



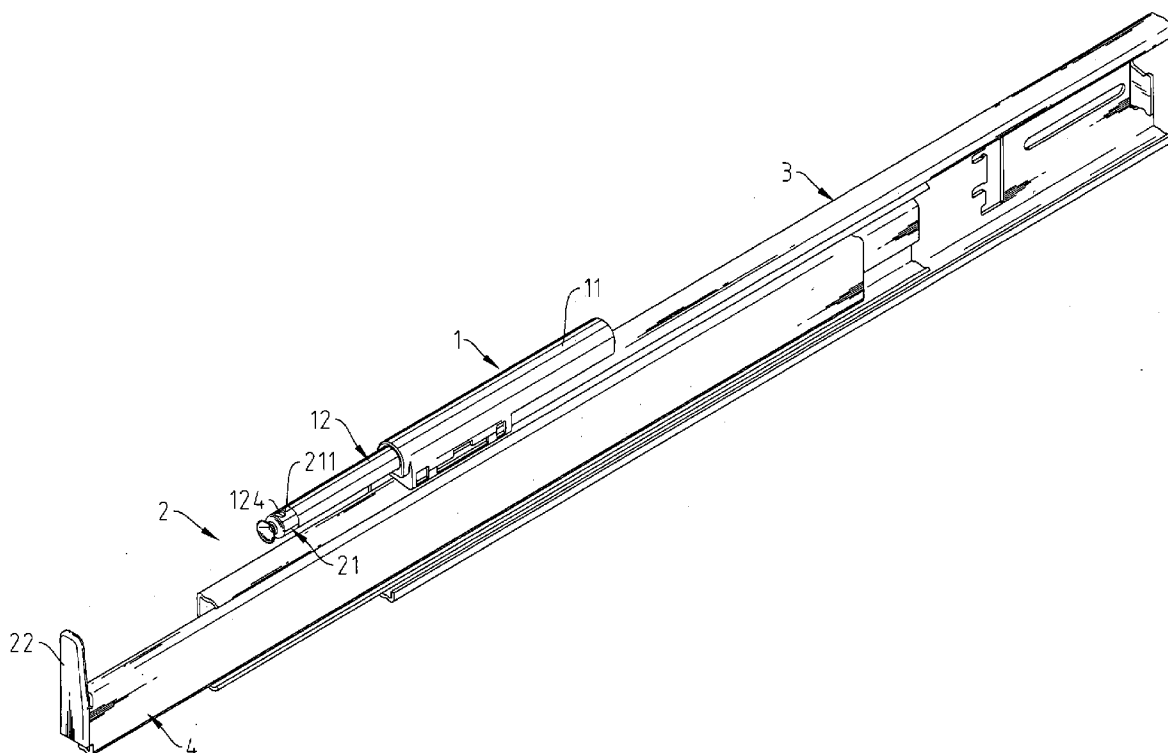
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(19) **United States**(12) **Patent Application Publication**
Lin(10) **Pub. No.: US 2004/0174101 A1**(43) **Pub. Date: Sep. 9, 2004**(54) **CLOSING BUFFER MECHANISM FOR
DRAWER SLIDE TRACK**(52) **U.S. Cl. 312/333**(75) **Inventor: Chun-Wei Lin, Ying Ghor Town (TW)**(57) **ABSTRACT**

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A closing buffer mechanism for drawer slide track mainly constitutes buffer mechanism and separable dismounted bumper. The buffer mechanism comprises cylinder, connecting rod and piston. The separable bumper may be either sucking tray, magnetic or snap assembly. It is mounted to one end of moveable rod and the front end of-connecting rod. It makes close contact while the connecting rod moves forward. When reserve force is applied, the bumper will separate the connecting rod. While the drawer is being closed, the moveable rod will move inward and bring the bumper assembly moving inward which causes the connecting rod retreat to inside of a cylinder and compress air at the end chamber. The compressed air will then ooze gradually through small air vent so as to alleviate the inward pushing force. Therefore, the inward force the drawer exerts is reduced at the closing end.



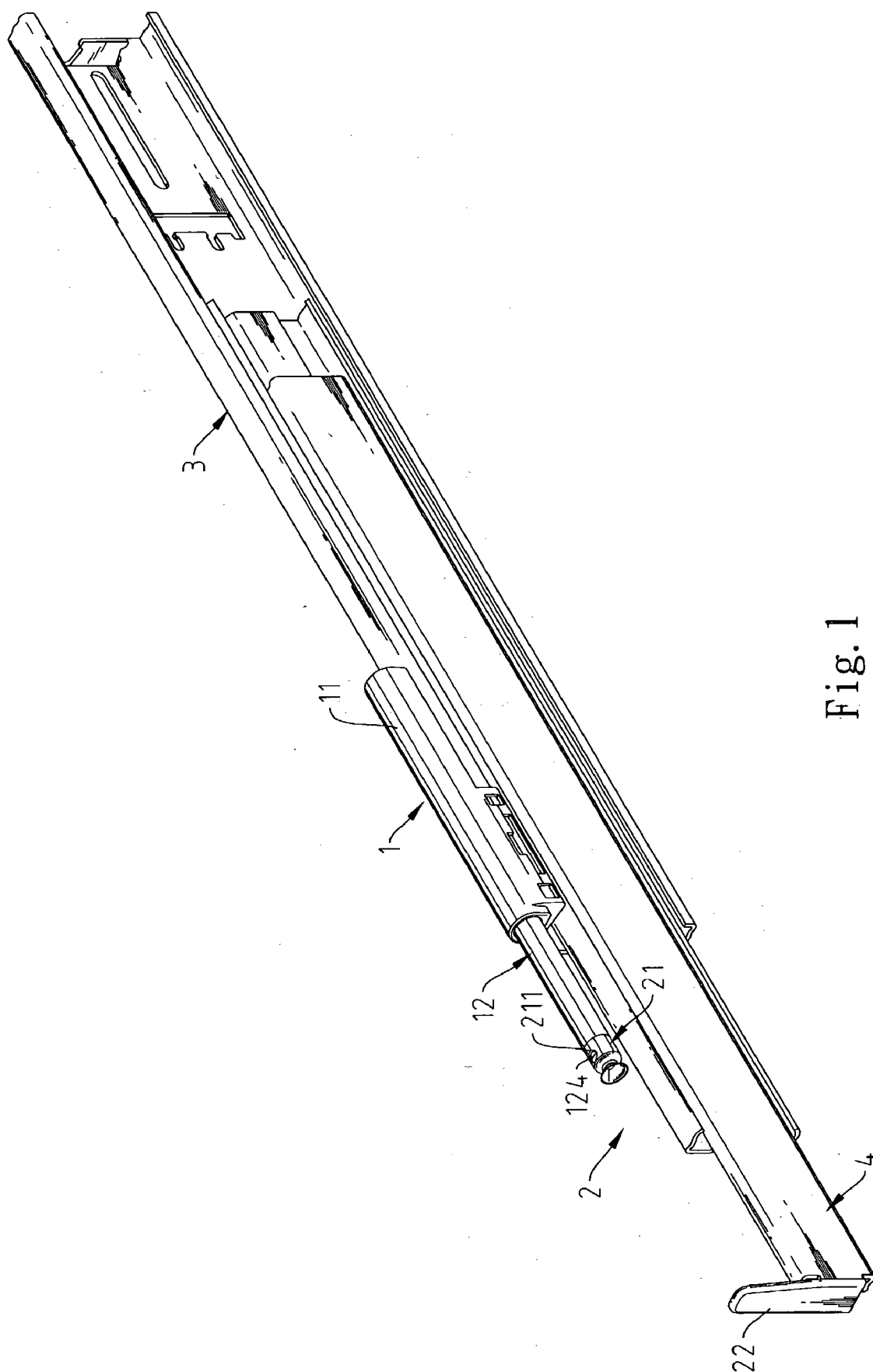


Fig. 1

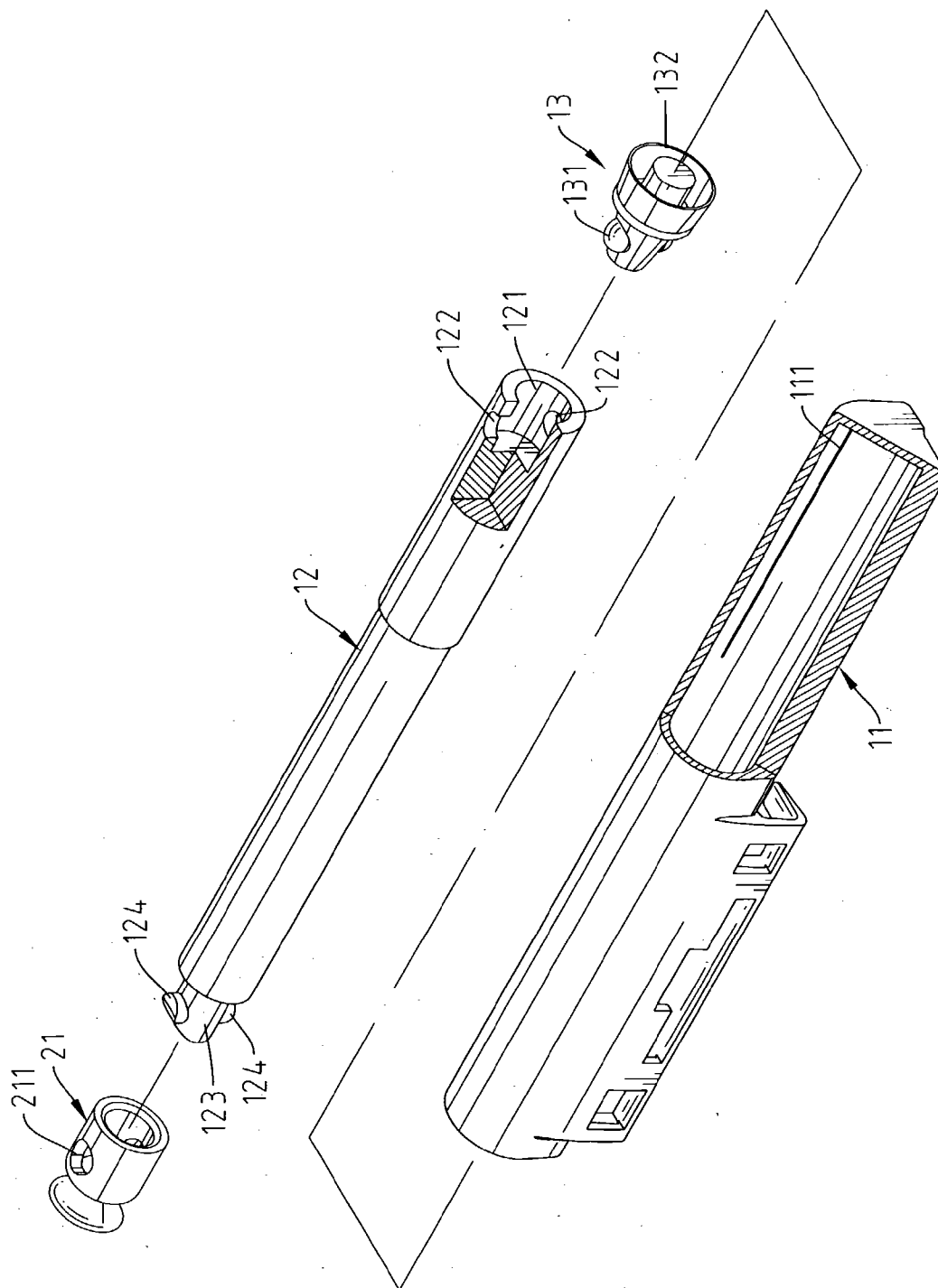


Fig. 2

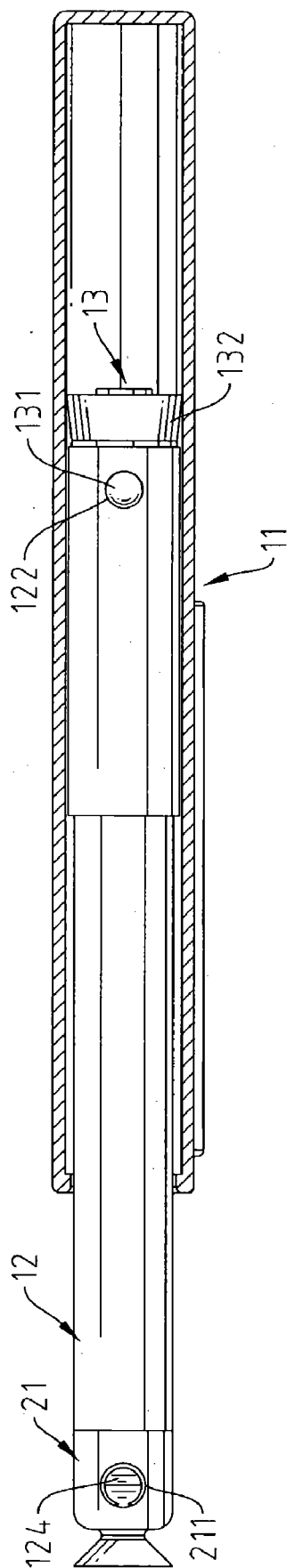


Fig. 3

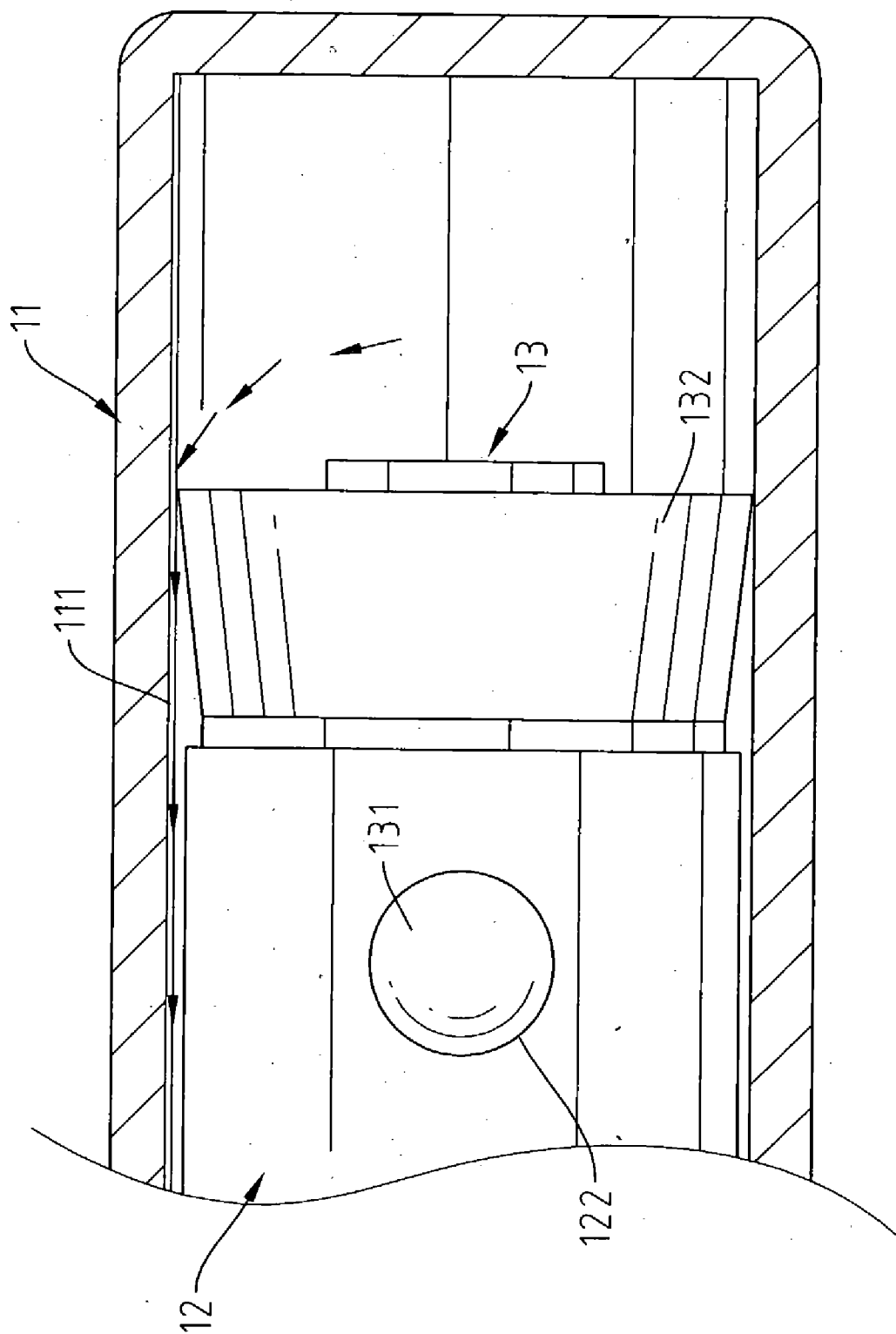


Fig. 4

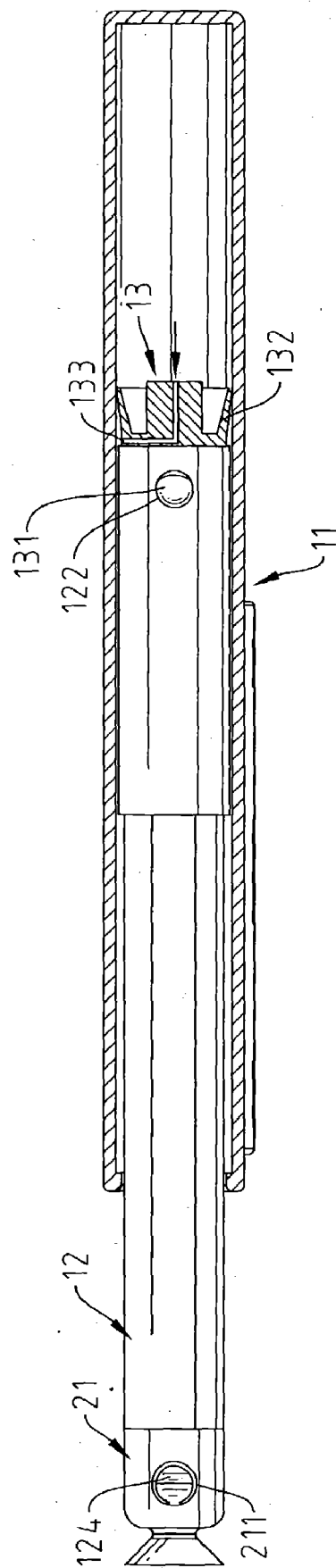


Fig. 5

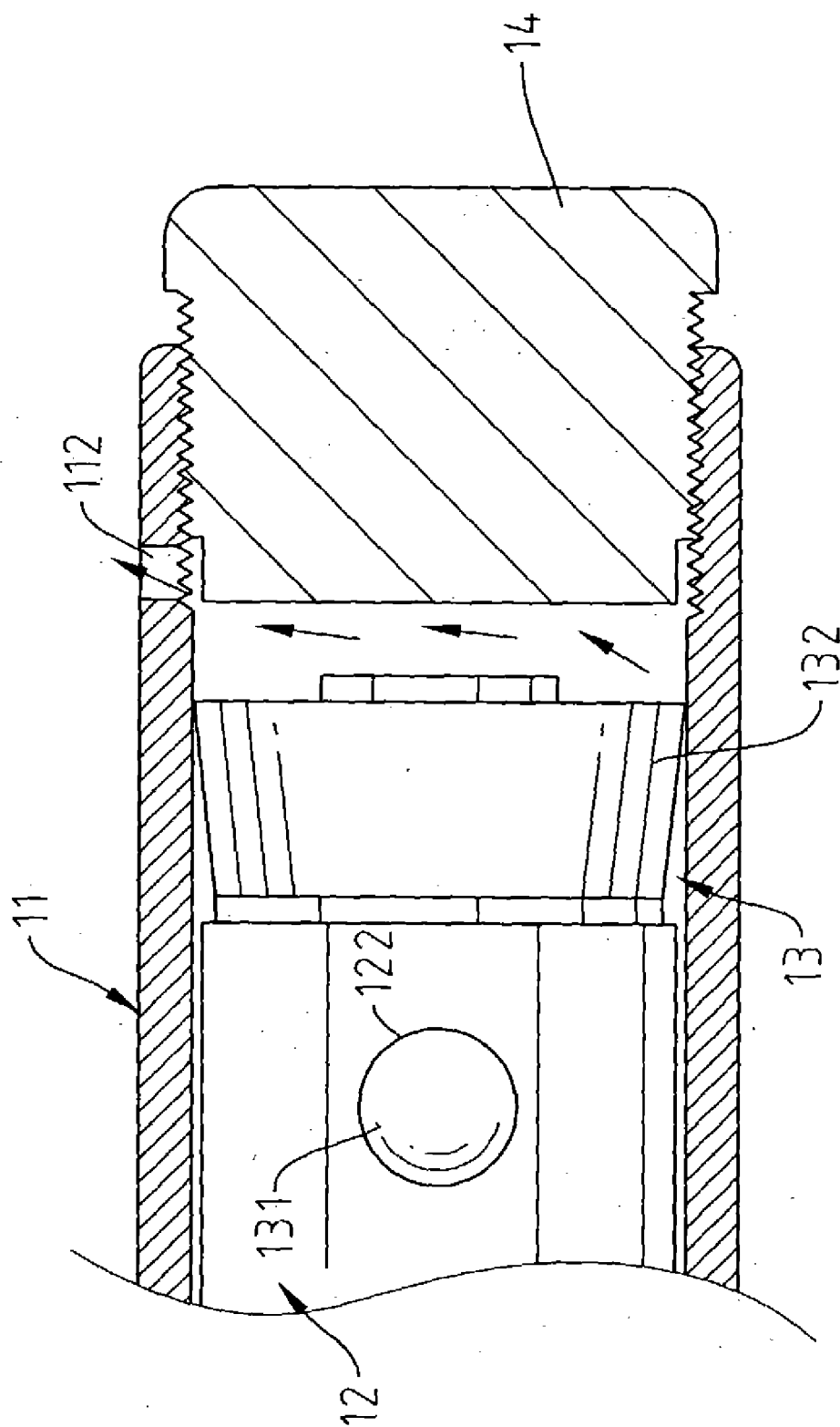


Fig. 6

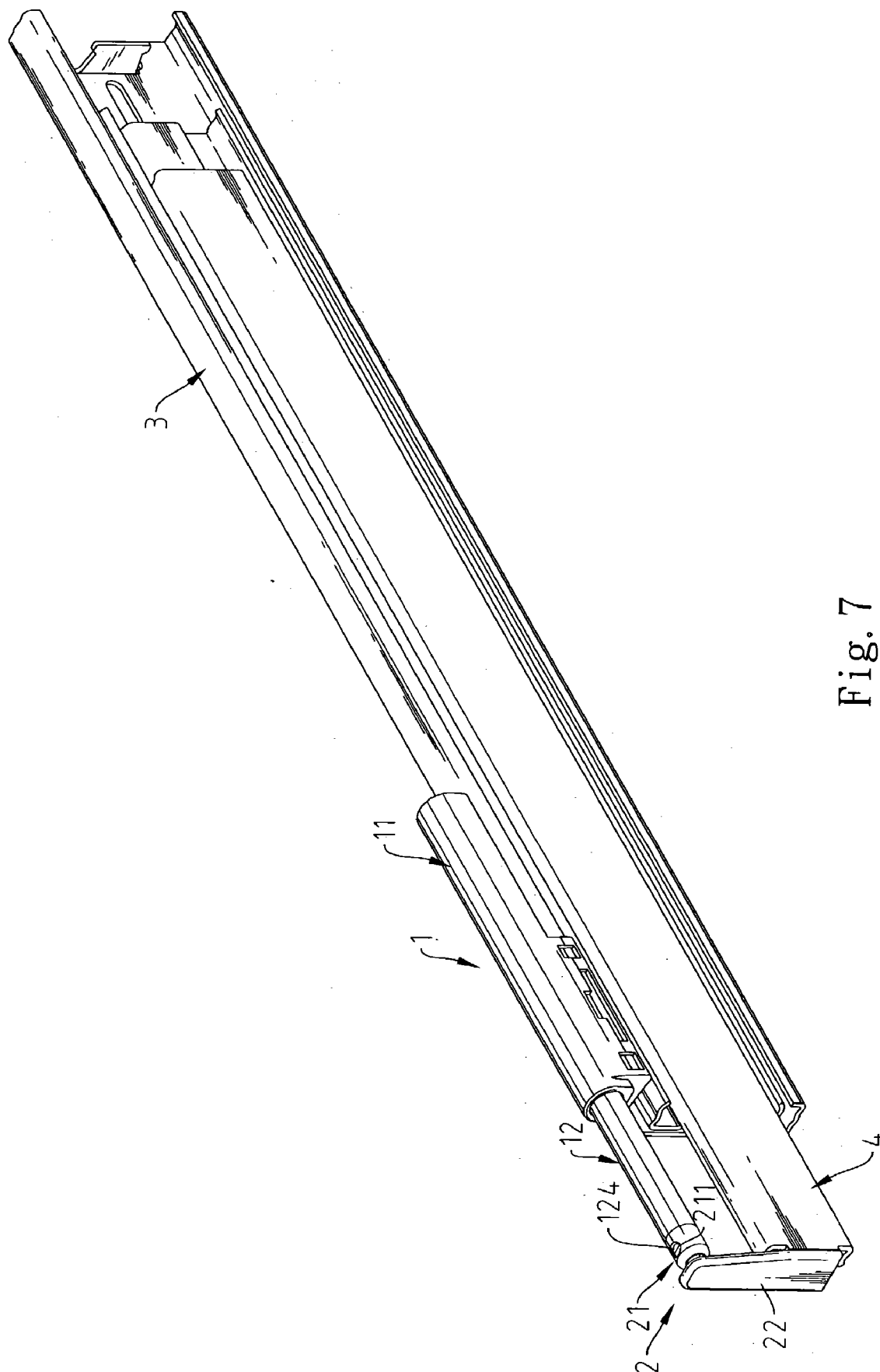


Fig. 7

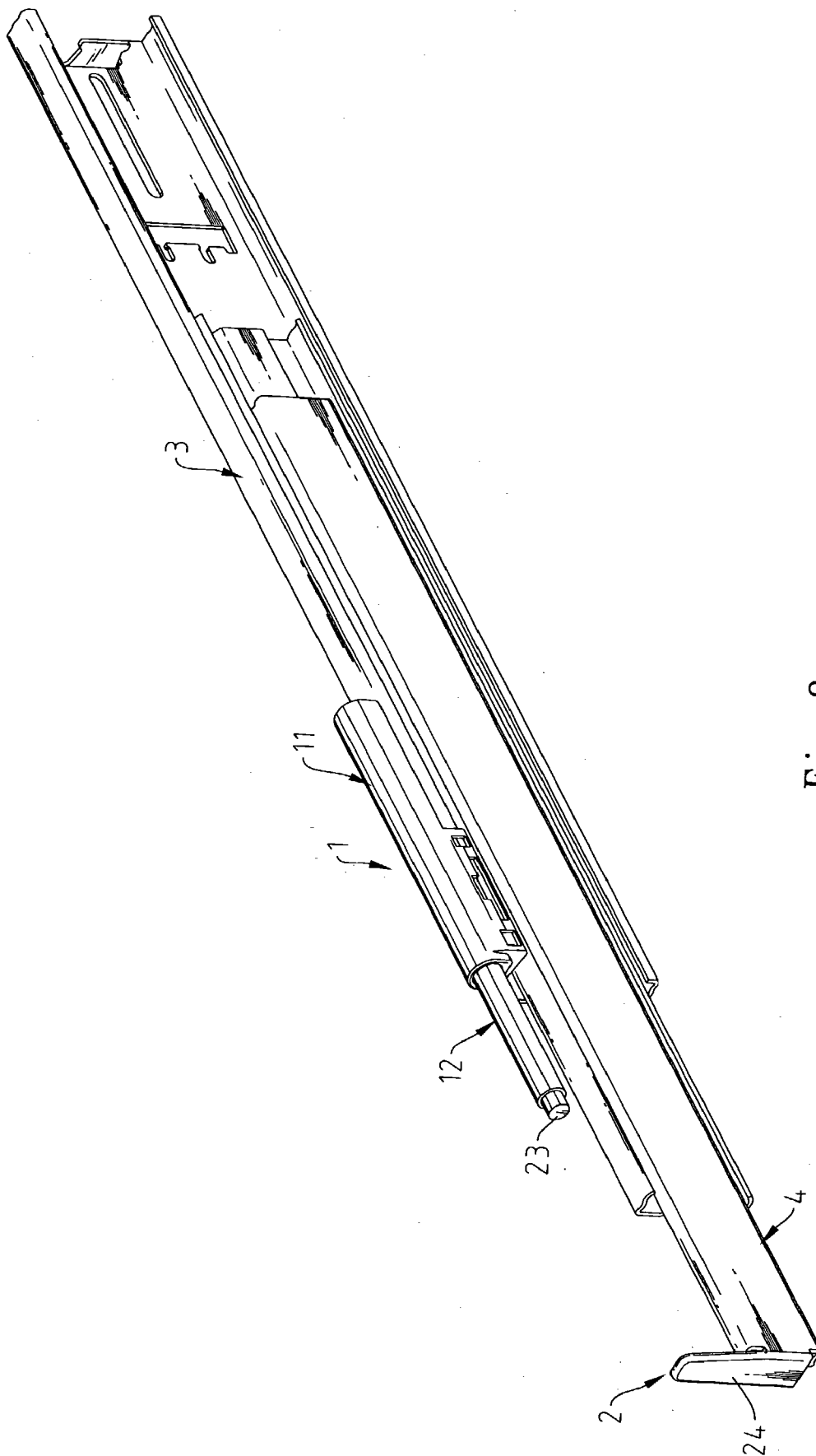


Fig. 8

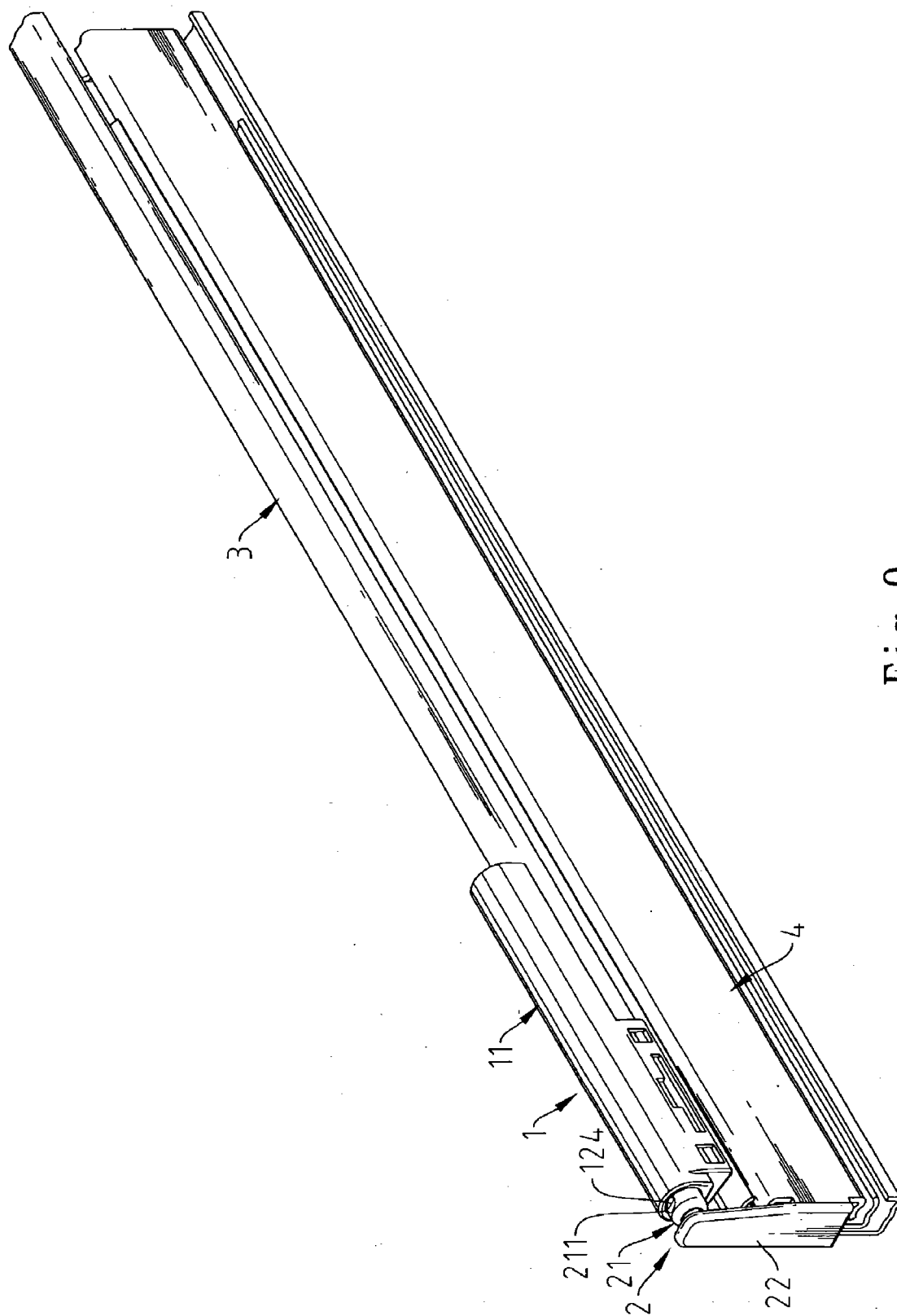


Fig. 9

CLOSING BUFFER MECHANISM FOR DRAWER SLIDE TRACK

FIELD OF THE INVENTION

[0001] This invention relates a creative drawer in which when the drawer is being closed, the closing buffer mechanism will render cushion action to the moveable rod so as to reduce the noise and to enhance the safety as well.

BACKGROUND OF THE INVENTION

[0002] In most cases, the in and out movement of the drawer of the office desk is supported by the slide track, however the design of slide track, either two sections or three sections, only provides the stop at the opening end to prevent the drawer from falling off, but in closing operation, there is no design for safety structure. In case the drawer is being closed at high speed, it as usual leads to the injury if the finger is incidentally enters in the drawer. The high speed to close the drawer is likely to generate the unpleasant noise and violent collision.

SUMMARY OF THE INVENTION

[0003] For the purpose of safety, this invention provides the "Closing Buffer Mechanism" for application and production by the related industries.

[0004] As the technology concerned, the closing buffer mechanism is mounted along with the edge of the slide track of the drawer with the bumper assembly linked with the moveable rod and the connecting rod, while the drawer is moving near the closing end, the closing buffer mechanism will render a counter force to reduce the thrust of the drawer and to minimize the noise so as to enhance the safe operation. This is the main goal that the invention is intended to achieve.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] FIG. 1 shows the stereo of this closing buffer mechanism of this invention.

[0006] FIG. 2 shows the schematic diagram of disassembly of associated parts of this invention.

[0007] FIG. 3 shows the cross section of the buffer mechanism of this invention.

[0008] FIG. 4 shows the compressed air is being discharged from the vent slot at the end of the cylinder.

[0009] FIG. 5 shows the compressed air is being discharged from the vent hole at the end of the cylinder.

[0010] FIG. 6 shows the cross section of the adjusting valve of the buffer mechanism.

[0011] FIG. 7 shows the displacement of the moveable rod along with the buffer mechanism.

[0012] FIG. 8 shows another embodiment of the separable bumper assembly.

[0013] FIG. 9 shows when the moveable rod is at the end of closing, the cushion action the buffer mechanism is rendering.

DETAILED DESCRIPTION OF THE INVENTION

[0014] Please refer to FIGS. 1 through 9, the closing buffer mechanism of this invention mainly comprises a buffer mechanism 1 and a separable bumper assembly 2.

[0015] The buffer mechanism constitutes a cylinder 11, a connecting rod 12 and a piston 13, in which a tube with the rear end sealed and the front end opened, and the outer rim is fixed on the front end of or the rear end of the slide track 3 as shown in FIG. 1 dependent on the space available.

[0016] The inner hollow of the cylinder 11 permits the connecting rod 12 to move inward and outward. The connecting rod 12 has a large rear end and small front end. On the large end, there is a groove 121 to house the soft piston 13. The groove 121 has a go-through lock hole 122 to receive the lock tendon 131 on the front end of the piston 13. The small front end of the connecting rod 12 also has a lock tendon 123.

[0017] The piston 13 has a valve ring 132, larger in diameter than the cylinder 11 so as to seal the inner wall of the cylinder 11. However, there leaves a small air passage between the cylinder 11 wall and the valve ring 132. This air passage leads to the long vent slot 111, or to the vent hole 133 penetrating the center line of the piston 13.

[0018] When the connecting rod 12 is inserted into the cylinder 11, there forms a space between the rear end of the connecting rod 12 and the front end of the piston 13 worked as an air chamber. While the connecting rod 11 moves inward in the cylinder 12 and therefore compress the air which will gradually ooze out through the vent slot 111 as the arrow shown in FIG. 4 or the vent hole 133 of the valve ring 132 as the arrow shown in FIG. 5. which will restrict the thrust of the connecting rod 12 to achieve the cushion action.

[0019] In addition, this invention further provides an adequate adjustment for the buffer mechanism to gain the desirable buffering efficiency. As shown in FIG. 6, the rear end of the cylinder 11 provides a go-through vent hole 112 and an adjusting valve 14 which take the place of vent slot 111 and vent hole 133. The adjusting valve 14 controls the openness of the vent hole 112 to obtain the desirable buffering action.

[0020] The separable bumper assembly can be either a suction tray assembly, the magnetic assembly or the snap assembly. When a force is applied, it achieves separation.

[0021] As shown in FIGS. 1 and 2, the separable bumper assembly consists of a suction tray 21 and a bumper 22. The suction tray 21 is fixed to the convex kick 123 of the connecting rod 12. The way to fix fast the suction tray 21 to the connecting rod 12 is by means of lock hole 211 on the suction tray 21 and the lock tendon 124 on the convex kick 123. The bumper 22 is mounted on the front end of the 30 moveable rod 4. When the suction tray 21 contacts the bumper 22, the suction tray 21, the bumper 22 and the moveable rod 4 will move inward together. When the moveable rod 4 is pulled outward and the pulling force is greater than the sucking force of the suction tray 21, the suction tray 21 and the bumper will separate accordingly as shown in FIG. 1.

[0022] As shown in FIG. 8, the separable bumper assembly 2 is a magnetic assembly composed of the magnetic head 23 and the bumper 24 where the convex kick 123 of the connecting rod 12 is replaced by the magnetic head 23. When the magnetic head 23 contacts the bumper 24, the magnetic head 23, the bumper 24 and the moveable rod 4 will move inward together. If an outward force is applied to

the moveable rod 4, greater than the magnetic attraction, the magnetic head 23 therefore separates from the bumper 24.

[0023] The separable bumper assembly can be a snap assembly where the male post or the female socket can be fixed on the connecting rod 12 or the bumper. When the connecting rod 12 moves inward, the post clamps into the socket, and three parts move together inward. When the moveable rod 4 is pulled outward, greater than the clamp force, the post leaves the socket.

[0024] It is clearly obvious that as shown in FIG. 9, when the drawer is being closed, the moveable rod 4 moves inward, and brings the bumper 22 moving inward too. As soon as the suction tray 21 contact the bumper 21, the suction tray 21, the bumper 21 and the moveable rod 4 will move inward together and the connecting rod 12 will retreat into the cylinder 11 and gradually compress the air inside, the air escapes out gradually too, this is the cushion action the closing buffer mechanism has achieved to counter the thrust of inward movement and to minimize the noise and percussion.

1. A closing buffer mechanism for the drawer slide track mainly comprises a buffer mechanism and a separable bumper assembly.

The buffer mechanism constitutes a cylinder, a connecting rod and a piston, in which the cylinder is a section of tube with end sealed and one end opened. The cylinder is fixed on the outer edge of the slide track. The hollow of the cylinder permits the connecting rod to move in and out. The connecting rod has one end to receive the soft piston. The valve ring, of the piston, slightly larger than the bore of the cylinder seals the wall of the cylinder to form a chamber to store the compressed air.

The separable bumper assembly can be either the suction assembly, the magnetic assembly or the snap assembly. This assembly has two parts are mounted on one end of the slide rod and the front end of the connecting rod respectively. When two parts are contacted, they link and move the connecting rod together inward the cylinder. When a counter force is applied, the separable bumper assembly separates.

When the drawer is being closed, the moveable rod moves inward, brings the bumper assembly contacted and moved inward along the connecting rod which therefore compress the air at end chamber, the compressed air will gradually escape from the air passage formed between the cylinder wall and the piston. This compressed air works as a cushion action to absorb the thrust the moveable rod applies.

2. The closing buffer mechanism for the drawer as claimed in the claim 1, in which the air passage formed between the cylinder wall and the piston can be a vent slot at the end of the cylinder.

3. The closing buffer mechanism for the drawer as claimed in the claim 1, in which the air passage formed between the cylinder wall and the piston can be a vent slot through the center of the valve ring.

4. The closing buffer mechanism for the drawer as claimed in the claim 1, in which the end of the cylinder provides a go through lock hole to receive the lock tendon of the piston as a means of fastening.

5. The closing buffer mechanism for the drawer as claimed in the claim 1, in which the front end of the connecting rod is convex post.

6. The closing buffer mechanism for the drawer as claimed in the claim 1, in which the separable bumper assembly comprises a suction tray and a bumper. The suction tray is fastened on the convex post of the connecting rod and the bumper is mounted on end of the moveable rod. When the suction tray contacts the bumper, these three move together.

7. The closing buffer mechanism for the drawer as claimed in the claim 6, in which the suction tray has a go through lock hole at the axial direction to receive the lock tendon on the convex post of the connecting rod.

8. The closing buffer mechanism for the drawer as claimed in the claim 1, in which the separable bumper assembly can be a magnetic assembly composed of a magnetic post and a bumper to take the place of the convex post. The bumper is fastened on the end of the moveable rod, when contacted, these three move together too.

9. The closing buffer mechanism for the drawer as claimed in the claim 1, in which the separable bumper assembly can be a snap assembly where the post of the convex post is inserted and held in the socket of the bumper on the moveable rod so these three move together.

10. The closing buffer mechanism for the drawer as claimed in the claim 1, in which the cylinder has an open end and a hole in the wall, the open end is sealed with an adjusting valve and the open passes the wall to form an air hole. An adjusting valve works as a plug to close the open end of the cylinder and to control the openness of the air hole and the discharging amount of compressed air in an effort to obtain the desirable cushion action for the buffer mechanism.

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