

Jan. 27, 1959

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2,871,085

DRAWER SLIDE

Filed May 17, 1954

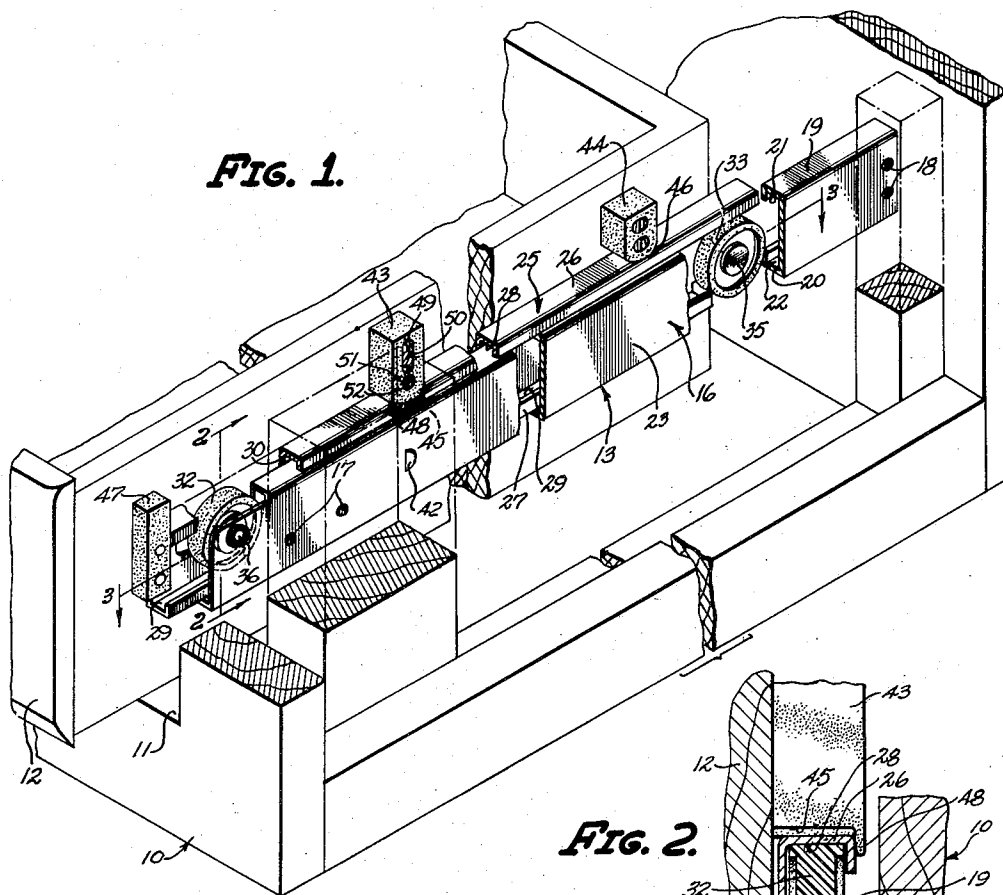


FIG. 2.

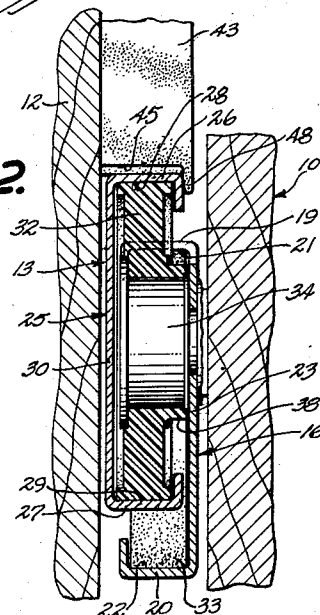
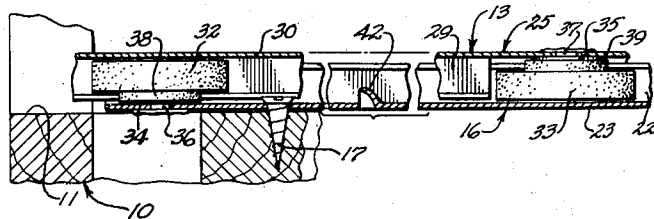


FIG. 3.



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1

2,871,085

DRAWER SLIDE

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Application May 17, 1954, Serial No. 430,082

10 Claims. (Cl. 312—339)

The present invention relates in general to drawer slides and among the principal objects of the invention is the provision of a drawer slide which permits full extension of a drawer carried thereby, which occupies a minimum of space to permit the installation of a drawer of maximum size in a particular opening, which operates with a minimum of frictional resistance to opening and closing movement of the drawer, which eliminates metal-to-metal contact of the component parts thereof, which is of simple construction for economical manufacture, and which may be installed with a minimum of labor and without any routing or mill work on the drawer or drawer frame.

An important object of the invention is to provide a drawer slide having stationary guide and movable slide members of C-shaped cross section nested together in face-to-face relation, thereby minimizing the over-all thickness of the slide so that a drawer of maximum size can be installed in a given drawer opening. The longitudinal axes of the guide and slide members are vertically spaced to permit the nesting relation mentioned, the slide member being at a higher elevation than the guide member to permit seating of drawer-carrying slides thereon, which is another object of the invention.

Since the guide and slide members are of C-shaped cross section, each provides an upper, downwardly facing, channel-shaped track extending longitudinally thereof to provide an upper, downwardly facing track surface, and provides a lower, upwardly facing, channel-shaped track extending longitudinally thereof to provide a lower, upwardly facing track surface. Disposed in the channel-shaped tracks on the slide member and mounted on the front end of the guide member is a front roller, a rear roller being mounted on the rear end of the slide member and being disposed in the channel-shaped tracks on the guide member. With this construction, the front and rear rollers key the slide member to the guide member against lateral movement of the slide member relative to the guide member and hold these members assembled in the nested relation mentioned, which is an important feature of the invention. Further, utilizing the front and rear rollers to hold the guide and slide members in assembled relation in this manner provides a simple drawer slide which may be manufactured economically, this being an important feature of the invention also.

Another object is to provide the slide and guide members with plane webs connecting the respective upper and lower channel-shaped tracks thereof, the provision of such plane connecting webs, without any lateral offsets, or the like, providing for more economical manufacture of the drawer slide of the invention, which is an important feature.

Another object is to provide means spacing the front roller from the web of the guide member into alignment with the upper and lower channel-shaped tracks on the slide member, and to provide means spacing the rear roller from the web of the slide member into alignment with the upper and lower channel-shaped tracks on the guide

2

member to attain the keying relation hereinbefore discussed. Another object is to provide a drawer slide wherein such spacing means include hubs on the respective rollers.

- 5 Another object is to provide front and rear glides on the drawer which rest on and are slidable relative to the slide member to provide for relative movement between the drawer and slide member, as well as relative movement between the slide member and the guide member.
- 10 With this construction, full extension of the drawer is attained to facilitate access to the contents thereof, which is an important feature of the invention.

- 15 An important object of the invention is to provide glides and rollers of relatively large, nonmetallic materials, such as nylon, thereby eliminating metal-to-metal contact between the components of the drawer slide and virtually eliminating any noise during opening and closing movement of the drawer. Although nylon has been mentioned specifically as a suitable nonmetallic material for the glides and rollers, various other nonmetallic materials may be utilized also.
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- 25 Another object is to offset vertically the front and rear rollers which engage the slide and guide members, respectively, so that the guide and slide members may be similarly offset to permit nesting the guide and slide members together in face-to-face relation with the slide member at a higher elevation than the guide member, as hereinbefore discussed.

- 30 Another object is to provide a drawer slide wherein the web of the guide member is provided, near the front end thereof, with an integral stop means engageable by the rear roller to limit forward movement of the slide member.

- 35 Another object is to provide a stop means on the slide member at the front end thereof which is engageable by the front glide on the drawer to limit forward movement of the drawer relative to the slide member and which is engageable with the front roller to limit rearward movement of the slide member relative to the guide member, this stop means thus performing a dual function.
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- 45 Another object is to provide glides on the drawer having convex surfaces which engage the slide member.

- 50 Another object is to provide the front glide on the drawer with a depending flange which is spaced from the side of the drawer so as to receive therebetween the upper edge of the slide member, thereby keying the drawer against lateral movement relative to the slide member.

- 55 Another object is to provide a drawer slide wherein one of the glides on the drawer, preferably the front glide, is vertically adjustable relative to the side of the drawer to provide for accurate alignment of the entire installation.

- 60 Another object of the invention is to provide a drawer glide having a vertical slot therein to permit vertical adjustment of the glide relative to the side of a drawer on which it is installed.

- 65 The foregoing objects, advantages and features of the present invention, together with various other objects, advantages and features thereof which will become apparent, may be attained with the exemplary embodiment of the invention which is illustrated in the accompanying drawing and which is described in detail hereinafter.

- 70 Referring to the drawing:

- Fig. 1 is a fragmentary isometric view illustrating the drawer slide of the invention installed in a drawer cabinet to support a drawer which is movable into and out of the cabinet, various elements of the structure being broken away as required to reveal elements which would otherwise be hidden; and

- Figs. 2 and 3 are fragmentary sectional views respec-

3

tively taken along the arrowed lines 2—2 and 3—3 of Fig. 1 of the drawing.

In the drawing, the numeral 10 identifies a drawer cabinet or frame which provides an opening 11 for a drawer 12. The latter is mounted on two drawer slides of the invention which are disposed between the sides of the drawer and the frame, only one of these drawer slides, identified by the numeral 13, being illustrated as a matter of convenience.

The drawer slide 13 of the invention includes a guide member 16 of C-shaped cross section which is secured to the cabinet 10 at its front and rear ends, as by screws 17 and 18, respectively. Alternatively, or additionally, the member 16 may be mounted by screws intermediate its ends as well. The C-shaped cross section of the guide member 16 results in the provision of an upper, downwardly facing, channel-shaped track 19 and a lower, upwardly facing, channel-shaped track 20, these tracks extending longitudinally of the guide member and respectively providing upper, downwardly-facing, and lower, upwardly-facing track surfaces 21 and 22. The channel-shaped tracks 19 and 20 are connected by a web 23 through which the screws 17 and 18 extend, the web 23 being plane throughout to simplify the structure of the guide member 16.

Nested with the guide member 16 in face-to-face relation therewith is a slide member 25 of C-shaped cross section, the slide member being offset upwardly relative to the guide member 16 to permit a face-to-face nesting relation between the guide member and the slide member with the slide member at a higher elevation than the guide member. The C-shaped cross section of the slide member 25 provides it with an upper, downwardly facing, channel-shaped track 26 and a lower, upwardly facing channel-shaped track 27, these tracks extending longitudinally of the slide member 25 and respectively providing upper, downwardly-facing and lower, upwardly-facing track surfaces 28 and 29. The channel-shaped upper and lower tracks 26 and 27 are connected by a web 30, this web also being plane throughout to simplify manufacture of the slide member 25.

Mounted on the front end of the guide member 16 and extending into the channel-shaped tracks 26 and 27 of the slide member 25 is a front roller 32 of a hard, nonmetallic material, the front roller 32 being offset upwardly relative to the longitudinal axis of the guide member so as to place its center on the longitudinal axis of the upwardly offset slide member 25. Similarly, mounted on the rear end of the slide member 25 is a rear roller 33 of a hard, nonmetallic material, the rear roller being offset downwardly relative to the longitudinal axis of the slide member 25 to place the center of the rear roller on the longitudinal axis of the guide member 16 so that the rear roller may be disposed in the guide member 16 and may extend into the channel-shaped tracks 19 and 20 thereof. The front and rear rollers 32 and 33 are rotatable on axle elements 34 and 35, respectively, these axle elements respectively being provided with pins 36 and 37 which extend through the webs 23 and 30, respectively, of the guide and slide members 16 and 25 and which are shown as riveted to secure the axle elements 34 and 35 to the webs 23 and 30, respectively, although they may be secured thereto in other ways. The front roller 32 is provided with a hub 38 which spaces it from the web 23 of the guide member 16 into alignment with the channel-shaped upper and lower tracks 26 and 27 on the slide member 25. Similarly, the rear roller 23 is provided with a hub 39 which spaces the rear roller from the web 30 of the slide member 25 into alignment with the upper and lower channel-shaped tracks 19 and 20 on the guide member. The use of spacing means, such as the hubs 38 and 39, for the rollers 32 and 33 permits the use of plane webs 23 and 30 without any lateral offsets, thereby simplify-

4

ing the manufacturing of the guide and slide members 16 and 25, which is an important feature.

As will be apparent, with the foregoing construction, the front and rear rollers 32 and 33 key the slide member 25 to the guide member 16 against lateral movement and serve to hold the guide member and the slide member in assembled relation, which is an important feature of the invention. Also, the rollers 32 and 33 space the guide member 16 and the slide member 25 apart so that no contact therebetween exists. This prevents metal-to-metal contact between the guide and slide members 16 and 25 during movement of the slide member relative to the guide member, assuming that the guide and slide members are metallic, which is preferably the case. Such elimination of metal-to-metal contact renders the drawer slide 13 virtually noiseless, which is an important feature. Also, the use of the rollers 32 and 33 tends to minimize friction, which is another feature.

Withdrawal of the slide member 25 from the guide member 16 in response to forward movement of the slide member is prevented by a stop means 42 on the guide member 16 near the front end thereof, the stop means 42 preferably being integral with the web 23 of the guide member 16 and preferably comprising an inwardly struck portion of such web. The stop means 42 is engageable by the rear roller 33 to limit forward movement of the slide member 25.

Mounted on one side of the drawer 12 itself are two glides 43 and 44 provided with convex surfaces 45 and 46 resting on and slidably engaging the upper edge of the slide member 25, forward movement of the drawer relative to the slide member 25 being limited by engagement of the front glide 43 with a stop means 47 mounted on the front end of the slide member 25. The stop means 47 is also engageable with the front roller 32 during rearward movement of the slide member 25 to limit such rearward movement of the slide member, the stop means 47 thus performing a dual function.

As will be apparent, the slide member 25 is a floating member which is not rigidly connected to either the cabinet 10 or the drawer 12. Consequently, full extension of the drawer 12 may be attained, such full extension resulting when the rear roller 33 has been moved forwardly into engagement with the stop means 42 and when the front glide 43 has been moved forwardly into engagement with the stop means 47. Thus, the drawer 12 may be completely withdrawn from the drawer opening 11 to expose the entire interior of the drawer to view so that the contents thereof are rendered completely accessible, which is an important feature of the invention.

The front glide 43 is provided with a depending flange 48 which is spaced outwardly from the side of the drawer 12 to receive therebetween the upper edge of the slide member 25, thereby keying the front end of the drawer to the slide member against relative lateral movement. Preferably, the rear glide 44 is provided with no such flange to permit some side sway of the rear end of the drawer to prevent binding, particularly if the drawer width is not completely uniform from front to rear.

An important feature of the invention resides in making at least one of the glides 43 and 44, preferably the front glide 43, vertically adjustable during installation to insure proper alignment of all of the components of the installation. The front glide 43 is shown as vertically adjustable by virtue of being provided with a vertical slot 49 therein for a screw 50 engaging the side of the drawer 12, the glide 43 also having therein a hole 51 for a screw 52 engaging the side of the drawer. During installation, the front glide 43 is positioned by means of the screw 50 only, this screw being tightened sufficiently to clamp the front glide 43 in place temporarily. Thus by loosening and tightening the screw 50 as required, the vertical position for the glide block 43 necessary to smooth operation may be accurately selected, the screw 50 thereafter being tightened permanently and the screw 52 being installed

5

in the hole 51 and tightened to fix the front glide 43 in its adjusted position. The result of this process is extremely smooth operation, which is an important feature.

Considering the over-all operation of the drawer slide 13 of the invention, it will be apparent that full extension of the drawer 12 is attained merely by moving the drawer 12 forwardly until the rear roller 33 engages the stop means 42 and the front glide 43 engages the stop means 47, the drawer, under such conditions, being completely withdrawn from the drawer opening 11. It will be noted that the roller 33 selectively engages the track surfaces 21 and 22 of the guide member 16 as the drawer 12 is opened. In other words, when the drawer 12 is closed, the weight of the drawer causes the rear roller 33 to engage the lower track surface 22 of the guide member 16. However, as the drawer 12 moves forwardly on the slide member 25 and the latter moves forwardly relative to the guide member 16, the weight of the open drawer tends to rock the slide member 25 in the counter-clockwise direction, as viewed in Fig. 1, so that the rear roller 33 engages the upper track surface 21 of the guide member 16, rather than the lower track surface 22 thereof. The front roller 32 always engages the upper track surface 28 of the slide member 25, except when a sufficient upward force is applied to the drawer 12 in opening or closing it, the front roller 32 engaging the lower track surface 29 of the slide member under such conditions.

Thus, it will be apparent that the present invention provides a drawer slide 13 which occupies a minimum of space as a result of the face-to-face nesting relation between the guide member 16 and the slide member 25, which is a simple construction for economical manufacture, which eliminates metal-to-metal contact and is therefore virtually noiseless, which minimizes friction through the use of nonmetallic rollers and glides in engagement with metallic track surfaces, which utilizes rollers and glides to key the various components together against lateral relative displacement, which provides for smooth operation by virtue of glide adjustability, which permits full drawer extension to provide maximum accessibility to the interior of the drawer, and which permits complete removal of the drawer readily.

Although I have disclosed an exemplary embodiment of my invention herein for purposes of illustration, it will be understood that various changes, modifications and substitutions may be incorporated in the embodiment disclosed without departing from the spirit of the invention as defined by the claims which follow.

I claim as my invention:

1. In a drawer slide, the combination of: guide and slide members of C-shaped cross section nested together in face-to-face relation, each of said members having an upper, downwardly facing, channel-shaped track extending longitudinally thereof to provide an upper, downwardly facing track surface, and each of said members having a lower, upwardly facing, channel-shaped track extending longitudinally thereof to provide a lower, upwardly facing track surface, said slide member being offset vertically upwardly relative to said guide member so as to nest said guide and slide members together in overlapping relation and so as to dispose said upper, channel-shaped track of said slide member above said upper, channel-shaped track of said guide member, said members having plane, parallel, laterally spaced webs respectively connecting said upper and lower channel-shaped tracks thereof; front and rear rollers respectively mounted on the front end of said web of said guide member and the rear end of said web of said slide member, said front roller extending into said upper and lower channel-shaped tracks on said slide member and being engageable with said upper and lower track surfaces on said slide member, and said rear roller extending into said upper and lower channel-shaped tracks on said guide member and being engageable with said upper and lower track surfaces on said guide member, whereby said front and rear rollers

6

key said slide member to said guide member against lateral movement of said slide member relative to said guide member; means spacing said front roller from said web of said guide member into alignment with said upper and lower channel-shaped tracks on said slide member; and means spacing said rear roller from said web of said slide member into alignment with said upper and lower channel-shaped tracks on said guide member.

2. In a drawer slide, the combination of: guide and slide members of C-shaped cross section nested together in face-to-face relation, each of said members having an upper, downwardly facing, channel-shaped track extending longitudinally thereof to provide an upper, downwardly facing track surface, and each of said members having a lower, upwardly facing, channel-shaped track extending longitudinally thereof to provide a lower, upwardly facing track surface, said slide member being offset vertically upwardly relative to said guide member so as to nest said guide and slide members together in overlapping relation and so as to dispose said upper, channel-shaped track of said slide member above said upper, channel-shaped track of said guide member, said members having plane, parallel, laterally spaced webs respectively connecting said upper and lower channel-shaped tracks thereof; front and rear rollers respectively mounted on the front end of said web of said guide member and the rear end of said web of said slide member, said front roller extending into said upper and lower channel-shaped tracks on said slide member and being engageable with said upper and lower track surfaces on said slide member, and said rear roller extending into said upper and lower channel-shaped tracks on said guide member and being engageable with said upper and lower track surfaces on said guide member, whereby said front and rear rollers key said slide member to said guide member against lateral movement of said slide member relative to said guide member, said front roller being offset vertically relative to the longitudinal axis of said web of said guide member in an upward direction and said rear roller being offset vertically relative to the longitudinal axis of said web of said slide member in the downward direction, whereby to provide for said nesting, vertically offset relation between said members; means spacing said front roller from said web of said guide member into alignment with said upper and lower channel-shaped tracks on said slide member; and means spacing said rear roller from said web of said slide member into alignment with said upper and lower channel-shaped tracks on said guide member.

3. A drawer slide as defined in claim 1 wherein each of said spacing means includes a hub on the corresponding roller.

4. A drawer slide as defined in claim 1 wherein said guide member is provided, near the front end thereof, with a stop means engageable by said rear roller to limit forward movement of said slide member.

5. A drawer slide as defined in claim 1 wherein said slide member is provided, at the front end thereof, with a stop means engageable with said front roller to limit rearward movement of said slide member.

6. In a drawer slide, the combination of: guide and slide members of C-shaped cross section nested together in face-to-face and overlapping relation with said slide member offset vertically upwardly relative to said guide member so that the top of said slide member is above the top of said guide member, each of said members having an upper, downwardly facing, channel-shaped track extending longitudinally thereof to provide an upper, downwardly facing track surface, and each of said members having a lower, upwardly facing, channel-shaped track extending longitudinally thereof to provide a lower, upwardly facing track surface, each of said members having a plane web connecting said upper and lower channel-shaped tracks thereof; front and rear rollers respectively mounted on the front end of said web of said guide mem-

7

ber and the rear end of said web of said slide member, said front roller extending into said upper and lower channel-shaped tracks on said slide member and being engageable with said upper and lower track surfaces on said slide member, and said rear roller extending into said upper and lower channel-shaped tracks on said guide member and being engageable with said upper and lower track surfaces on said guide members, whereby said front and rear rollers key said slide member to said guide member against lateral movement of said slide member relative to said guide member; means spacing said front roller from said web of said guide member into alignment with said upper and lower channel-shaped tracks on said slide member; and means spacing said rear roller from said web of said slide member into alignment with said upper and lower channel-shaped tracks on said guide member.

7. In combination: a drawer slide as defined in claim 6 and a drawer having on a side thereof front and rear slide elements slidably seated on said slide member, said slide elements having convex surfaces slidably engaging said slide member.

8. In combination: a drawer slide as defined in claim 6 and a drawer having on a side thereof front and rear glides seated on said slide member, said front glide having thereon a depending flange spaced from said side of

8

said drawer to receive therebetween the upper edge of said slide member.

9. In combination: a drawer slide as defined in claim 6 and a drawer having on a side thereof front and rear glides seated on said slide member, one of said glides being vertically adjustable relative to said side of said drawer, said one glide having a vertical slot and a hole therein, said one glide being secured to said drawer by fasteners respectively extending through said slot and said hole and engaging said drawer.

10. In combination: a drawer; front and rear glides on one side of said drawer, one of said glides having a vertical slot and a hole therein; fastening elements extending through said hole and said slot and engaged with said side of said drawer; and a member on which said glides are seated.

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