ABSTRACT

A plastic guide for a drawer, constituting the stationary element of a two-element slide-facilitating arrangement for the drawer of a furniture piece, the guide having upper and lower integral horizontally extending flanges integrated by a vertically extending web to define a generally I-shape in transverse section, the upper flange including an integral reinforcement on the underside thereof extending partway along the length of the upper flange from the forward end portion of the guide.

3 Claims, 13 Drawing Figures
PLASTIC GUIDE FOR DRAWER

BACKGROUND AND SUMMARY OF INVENTION

Historically, drawer guides have been constructed of wood and have had a T-shape or H-shape in transverse section. The guides are normally secured to the front and rear parting rails of a furniture piece such as a dresser, night stand, etc. The flange of the T-shape is engaged by a slide member secured to the underside of the drawer and which is advantageously channel-shaped as illustrated in co-owned U.S. Pat. No. 3,328,107.

The heretofore employed wood guides have suffered from a number of drawbacks. Because the wood could swell due to changes in climate, an unduly large tolerance or clearance had to be allowed to insure basic workability, i.e., proper sliding relation between the drawer slide and furniture guide. This naturally resulted in poor operation when the swelling was minimal. Further, to achieve desirable operation, sanding had to be performed on the wood which raised the cost significantly. Yet further, the wood guides had to be equipped with screw openings at the ends thereof (for securement of the guide to the parting rails) which, if not performed with a good deal of care, could result in splitting of the guide and total loss thereof.

Attempts have been made to employ other materials of construction for the wood guides. For example, plastic guides have been provided which approximate the shape of the previously employed wood guides. To make these plastic guides reasonably competitive with the wood guides, it was necessary to substantially reduce the amount of material which resulted in problems of undue flexure. Any attempt to minimize the flexural problems resulted in an unduly expensive guide — from the standpoint of the quality and quantity of the plastic material needed.

According to the instant invention, the drawbacks of the previously employed wood and plastic guides are avoided. More specifically, through the use of a unique configuration (generally approximating an I-shape in transverse section) we have been able to provide a superior plastic guide. The guide is characterized by a unique integral reinforcement adjacent the forward portion of the guide, advantageously provided on the underside of the top flange. This not only minimizes any flexural problems but establishes a superior sliding relationship with the drawer slide while retaining the advantage of economy of manufacture.

Other objects and advantages of the invention can be seen in the details of construction and operation set down in the ensuing specification.

DETAILED DESCRIPTION

An illustrative embodiment of the invention is described in conjunction with the accompanying drawing, in which

FIG. 1 is a perspective view of a portion of a furniture piece equipped with a slide-equipped drawer and the inventive guide with parts partially broken away or shown in phantom to better illustrate the environment of the invention;

FIG. 2 is a perspective view, partially broken away, of the inventive guide;

FIG. 3 is a top plan view, partially broken away and in section of the guide of FIG. 2;

FIG. 4 is a side elevational view of the guide;

FIG. 5 is a bottom elevational view of the guide, again partially broken away to show details of construction in section;

FIGS. 6, 7 and 8 are cross sectional views taken along the lines 6—6, 7—7, and 8—8, respectively as applied to FIG. 4;

FIG. 9 is a perspective cut away view of one end portion of the inventive guide and showing the details of a screw-receiving hole;

FIG. 10 is a sectional view taken along the line 10—10 applied to FIG. 4;

FIG. 11 is another sectional view of the end portion of the guide as would be seen along the slight line 11—11 applied to FIG. 4;

FIG. 12 is a front end elevational view of the structure seen in FIG. 4; and

FIG. 13 is a longitudinal sectional view of the front end portion of the guide seen in FIG. 4.

In the illustration given, and with particular reference to FIG. 1, the numeral 20 designates a drawer provided as part of a furniture piece F (such as a dresser, nightstand, etc.) and which is equipped with a front handle as at 21. The drawer 20 also has a slide element 22 adapted to move on a stationary guide 23 (see FIG. 2).

The inventive guide 23 is advantageously constructed of medium impact polystyrene and normally has a length from about 10 inches to about 19 inches. As indicated, the transverse cross-section is generally of an I-shape which includes an upper flange 24 and a lower 25 integrated by a vertically extending web portion 26. Adjacent the forward end of the guide 23 we provide a screw receiving opening 27 and adjacent the rear end another opening 28. It will be noted that the lower flange 25 is stepped as at 29 (adjacent the forward end) and at 30 (adjacent the rear end) for properly engaging the front and rear parting rails, respectively.

As can be appreciated from a consideration of the right hand portion of FIGS. 2 and 4 and comparing these with FIGS. 6—8, there is provided a reinforcement generally designated 31. The reinforcement 31 is seen to include a longitudinally extending wall or rib 32 which is positioned below and integrated with the upper wall or flange 24, but limited in extent to the front portion of the guide 23. For example, a conventional guide may measure in length slightly over 16% inches while the distance from the front end 33 (see FIG. 4) to the rear 34 of the reinforcement 31 is about 7 inches. No significant advantage is gained by extending the reinforcement further rearwardly than about 50% of the length of the guide inasmuch as the guide is not subjected to vertical flexure until the drawer is pulled out about half its length. Further removal of the drawer changes the character of the loading so as to tend to deform the guide — as by having a downward force applied at the front end 33 and an upward force on the underside of the reinforcement 31 adjacent the rear end 34. Therefore, we provide the rib 32 with its under surface 32a (see FIG. 7) spaced suitably below the top surface 24a of the flange 24 (see FIG. 6) so as to afford good sliding contact with the channel spaced slide 22. Normally the depth of the channel in the slide 22 is of the order of somewhat in excess of three-eighths inch so that the spacing between the top flange...
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surface 24A and the bottom rib surface 32a is 0.375 inch.

In the illustrated embodiment, the rib 32 (on both sides of the web 26) is integrated with the flange 24 by means of a plurality of crossed webs 35 (see FIGS. 4 and 4). In the embodiment illustrated the web 26 separates the openings 35a (see FIGS. 4 and 8) on opposite sides. However, in some instances, the openings may extend the width of the guide. Also, as appreciated from a consideration of FIG. 7, the rib 32 is slightly narrower than the top flange 24 to accommodate possible "toe-in" of the slide 22. It will be appreciated that the channel shaped slide 22 may become deformed during manufacture or in use whereby the bottom edges come closer together, i.e., toe-in toward each other and the relief of each side edge 32b of the rib 32 by about 0.030 inch avoids any potential binding engagement between the slide 22 and the guide 23. Still further, many slides 22 are equipped with indentations in the sidewalls so as to provide a tight connection when the drawer is fully inserted. The reduced width of the rib 32 also is helpful in avoiding undue binding under this condition of operation.

We have found it advantageous in the resisting of vertical flexure without deformation or rupture while limiting the amount of material employed in the guide to provide the rib 32 of a thickness of the order of 0.090 inch reinforced by the cross ribs or webs 35 on 0.700 inch centers.

The lower flange 25 performs an advantageous function in aiding the resistance to both vertical and horizontal flexure of the guide due to drawer loading. In the illustration given, the bottom flange 25 is somewhat wider than the top flange 24 (1.500 inch as against 1.134 inch). Preferably, the bottom flange 25 is wider than the top flange so as to develop additional resistance to horizontal flexure with cost being the consideration which limits the extra width of the flange 25. We also minimize the cost through the conservation of material by introducing circular openings as at 36 in the web 26 (see FIG. 4).

Referring now to FIG. 13 (or alternatively the extreme right hand end of FIG. 4) it will be seen that the top structure, viz., the flange 24 and reinforcement 31 are tapered in proceeding toward the forward end of the guide 23. The taper is provided by an inclination of both the top wall 24a as at 37 and the bottom wall 32 as at 38. Either or both tapers 37 and 38 are effective in facilitating the installation of a drawer by virtue of cutting down on the thickness of the guide portion received within the slide 22. The taper 37 provided on the flange 24 is additionally advantageous in that it cuts down on the drag and wear as the drawer is moved in and out, and it being understood that the plastic will wear in preference to the metal slide 22. Although it is possible to use cylindrical openings, preferably counterbored (as at 27 and 28 in FIG. 3), we find that we can eliminate the use of cores in the molding procedure through the structure depicted in FIGS. 9-11 taken in combination with FIGS. 3-5. For this unique screw receiving opening 28, we provide a slot 39 in the top flange 24. The slot 39 extends inwardly from the side edge 28b and includes a semicircular apex as at 39a. This is advantageously achieved through one-half of the mold and without the use of a pin core of the like. This results in a semi-cylindrical supporting wall 39a as can be appreciated from FIG. 11. The cooperating half of the mold is suitably configured so as to develop a further cooperating semi-cylindrical wall as at 40 (see FIGS. 10 and 11). This, in effect, provides a counter bore for receipt of the screw head. A boss-like structure 41 integrates the underside of the rib 32 with the upper side of the lower flange 25 (see FIGS. 11-13). A slot 42 is provided in the rib 32 (see FIGS. 3, 10 and 11) which results in the provision of a semi-cylindrical wall 42a disposed below and inwardly of the previously referred semi-cylindrical wall 39a. Lastly, a slot 43 extends into the lower flange 25 and the boss 41 to develop a semi-cylindrical wall 44 (compare FIGS. 5 and 11). Thus we have right and left hand vertically spaced cylindrical bearing surfaces for both the counter bore and the main bore thereby providing a screw receiving opening without the need for providing a pin core or the like.

Accomplished with the inventive construction, the maximum deflection due to drawer loading on a guide occurs at from about 3 inches to about 4 inches of engagement between the slide 22 and the guide 23; i.e., 3 to 4 inches rearward of the forward end 33. Thus, it is possible in some instances to reduce the length of the reinforcement 31, depending upon the length of the drawer, distribution of loading, quality of material, etc. However, a favorable combination of economy and strength can be achieved by limiting the reinforcement 31 to the forward 50 percent of the guide 23 but covering at least the initial 3 inches.

We claim:

1. A drawer guide adapted to be mounted on a furniture piece to guide the movement of a drawer positioned over the front and rear parting rails of said furniture piece and equipped with a channel shaped slide comprising a unitary elongated plastic element having upper and lower integral horizontally extending flanges integrated by a vertically extending web to define a generally I-shape and transverse section and equipped with an aperture adjacent each end for receiving a fastener to secure the element to said parting rails, said element further including an integral reinforcement on the underside of said top flange, said top flange and reinforcement being integrated at said front end, at least one of the upper walls of said flange and lower wall of said reinforcement being tapered to facilitate engagement of said slide with said guide.

2. The structure of claim 1 in which both of said walls are convergently tapered.

3. A drawer guide adapted to be mounted on a furniture piece to guide the movement of a drawer positioned over the front and rear parting rails of said furniture piece and equipped with a channel shaped slide comprising a unitary elongated plastic element having upper and lower integral horizontally extending flanges integrated by a vertically extending web to define a generally I-shape and transverse section and equipped with an aperture adjacent each end for receiving a fastener to secure the element to said parting rails, said element further including an integral reinforcement on the underside of said top flange, each aperture including vertically spaced oppositely disposed semi-cylindrical walls, each aperture including two pairs of vertically spaced oppositely disposed walls with the upper of said pair of walls being of greater diameter to provide a counter bore.