May 22, 1962 E. M. HITCHCOCK 3,035,880

SELF ADJUSTING DRAWER GUIDE

Filed Nov. 23, 1960 2 Sheets-Sheet 1

Fig. 1

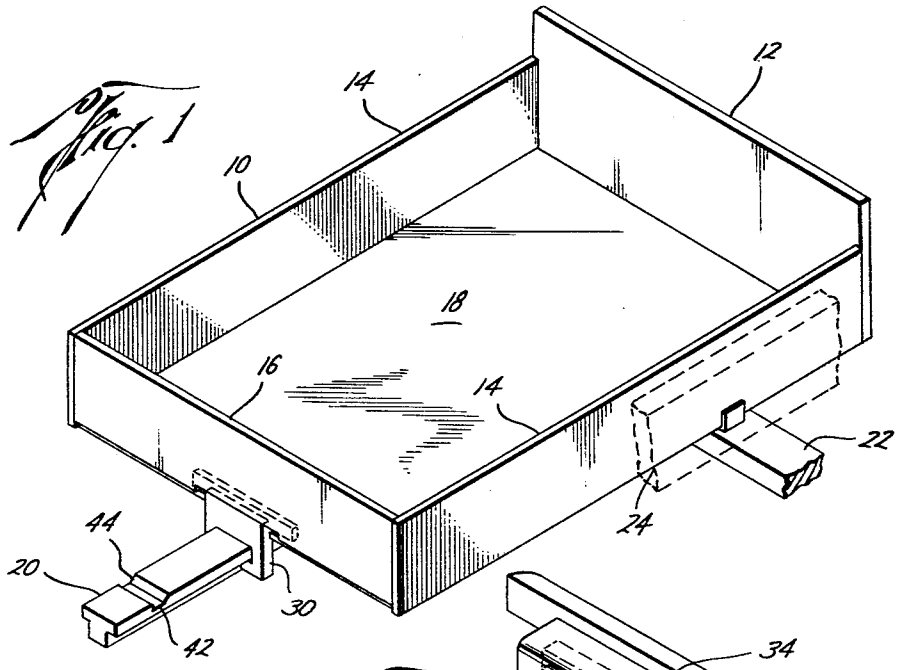


Fig. 2

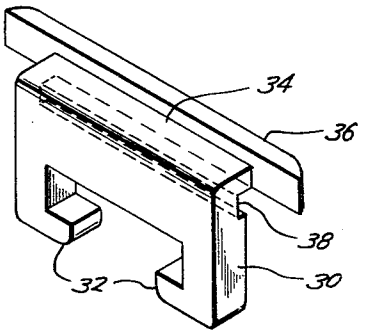


Fig. 3

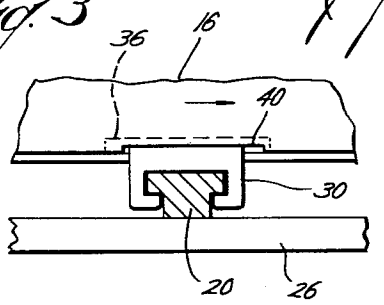


Fig. 4

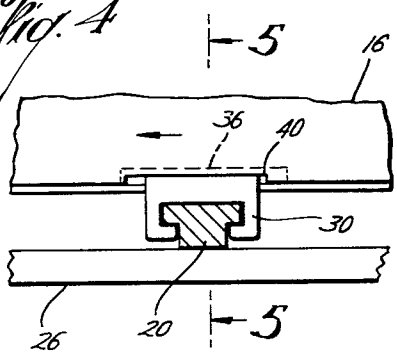
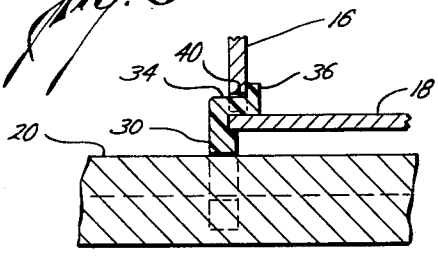


Fig. 5



Edward M. Hitchcock
INVENTOR.

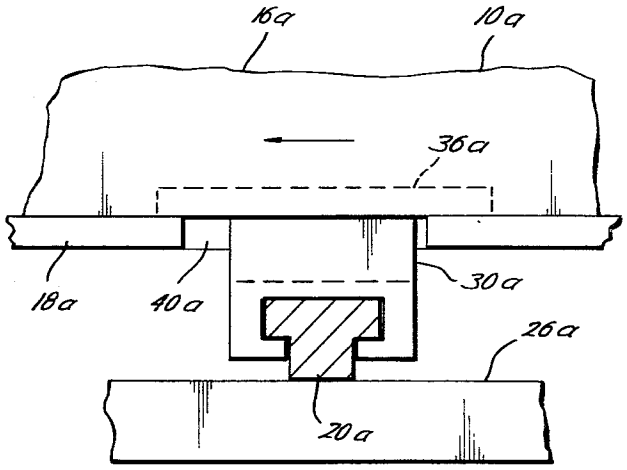
BY James F. Heiler
Jefferson D. Gilbert
William A. Stout
Paul L. DeVenteuil
ATTORNEYS

May 22, 1962 E. M. HITCHCOCK 3,035,880

SELF ADJUSTING DRAWER GUIDE

Filed Nov. 23, 1960 2 Sheets-Sheet 2

Fig. 6



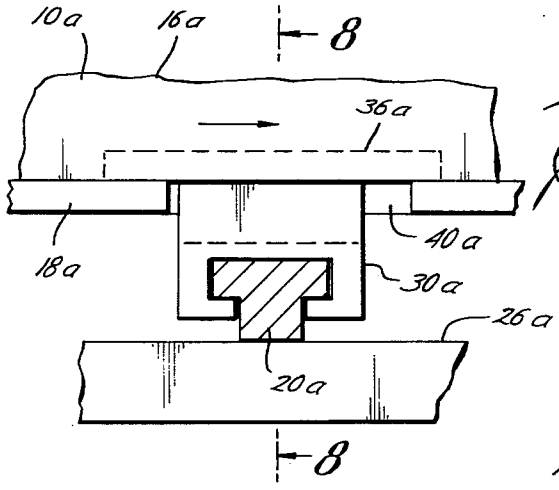


Fig. 7

Fig. 8

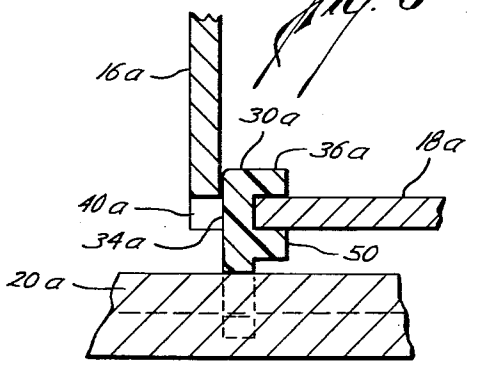
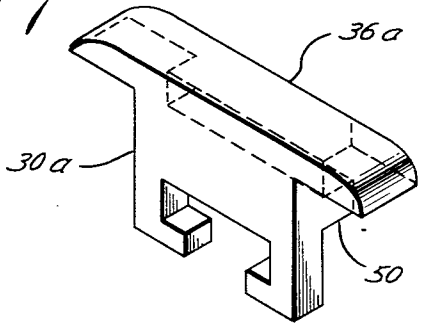


Fig. 9



Edward M. Hitchcock
INVENTOR.

BY James F. Heiby
Jefferson D. Gilly
William A. Hunt
Paul L. DeVerter III
ATTORNEYS

United States Patent Office 3,035,880 Patented May 22, 1962

3,035,880

SELF ADJUSTING DRAWER GUIDE

Edward M. Hitchcock, Austin, Tex., assignor, by mesne assignments, to Woodward, Inc., Austin, Tex., a corporation of Texas

Filed Nov. 23, 1960, Ser. No. 71,257
9 Claims. (Cl. 312—332)

The present invention relates to a self adjusting drawer guide, and more particularly, relates to a self adjusting drawer guide in a sliding drawer construction so that the drawer will not become stuck or bind in a drawer compartment but will be self adjusting as it is moved in and out of the drawer compartment.

In sliding drawer construction in which a movable drawer is provided in a drawer compartment of the type such as generally used in furniture, bureaus, cabinets, desks and the like, it has been conventional to provide a guide rail beneath and longitudinally positioned to support the movable drawer and provide a guide member connected to the drawer and slidably connected to the guide rail to support and guide the drawer and keep it aligned with the drawer compartment. However, because of the rigid connections between the drawer and the guide rail the drawer has frequently become stuck and will bind if any of the parts of the drawer construction are not correctly aligned. Furthermore, in the case of wooden drawer constructions the wood members frequently become warped or change their alignment over a prolonged period of time. The present invention is directed to providing a self adjusting drawer guide to permit the drawer to adjust and properly align up even when the various supporting structure and guide rail are out of line.

It is therefore an object of the present invention to provide a self adjusting guide member for connection between the drawer and the supporting guide rail.

A further object of the present invention is the provision of an adjusting guide member which is slidably connected to the guide rail and which extends through a transverse slot in the drawer, the guide member being smaller in a transverse direction than the slot whereby the guide member may transversely move in the slot as required to permit the drawer to adjust and line up with the fixed guides and supports forming the drawer compartment.

A still further object of the present invention is the provision of a self adjusting antifrictional guide member which is slidably connected to a drawer guide rail and extends through a transverse slot near the back of the drawer, the guide member being smaller in a transverse direction than said slot to permit a transverse sliding adjustment of the drawer in response to the alignment of the drawer guides and supports, the guide member being provided with a slidable stop member inside of the drawer and said stop member being larger in one direction than the slot thereby slidably securing the guide member to the drawer.

Yet a still further object of the present invention is the provision of a transversely adjusting guide member transversely movable in a slot near the back of the drawer and drawer support means on the guide member for vertically supporting the drawer.

A still further object of the present invention is the provision of a front aligning notch in the guide rail which is positioned so that the front of the drawer is aligned with the drawer compartment when the guide member is positioned in the notch.

Yet a further object of the present invention is the provision of a self adjusting guide member slidably connected to a guide rail and extending through a transverse slot in the drawer and provided with a stop member larger in all directions than the slot thereby covering the slot and yet allowing transverse adjusting movement of the guide member in the slot.

Other and further objects, features and advantages will be apparent from the following description of presently preferred embodiments of the invention, given for the purpose of disclosure, and taken in conjunction with the accompanying drawings, where like character references designate like parts throughout the several views, and where,

FIGURE 1 is a perspective view, partly in section, illustrating the apparatus according to the present invention as shown slidably connected to a guide rail and transversely slidably and self adjustingly connected to a movable drawer,

FIGURE 2 is a perspective view illustrating one form of the adjusting drawer guide member of the present invention,

FIGURE 3 is a rear elevational view of a drawer partly in section, showing the position of the guide member relative to the drawer as the drawer is moved in one transverse direction,

FIGURE 4 is a rear elevational view, partly in section, similar to FIGURE 3 showing the guide member in relative position to the drawer as the drawer is moved in the other transverse direction,

FIGURE 5 is a cross-sectional view taken along the line 5—5 of FIGURE 4,

FIGURES 6, 7, 8 and 9 relate to the present invention wherein the transverse slot in which the adjusting guide member moves is in the drawer bottom,

FIGURES 6 and 7 are rear elevational views, partly in section, showing the position of the guide member as the drawer is transversely moved,

FIGURE 8 is a cross-sectional view taken along the line 8—8 of FIGURE 7, and

FIGURE 9 is a perspective view illustrating the adjusting guide member used with the drawer bottom transverse slot.

Referring now to the drawings, a conventional drawer construction is shown wherein the reference numeral **10** generally designates a movable drawer, one or more guide rails **20**, here shown as one for convenience, which is longitudinally positioned under the drawer to support and guide the drawer **10** as it is moved, bottom frame supports **22** and side supports **24**, here shown as the horizontal type, which also support and guide the drawer **10** and form in part a drawer compartment. The invention is directed to the adjusting guide member **30** which allows the drawer to adjust transversely with reference to all of various parts of the drawer compartment when the drawer is moved longitudinally and as will be more fully discussed hereinafter.

The drawer **10** as is conventional has a front **12**, sides **14**, back **16** and bottom **18**, the sides and back being reduced in height as compared with the front **12** in order to conserve lumber. The sides **14** of the drawer **10** each ride on the frame **22** and the back of the drawer is supported by the guide rail **20** through the guide member **30** and thus the drawer is slidably supported at three points. Side guides or supports **24** (partially shown in section) and bottom support **26** may be provided to form part of a drawer compartment with the other supports.

In the past the guide member **30** has been fixedly secured to the back **16** of the drawer and thus the supports **24** which are on either side of the drawer, the guide rail **20**, and the drawer **10** must be carefully constructed and aligned parallel to each other to prevent binding of the drawer as it moves forward and back. Furthermore, it has been necessary in the past that lumber for these parts be carefully selected and lumber that is slightly out of square cannot be used as it will hinder the operation of the drawer. And in many cases wood

after prolonged use will tend to warp and cause the drawer **10** to bind in the drawer compartment even in cases where the compartment was originally carefully constructed.

The present invention is directed to the self adjusting guide member **30** which will allow the rear of the drawer **10** to transversely adjust itself as required to be guided in the drawer compartment between the supports **24** and the guide rail **20** so long as there is sufficient width in the drawer compartment to accommodate the drawer. Therefore, inexpensive labor may be used to assemble the drawer construction as the parts are not required to be carefully aligned, less expensive lumber can be used, and the waste in lumber can be reduced thereby lowering the cost of production for drawer construction.

The self adjusting guide member **30** is preferably made of an antifrictional plastic material such as polytetrafluoroethylene which is sold under the trade name of Teflon by Du Pont. One end of the guide member **30** is slidably secured in a longitudinal direction along the guide rail **20**. A conventional T rail and T slot connection may be provided as shown to provide this slidable longitudinal movement with the guide rail **20** being T-shaped in cross-section and the guide member **30** having extensions **32** which form a T slot to coact with the guide rail **20**. A transverse slot **40** is provided near the rear of the drawer **10** and the guide member **30** extends through the slot **40** but is narrower than the slot **30** at the point at which it extends through the slot in a transverse direction thereby allowing transverse movement of the guide member **30** in the slot **40**.

Referring to FIGURES 2–5, inclusive, the guide member **30** is shown as an angle shape with the extension **34** extending through the transverse slot **40**. A stop member **36** is provided on the end of extension **34** to retain the guide member **30** in the slot **40**. The stop **36** is positioned inside of the drawer **10** and thus does not prevent transverse movement of the guide member **30** in the slot **40**. Fruthermore, the stop member **36** is preferably wide enough both in length and width to cover the slot **40** regardless of its position in the slot (FIGURES 3 and 4) so as to prevent items in the drawer from falling out of the drawer through the slot **40** or from becoming lodged in the slot **40** and interfering with the self adjusting movement of the member **30**. Of course, merely to provide for the adjusting movement of the guide member **30**, the stop member **36** need only be larger than the slot **40** in one direction.

It is noted in FIGURES 1–5 that the slot **40** is on the lower side of the back **16** and the guide member **30** is held in place securely in a longitudinal manner by the action of the drawer back **16** and the drawer bottom **18** (FIGURE 5) acting against the extension **34**. Furthermore, a recess **38** (FIGURES 2 and 5) may be provided in the guide member **30** to engage the end of the bottom **18** of the drawer **10** so as to further secure the guide member **30** in a longitudinal direction. However, the recess **38** is not necessary and may be omitted. The slot **40** is made sufficiently wide in a vertical direction so as not to bind on the guide member extension **34** and the use of an antifrictional plastic will allow free transverse movement between the guide member **30** and the drawer **10** to allow the drawer to adjust as it is moved.

Referring to FIGURES 3 and 4 it is noted that even though the guide member **30** is moved transversely in the slot **40** the stop member **36**, as shown in the dotted lines, moves but yet never provides an opening from the interior of the drawer **10** through the slot **40** and exteriorly of the drawer **10**.

It is to be noted that the guide member **30** may be quickly and easily installed without the use of any additional fastening means by merely placing the member **30** in the slot **40** as the drawer is being constructed. Furthermore, the drawer rides firmly on the top of the extension **34** and no tilt blocks are required as this three point support construction has been found to be satisfactory. It is also to be noted that the guide member is held in the slot **40** so that vertical or forward and back movement between the member **30** and the drawer **10** does not occur.

Referring now to FIGURE 1, it is noted that a notch **42** may be provided in the guide rail **20** and on the side of the notch **42** nearer the drawer front a beveled surface **44** is provided. The notch **42** is positioned so that the drawer front is aligned with the front of the drawer compartment when the guide member **30** is moved and positioned in the notch **42**. Thus the front **12** of the drawer is conveniently aligned by the use of the notch **42** positioning the guide member **30**.

Of course, various modifications of the adjustable guide member and slot arrangement may be made. FIGURES 6–9 illustrate a modification of the structure according to the invention, the letter "*a*" being applied to parts corresponding to those in FIGURES 1–5 for convenience of reference. In these figures it is noted that the slot **40***a* is provided in the bottom **18***a* of the drawer **10***a* adjacent the back **16***a* but is still positioned transversely of the guide rail **20***a*. The guide member **30***a* similarly provides a sliding longitudinal gripping movement with the guide rail **20***a* as shown in FIGURES 1–5.

However, the body of the guide member **30***a* is straight and the end **34***a* extends through the slot **40***a* and is narrower than the slot **40***a* thereby providing slidable transverse movement of the member **30***a* in the slot **40***a*. Preferably, stop member **36***a* covers the slot **40***a* regardless of the position of the member **30***a* in the slot **40***a*. In this modification a supporting shoulder **50** is provided which is positioned under and supports the bottom **18***a* of the drawer **10***a* and thus provides that the drawer **10***a* will ride on and be supported by the member **30***a* and that the guide **30***a* is held in the slot **40***a* so as to allow transverse movement but substantially preventing any vertical or longitudinal movement of the member **30***a* relative to the drawer **10**.

In operation, the guide members **30** and **30***a* are assembled in the slots **40** and **40***a*, respectively at the time the drawer **10** is assembled. It is noted that this requires no extra fastening equipment and can be quickly and easily performed. Any suitable drawer compartment can then be constructed that is provided with the conventional guide rail or rails **20**, and may include as shown the support rails **22** and **24**. In the drawer construction inexperienced labor can be used as these drawers, support, and guide members do not have to be as accurately aligned as in previous construction. The only requirement is that the space between the sides of the compartment as defined by the supports **24** must be sufficient to accommodate the width of the drawer **10**. Also by the use of this self adjusting drawer guide perfectly shaped lumber is not required. Thus, the mere fact that such parts as the back **16**, guide rail **20**, supports **22** and **24** are slightly warped or bowed will not affect the operation of the drawer. Furthermore, if any swelling, bowing or warping of the drawer or supports occurs the operation of the drawer will not be stopped. Thus, as shown in FIGURES 3 and 4 assuming that the drawer **10** encounters one of the side supports **24** as would normally cause a binding and prevent the further operation of the drawer, the drawer **10** will move in a transverse direction with the slot **40** moving relative to the support member **30** thus allowing the drawer to move into an open space between the supports **24** so as to continue its longitudinal movement. Furthermore if the guide rail **20** is warped in one direction or the other it will allow the movement of the guide member **30** in the slot **40** so as to prevent the sides **14** of the drawer **10** from becoming stuck against the side rails **24**.

Thus while it is noted that the guide members **30** and **30***a* are vertically and longitudinally held in place by

the drawer they can freely move in a transverse direction particularly in view of the fact that they are constructed of an antifrictional plastic and provide a self adjusting movement as required to meet the contour of the drawer compartment. It is also noted that a single size of guide member will fit various thickness of drawer backs. It is also noted that this type of self adjusting drawer guide is advantageous on drawers that work on twin guide rails **20** in which case any warping or bowing of either guide rail **20** or misalignment would prevent the operation of a conventional type fixed drawer guide.

It is also noted that when the drawer guides **30** and **30***a* encounter the notch **42** in the guide rail **20** that they will stop and conveniently align the front **12** of the drawer **10** with the drawer compartment in an accurate and convenient manner. Furthermore, the guide member can be easily moved out of the notch **42** over the beveled side **44**.

Thus a self adjusting drawer guide is provided which is automatic in its operation and insures that the drawer will not stick or bind even when the drawer parts swell or shrink. The present invention also reduces the weight of the entire case and reduces the labor and material cost materially.

The present invention, therefore, is well adapted to carry out the objects and attain the ends and advantages mentioned as well as others inherent therein. While presently preferred embodiments of the invention are given for the purpose of disclosure, numerous changes in the details of construction and arrangement of parts may be made which will readily suggest themselves to those skilled in the art and which are encompassed within the spirit of the invention and the scope of the appended claims.

What is claimed is:

1. In a sliding drawer construction including a frame having a drawer compartment, a drawer having front, back, sides and a bottom and movable in said compartment, a guide rail longitudinally positioned under said drawer the improvement in a self adjusting drawer guide comprising, an adjustable guide member, said guide member slidably connected to said guide rail, said drawer having an opening transverse to said guide rail, said guide member extending through said opening, said guide member being smaller in width than said opening thereby being transversely self adjusting in said opening, and stop means on said guide member in the drawer, said stop means being larger in one direction than said opening thereby securing said guide member in said opening.

2. The invention of claim 1 wherein said guide rail includes a transverse notch having a beveled side on the side nearer the drawer front, said guide member slidable in and out of said notch.

3. The invention of claim 1 wherein said guide member is an antifrictional plastic and said guide member includes a supporting shoulder adjacent and beneath said drawer whereby said guide member supports said drawer.

4. In a sliding drawer construction including a frame forming a drawer compartment, a drawer movable in said compartment and a guide rail longitudinally positioned under said drawer the combination with the guide rail and the movable drawer of a self adjusting guide member, said guide member slidably engaging said guide rail, said drawer including a transverse slot adjacent the rear of said drawer, said guide member extending through said slot, and stop means on said guide member interiorly of the drawer, said stop means being larger in at least one direction than said slot thereby holding said guide member in said slot, said guide member being smaller in a transverse direction than said slot thereby providing an adjusting drawer as the guide member will move transversely in said slot when the drawer contacts the frame.

5. The invention of claim 4 wherein said guide rail includes a transverse notch having a beveled side nearer the drawer front and said guide member is slidable in and out of said notch, said notch being positioned so that the drawer front is aligned with the drawer compartment when the guide member is positioned in said notch.

6. The invention of claim 4 wherein said guide member is an antifrictional plastic and said guide member includes a supporting shoulder under and adjacent said drawer whereby said guide member supports said drawer.

7. In a sliding drawer construction including a frame having a drawer compartment, a drawer having a front, back, sides and bottom and movable in said compartment and a guide rail longitudinally positioned under said drawer the improvement comprising an angle shaped guide member slidably connected at one end to said guide rail, said drawer back having a transverse slot adjacent said drawer bottom, the second end of said guide member extending through said slot, said guide member being narrower in a transverse direction than said slot whereby said member is transversely movable in said slot, a slidable stop member on the second end of the guide member and positioned inside said drawer, said stop member being larger in all directions than said slot thereby slidably retaining said guide member in said slot and covering said slot.

8. The invention of claim 7 wherein said guide rail includes a transverse notch having a beveled side nearer the drawer front and said guide member is slidable in and out of said notch, and said notch is positioned so that the drawer is aligned with the drawer compartment when the guide member is positioned in said notch.

9. In a sliding drawer construction including a frame having a drawer compartment, a drawer having a front, bottom, back and sides and movable in said compartment and a guide rail longitudinally positioned under said drawer the improvement comprising, an antifrictional guide member slidably connected at one end to said guide rail, said drawer bottom having a transverse slot near said drawer back, the second end of said guide member extending through said slot, said guide member being narrower in a transverse direction than said slot whereby said member is transversely movable in said slot, a slidable stop on the second end of the guide member and positioned inside said drawer, said stop being larger in all directions than said slot thereby slidably retaining said guide member in said slot, and a slidable supporting shoulder on said guide member beneath and adjacent said drawer bottom for supporting said drawer.

References Cited in the file of this patent

UNITED STATES PATENTS

608,130	Kandle	July 26, 1898
985,910	Lange	Mar. 7, 1911
1,248,133	Kemp et al.	Nov. 27, 1917
2,857,233	Reiss et al.	Oct. 21, 1958