to the bevel/arcuation of the guiding channel **6.2**, the guiding channel **6.2** lifts gradually. The pin member **3** that is always in a liner movement enters into the positioning pit **6.3** located at the bottom portion of the guiding channel **6.2**. Thus, the pin member **3** is blocked and locked between the positioning pit **6.3** and the bottom portion of the open slot **5.1**. Therefore, the drawer is closed gradually and silently under the buffer action of the damper **8**.

[0044] With reference to FIGS. **2** and **7**, when the drawer is to be opened, the pin member **3** drives the sliding member **5** and the latch **6** to move toward left. While the projection **6.1** of latch **6** is arriving at the edge portion of the dent **4.1** of the supporting bracket **4**, the projection **6.1** enters into the dent **4.1** as the latch **6** is driven by the pin member **3**. Thus, both the latch **6** and the guiding channel **6.2** are pressed downwardly. Therefore, the pin member **3** is released from the positioning pit **6.3** and moves upwardly along with the guiding channel **6.2**, and in the meantime moves toward left within the open slot **5.1**. As the drawer is opened gradually, the pin member **3** is withdrawn from the sliding member **3**. Thus, the sliding member **5** and the latch **6** are stopped and maintained within the dent **4.1** of the supporting bracket **4**.

[0045] Returning to FIG. **1**, the sliding member **5** and the latch **6** are driven by the pin member **3**. When the drawer is pulled out or inserted into the furniture body, the sliding member **5** is always in a linear movement, i.e. in the direction of arrow C as shown in FIG. **1**. While the latch **6** is moving together with the sliding member **5**, the projection **6.1** moves along the straight groove **4.2** of supporting bracket **4**.

[0046] Returning to FIG. **2**, when the drawer is pulled out, the movement of the latch **6** continues until the dent **4.1** of supporting bracket **4**. Then the latch **6** moves along a direction of arrow A as shown in FIG. **2** as driven by the pin member **3**. When the drawer is pushed into the furniture body, the pin member **3** enters into the guiding channel **6.2** of latch **6**. Then the latch **6** moves along a direction of arrow B as shown in FIG. **2**.

[0047] The present invention therefore provides a closing device for drawer slide, and accompanying useful related items. Although the invention has been described with respect to certain embodiments, it should be realized that the invention may be practiced other than as specifically described. Accordingly, the invention should be viewed as the claims supported by this specification and their equivalents.

1. A closing device for drawer slide, comprising a fixed rail for mounting the drawer slide to a furniture body, and a sliding rail for mounting the drawer slide to a drawer;

the sliding rail including a pin member, and the fixed rail including a supporting bracket that includes a sliding member,

the sliding member is connected with an end of a spring, and another end of the spring is fastened to the fixed rail or the supporting bracket,

the sliding member has an open slot, wherein,

the sliding member further includes a sliding slot that intersects the open slot,

a latch that functions as a switch is provided within the sliding slot and moveable together with the sliding slot,

the latch comprises a guiding channel that intersects with the open slot,

the supporting bracket comprises a straight guiding groove wherein the sliding member rides over the straight guiding groove for a linear movement;

both the sliding member and the latch are driven by the pin member,

when the drawer is pulled out of the furniture body, the latch is moved into an opening or a dent of the supporting bracket, the latch moves along a direction perpendicular to a direction of pulling out of the drawer by means of the pin member,

when the drawer is pushed into the furniture body, the pin member drives the guiding channel of the latch, thus withdraws the latch from the opening or the dent of supporting bracket, then the sliding member is urged by the force of spring to a closed position.

2. A closing device for drawer slide as claimed in claim **1**, wherein,

the guiding channel is obliquely opened, wherein one inner side wall is straight, and another inner side wall is provided with a positioning pit.

3. A closing device for drawer slide as claimed in claim **1**, wherein,

the latch comprises a projection on a side thereof that faces the supporting bracket, the dent that corresponds to the projection is provided at the top portion of the supporting bracket.

4. A closing device for drawer slide as claimed in claim **3**, wherein,

a bevel or arc smooth edge is provided between the projection and the dent.

5. A closing device for drawer slide as claimed in claim **1**, wherein,

the open slot is horizontally opened.

6. A closing device for drawer slide as claimed in claim **1**, wherein,

the sliding member comprises a positioning hole or positioning slot that is connected with an end of the spring.

7. A closing device for drawer slide as claimed in claim **1**, wherein,

the fixed rail further comprises a damper, the damper is fastened to the fixed rail, a rod of the damper is connected with a side surface of the sliding member and is displaceable together with the sliding member.

* * * * *