Oct. 12, 1965 R. H. REISS, SR., ETAL 3,211,510

DRAWER GUIDE AND SYSTEM

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Fig. 1.

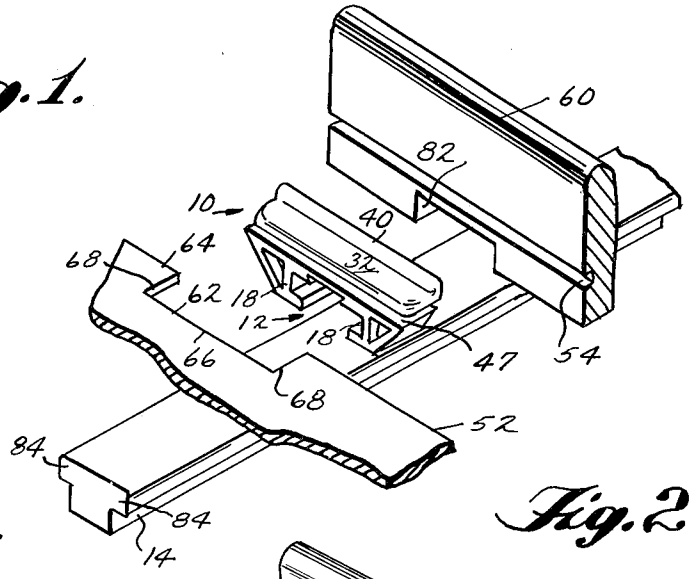


Fig. 5.

Fig. 2.

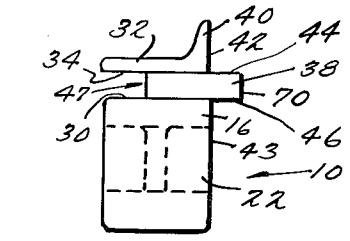
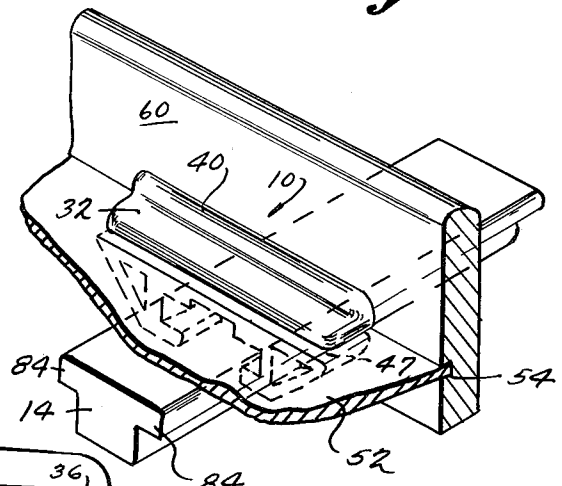


Fig. 3.



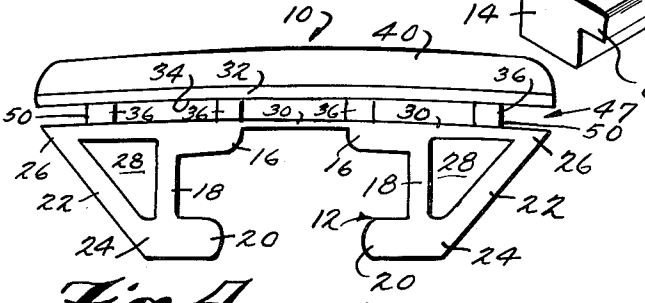
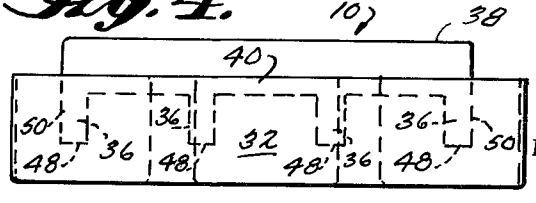


Fig. 4.



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DRAWER GUIDE AND SYSTEM

Filed Jan. 14, 1965 3 Sheets-Sheet 2

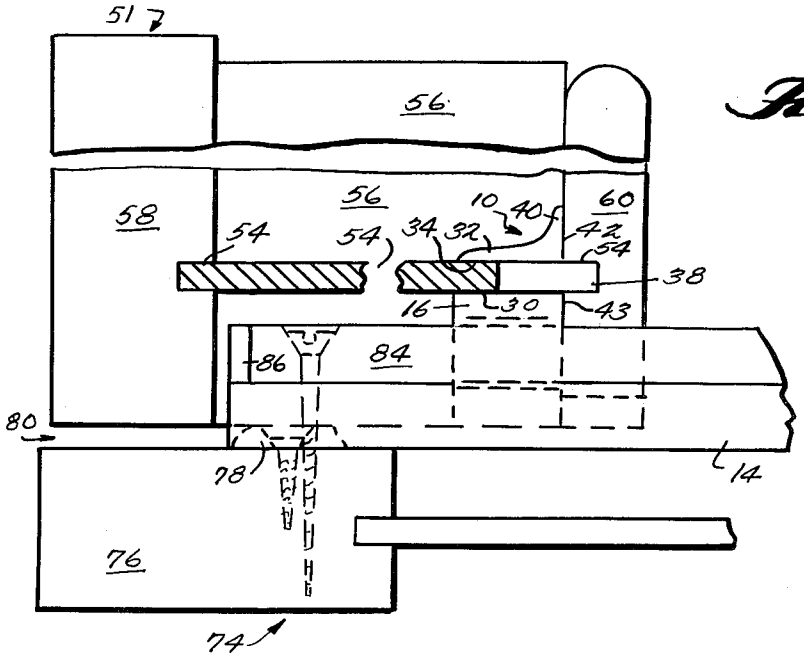
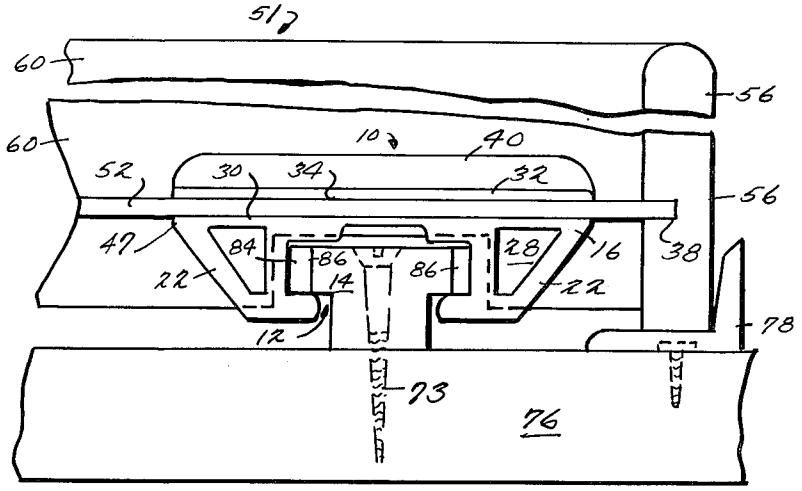


Fig. 6.

Fig. 7.



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DRAWER GUIDE AND SYSTEM

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Fig. 8.

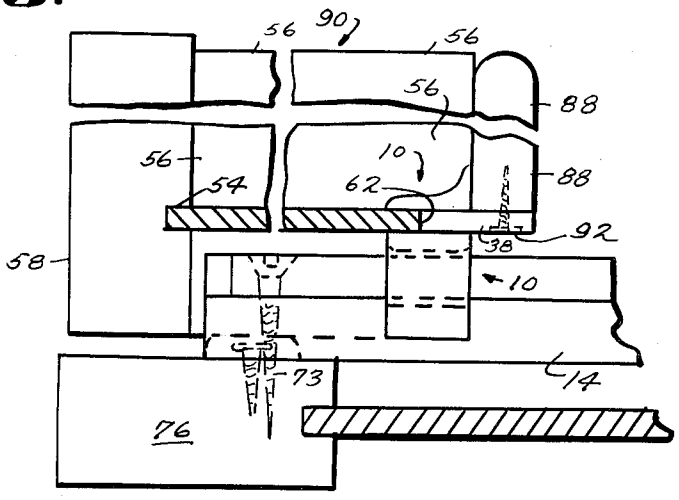
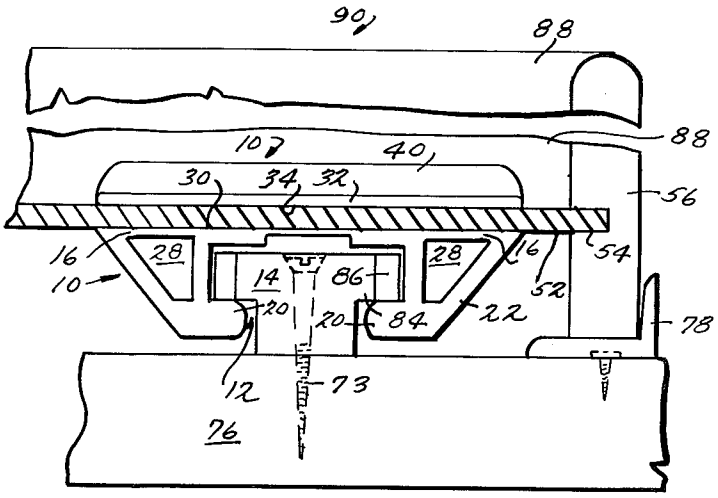


Fig. 9.



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3,211,510

DRAWER GUIDE AND SYSTEM

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Filed Jan. 14, 1965, Ser. No. 425,410
12 Claims. (Cl. 312—346)

The present invention relates to drawer guides and particularly to those used on less expensive furniture such as desks, stands, bureaus and cabinets to facilitate longitudinal sliding of the drawers concerned between their open and closed positions.

It has become customary in fitting drawers to furniture cases to provide some interdigitating guiding means on the drawer and case intersecting the drawing opening therein for preventing lateral, skew or tipping movement of the drawer as it is opened and closed by reciprocating it longitudinally of the case opening.

As a generalization, comprehensive well working and quiet guiding systems have been primarily found in more expensive furniture while less expensive furniture has had less effective or less durable guiding provisions.

An effective drawer guiding system, exemplified by the commonly assigned United States patent to Reiss et al. 2,857,233, granted October 21, 1958, includes a back bearing secured to the drawer back by screws, staples or the like is adapted to interdigitate with a rail secured to the case and intersecting the opening therein. A pair of corner stationary guides are provided on the case adjacent its front for engagement with the lower outer region of the drawer sides and thus with the back bearing provide a three point support and guide for the drawer. While such an assembly has been found to be successful and readily acceptable in many applications, there has been a continuing need in the art for a back bearing securely mountable on less expensive furniture whose drawer backs by virtue of their thinness will not permit screw or staple mounting of a back bearing such as that disclosed in the mentioned patent.

In view of this need, various proposals have been made for securing back bearings to inexpensive drawers. Adhesives have been employed, but none too successfully because they do not adhere sufficiently to the lubricous plastic materials currently being employed to fabricate such bearings, so that in use, under adverse conditions, such as high humidity and a heavy handed drawer opener, the incidence of failure of adhesive securements is too high for their wide commercial employment.

Other means have been proposed, for instance the interlocking of the back bearing between the drawer back and bottom as the drawer is being fabricated, particularly to allow lateral movement of the bearing, but such prior art securement provisions have not been found to be acceptable in many applications. Notably, such installations have been found to be unacceptable where the stress on the bearing, by virtue of its sliding contact with a guide rail, tends after a short period of use, to cause a separation of the drawer back and bottom. Such separation has been found to occur at particularly rapid rate when the drawer concerned is often pulled nearly from the case so that the tension between the guide rail and the back bearing is particularly great and in instances where the drawer is fabricated so as to allow some amount of play between the bearing and the drawer. In the latter case, as the drawer is pulled out suddenly or pulled out and allowed to tip down, the play between the drawer and bearing is taken up so swiftly that the difference in the momentum of the drawer and the bearing at the instant the slack is taken up tends to pull the drawer apart at its point of attachment to the bearing.

Accordingly, it is a primary object of the present invention to provide a drawer guide including a back bearing especially useful in inexpensive furniture, which is associable with the drawer concerned without the use of independent fasteners and which is accurately positionable on the drawer without need of providing for relative movement between the drawer and the bearing.

Another object of the present invention is the provision of a back bearing of the type described which has means for accommodation of the back bearing to drawer bottoms of varied thickness in order to ensure a snug mounting that will not tend to pull the drawer apart.

These and further objects of the present invention as well as its principles and scope of applicability will become more clearly apparent during the course of the following detailed discussion relating to the preferred embodiments of the invention which are illustrated in the attached drawings.

In the drawings:

FIGURE 1 is an exploded fragmentary perspective view of a drawer including a back bearing according to the present invention;

FIGURE 2 is an assembled fragmentary perspective view similar to FIGURE 1;

FIGURE 3 is a front elevation view of a back bearing according to the invention;

FIGURE 4 is a top plan view of the back bearing;

FIGURE 5 is a side elevation view of the back bearing;

FIGURE 6 is a side elevation view, partly sectioned of a drawer having a back which extends beneath its bottom and which includes a guiding system according to the invention;

FIGURE 7 is a front elevation view, partly sectioned of the system shown in FIGURE 6;

FIGURE 8 is a side elevation view, partly sectioned of a drawer whose bottom is secured to the lower extent of its back and which includes a guiding system according to the invention; and

FIGURE 9 is a front elevation view, partly sectioned of the system shown in FIGURE 8.

According to one embodiment of the invention, best depicted in FIGURES 1, 2, 6 and 7 the back bearing **10** includes an undercut channel **12** facing downwardly and arranged to slidingly interdigitate with a generally T-sectioned rail or drawer guide **14**, the latter being preferably mounted on a furniture case so as to extend longitudinally in the bottom central region of the opening thereof. The channel **12** is shown defined by a generally horizontally directed, transversely elongated member **16** from transversely spaced points along which a pair of facing L-shaped legs **18** depend so as to define the undercut channel **12** between them. The horizontal portions **20** of the legs **18** prevent accidental lift up and tip down of the drawer with which the bearing **10** is associated with respect to the rail **14**.

To strengthen the legs **18**, integral webs **22** are formed extending between the heels **24** of respective legs and the adjacent transverse ends **26** of the member **16**. Thin triangular webs **28** may be formed between the legs **18**, webs **22** and member **16** to further strengthen the structure shown.

It should now be noticed that the member **16** is not perfectly horizontally directed inasmuch as it is preferably bowed centrally slightly so as to have a generally cylindrically curved upper surface **30**, curved about a generally horizontal axis located below the surface **30** and parallel to the rail **14**. A second cylindrically curved member **32** having a lower surface **34** coaxial with the surface **30**, is mounted above the member **16** so as to be generally coextensive therewith.

The member **32** is shown joined to the member **16** by a plurality of laterally spaced, vertically directed webs **36**

extending from the rear of the surfaces **30** and **34** to points intermediate the front and rear of the surfaces **30** and **34**. The back bearing **10** is completed by a generally horizontally extending rib **38** integrally secured to the rear of the webs **36** and projecting rearwardly, and a vertically directed flange **40** integrally secured to the top rear region of the member **32** so as to have its rear surface **42** flush with the rear surface **43** of the member **16**, legs **18** and webs **22**. Like the surfaces **30** and **34**, the upper and lower surfaces **44** and **46** are preferably somewhat cylindrically curved, so that the rib **38** is slightly arcuate.

As can be seen by comparing FIGURES 3, 4 and 5, a generally C-shaped channel **47** is formed between the surfaces **30** and **34** having as its inner limit the front ends **48** of the webs **36** and the laterally outer surfaces **50** of the outermost webs **36**.

The drawer **51** shown in FIGURES 1, 2, 6 and 7 is of the type wherein the drawer bottom **52** is composed of nominal ⅛ inch thick pressed board, hard board or the like the periphery of which is received in a horizontally extending kerf or channel **54** in the inner lower region of the drawer sides **56**, front **58** and back **60** as the drawer is being assembled.

As best shown in FIGURE 1, the back bearing **10** is mounted on the drawer as it is being assembled without the use of independent fasteners.

A notch **62** of rectangular form is cut or otherwise formed in the central rear of the drawer bottom periphery intersecting the rear edge **64** of the bottom **52**. Preferably, the notch is accurately centered for instance by the use of a template to cut the notch, and is of sufficient width such that the drawer bottom periphery adjacent the notch **62** is snugly slidingly received in the channel **47** so that the edge **66** of the notch abuts the front ends **48** of the webs **36** and the side edges **68** of the notch are closely adjacent the laterally outer surfaces **50** of the outermost webs **36**.

The notch **62** is preferably of such depth from back to front that when the web fronts **48** abut the notch edge **66**, the rear edge **70** of the rib **38** is flush with the rear edge **64** of the drawer bottom.

Accordingly, as the drawer bottom **52** including the bearing **10** is assembled to the drawer back the edge **64** and rib **38** are received in the kerf **54** and the rear surfaces **42** and **43** abut the front surface **72** of the drawer back **60** above and below the drawer bottom **52**. This abutment is advantageous because it restrains the bearing **10** from rocking about a horizontal pivot line parallel with the drawer back which rocking would tend to separate the drawer back from the drawer bottom.

The guiding system shown in FIGURES 6 and 7 is completed by a generally T-sectioned guide rail mounted for instance by screws **73** on the furniture case **74** so as to extend from the front rail **76** to the rear thereof and a pair of front bearings **78**, as disclosed in the above-mentioned patent, mounted on the upper surface of the front rail **76** adjacent the sides of the furniture case drawer receiving opening **80**. Accordingly, as the drawer is slid longitudinally in the opening **80**, it is supported at three points by the back bearing **10**, and the front bearings **78**, the former in conjunction with the T-shaped guide rail **14** upon which it is slidingly received additionally providing guiding of the drawer by restraining lateral movement and tilting thereof with respect to the furniture case.

As best seen in FIGURE 1, the drawer back **60** is notched at **82** centrally thereof near its lower edge beneath the kerf **54**, the T-shaped guide rail **14** being slidingly received through the notch **82**. The leading edge of the laterally extending ears **84** of the guide rail **14** may be chamfered as at **86** in order to facilitate insertion of the drawer in the furniture case opening.

A second embodiment a guiding system according to the invention is shown in FIGURES 8 and 9. Portions of the system with the exception of the drawer back **88** and the mounting of the drawer bottom **52** thereto are identical to the system shown in FIGURES 1, 2, 6 and 7 and are similarly numbered.

Whereas the sides **56** and front **58** of the drawer **90** are kerfed at **54** for receiving the drawer bottom **52**, the drawer back **88** has its lower extent at what would otherwise have been the upper extent of drawer bottom receiving kerf therein.

In assembling the drawer **90**, the drawer bottom **52** is slid into the kerf **54** in the sides **56** and front **58**. The back bearing **10** is then slid into the notch **62** as discussed in regard to FIGURES 1, 2, 6 and 7. As best seen in FIGURE 8, the drawer bottom rear region is then fitted abuttingly subjacent the drawer back and secured thereto by any convenient means such as nails **92** staples, adhesive or the like. One or several of the fasteners may be secured through the rib **38**. The construction shown in FIGURES 8 and 9 affords at least the advantages of eliminating the need to cut a notch in the drawer back and allowing a drawer back to be constructed from narrower stock thus resulting in a material and weight saving. Additionally in some instances the construction shown in FIGURES 8 and 9 may offer a fabrication advantage inasmuch as in this embodiment the drawer back, front and sides may first be secured to one another, the back bearing next slipped into the notch **62** and the drawer bottom slipped into the kerf **54** from the rear of the drawer back. As the drawer bottom is slid forwardly in the kerf **54** it can be bowed downwardly centrally of the rear region thereof so that the flange **40** clears the lower edge of the back until the bottom is "snapped" into position as shown in FIGURES 8 and 9.

An important advantage provided by the back bearing **10** flows from the curvature of the facing surfaces **30** and **34** of the channel **47** which receives the drawer bottom peripherally of the notch **62**. The thin pressed board, composition board or the like from which inexpensive furniture drawer bottoms may be made often varies proportionately appreciably in thickness so that were the surfaces **30** and **34** planar, the channel **47** would have to be ample enough to accommodate the thickest of bottoms normally encountered.

The back bearing **10** is preferably molded as an integral unit from a somewhat lubricous somewhat flexible plastic material such as polyolefins exemplified by polyethylene, polypropylene, polystyrene, polyamides exemplified by nylon; polyacetals such as polyoxymethylene; polycarbonates; vinyl resins such as polyvinyl acetate, polyvinyl chloride, polyvinylidine chloride, polyvinyl butyral; polyesters, exemplified by polyethylene, terephthalate; polyacrylates; fluorinated polymerized resins exemplified by polytetrafluoroethylene, polyethers such as polyurethane and copolymers, interpolymers and mixtures, of the above.

Because of the curvature of the channel **47** and the flexibility of the material from which the back bearing is made, the back bearing **10** can be snugly received on a relatively wide range of drawer bottom thicknesses. This snugness cooperating with the positioning of the rear surface of the bearing **10** against the front of the drawer back to prevent such tipping of the back bearing as would accelerate separation of the drawer bottom and back.

Quite clearly the channel **47** need not be downwardly arcuate as shown, but may alternatively be upwardly arcuate. Although, the back bearing **10** has been discussed from the viewpoint of mounting single back bearing at the central region of a drawer rear it should be apparent that several such bearings could be spaced along the rear of the drawer and similarly mounted.

It should now be apparent that the apparatus disclosed herein fully and efficiently accomplishes each of the objects set forth at the outset of this specification. Inasmuch as the specific embodiments shown and de-

scribed can be modified without departing from the invention's principles as disclosed herein, the invention should be considered to embrace all such modifications as are within the spirit and scope of the following claims.

We claim:

1. A drawer back bearing comprising: a body, means defining a guide receiving channel therethrough; and means defining a generally laterally outwardly opening channel in said body disposed about a major portion of the periphery thereof, said channel having at least one substantial bend therein as seen in vertical plan whereby said back bearing is mountable on a notched drawer bottom having a thickness approximately equal to the vertical width of said channel, the drawer bottom peripherally of the notch being receivable in said channel on both sides of said bend to thereby prevent rocking of said drawer back bearing about a horizontal axis with respect to the drawer bottom.

2. A drawer back bearing as set forth in claim 1 wherein the second-mentioned channel is defined between means defining a pair of vertically spaced, facing surfaces, extending generally horizontally and generally parallel to one another, at least one of said surfaces being slightly arcuate about an axis generally parallel to the longitudinal axis of the first-mentioned channel whereby said back bearing is mountable on drawer bottoms of varied thickness.

3. A drawer back bearing as set forth in claim 2 wherein both of said surfaces are slightly arcuate and coaxial; said bearing being integrally composed of a lubricous, somewhat flexible plastic material.

4. A drawer back bearing as set forth in claim 1 further including means defining a generally horizontally extending, rearwardly projecting rib on the rear of said body for receipt in a drawer back bottom-receiving kerf.

5. A drawer back bearing as set forth in claim 4 wherein said body includes means defining substantially coplanar vertical surfaces extending upwardly and downwardly from the base of said rib for abutting engagement with the front surface of a drawer back to prevent rocking of the bearing.

6. A drawer comprising: a drawer front; two laterally spaced drawer sides; a drawer back and a drawer bottom; means defining a notch in said drawer bottom adjacent the rear thereof; a drawer back bearing including a body having means defining a guide-receiving channel therethrough, and means defining a generally laterally outwardly opening channel in said body disposed about a major portion of the periphery thereof, said channel having at least one substantial bend therein as seen in plan, said back bearing being received on said drawer bottom by the interdigitation of said drawer bottom peripherally of said notch and said laterally outwardly opening channel on both sides of said bend.

7. A drawer as set forth in claim 6 wherein said body includes means defining a transversely extending substantially vertical rear surface disposed abuttingly adjacent the front of said drawer back to maintain said back bearing on said drawer bottom and prevent tipping of the back bearing with respect to the drawer bottom and back.

8. A drawer comprising: a drawer front; two laterally spaced drawer sides; a drawer back and a drawer bottom; means defining a notch in said drawer bottom adjacent the rear thereof; a drawer back bearing including a body having means defining a guide receiving channel therethrough, and means defining a generally laterally outwardly opening channel in said body disposed about a major portion of the periphery thereof, said back bearing being received on said drawer bottom by the interdigitation of said drawer bottom peripherally of said notch and said laterally outwardly opening channel; said body including means defining a transversely extending substantially vertical rear surface disposed abuttingly adjacent the front of said drawer back to maintain said back bearing on said drawer bottom and prevent tipping of the back bearing with respect to the drawer bottom and back; and further including means defining a kerf in the drawer front, sides and back extending generally horizontally and opening laterally inwardly of the drawer, the periphery of said drawer bottom being received in said kerf; means defining a generally horizontally extending, rearwardly projecting rib on the rear of said body, said rib having its base at said vertical surface and said rib being received in said kerf.

9. A drawer as set forth in claim 8 further including means defining a notch through said drawer back beneath said kerf and aligned with the guide-receiving channel of said back bearing.

10. A drawer guiding system comprising: a drawer having a drawer front, a drawer back, a pair of laterally spaced drawer sides and a drawer bottom mounted to said front, sides and back; means defining a notch in said drawer bottom adjacent the rear thereof; a drawer back bearing including a body having means defining a guide-receiving channel therethrough, said body having opposed lateral edges proceeding generally parallel to said drawer sides between opposed front and back sides of the body and means defining a generally laterally outwardly opening channel in said body disposed about the periphery thereof including both of said opposed lateral edges, said back bearing being received on said drawer bottom by the interdigitation of said drawer bottom peripherally of said notch and said laterally outwardly opening channel; and means defining an elongated drawer guide slidingly received in said guide receiving channel, said guide extending generally parallel to said drawer sides.

11. A drawer guiding system as set forth in claim 10 further including a furniture case; means defining a drawer receiving opening in said furniture case, being defined at its lower foremost extent by a generally horizontal front rail; said elongated drawer guide being received in said case and projecting into said opening, said guide being secured at its foremost extent to said front rail; means defining a pair of front bearings spaced along said front rail adjacent the transverse extent of the drawer opening, said drawer being longitudinally reciprocable in said opening and said front bearings slidingly engaging the drawer to provide with said back bearing a three point support for said drawer.

12. A drawer guiding system as set forth in claim 10 wherein the generally laterally outwardly opening channel proceeds across the body front side and is generally C-shaped as seen in vertical plan and wherein said notch in the drawer bottom is generally C-shaped as seen in vertical plan, the drawer bottom, peripherally of said notch bottoming in said generally laterally outwardly opening channel throughout substantially the entire extent of the channel and the body rear side being substantially flush with and abutting the forward surface of the drawer back.

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