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Riley

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[54] **DRAWER ASSEMBLY**

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[52] **U.S. Cl.**..... **308/3.6;** 308/3.8; 312/341 NR; 312/342; 312/348

[51] **Int. Cl.** **F16c 17/00**

[58] **Field of Search**..... 308/3.6; 312/341 NR, 345, 312/346, 347, 348, 330, 351, 342

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Attorney, Agent, or Firm—Lindenberg, Freilich, Wasserman, Rosen & Fernandez

[57] **ABSTRACT**

A thin plastic guide member for mounting on a wooden chest frame, to slideably support a drawer with low sliding friction and noise. The guide member is T-shaped, with a cross arm for mounting on the sill beam of a chest frame and with a runner extending rearwardly from the middle of the cross arm for mounting on a runner-supporting beam of the chest frame. Both the cross arm and runner have thick edge portions connected by a thin web, so that the guide member can be mounted by staples or other fasteners driven through the thin connecting web with the tops of the fasteners low enough to avoid contact with the bottom of a drawer. The rear end of the runner has a pair of laterally extending end stops for abutting guide walls of the drawer to limit the rearward movement of the drawer into the chest.

11 Claims, 12 Drawing Figures

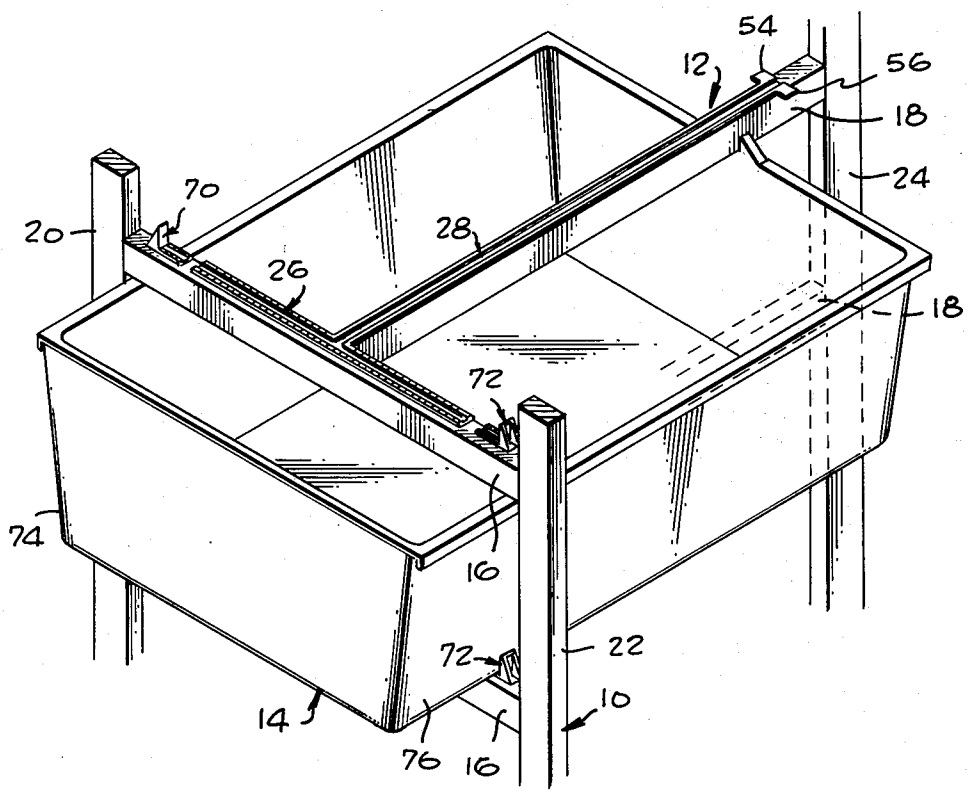


Fig. 1

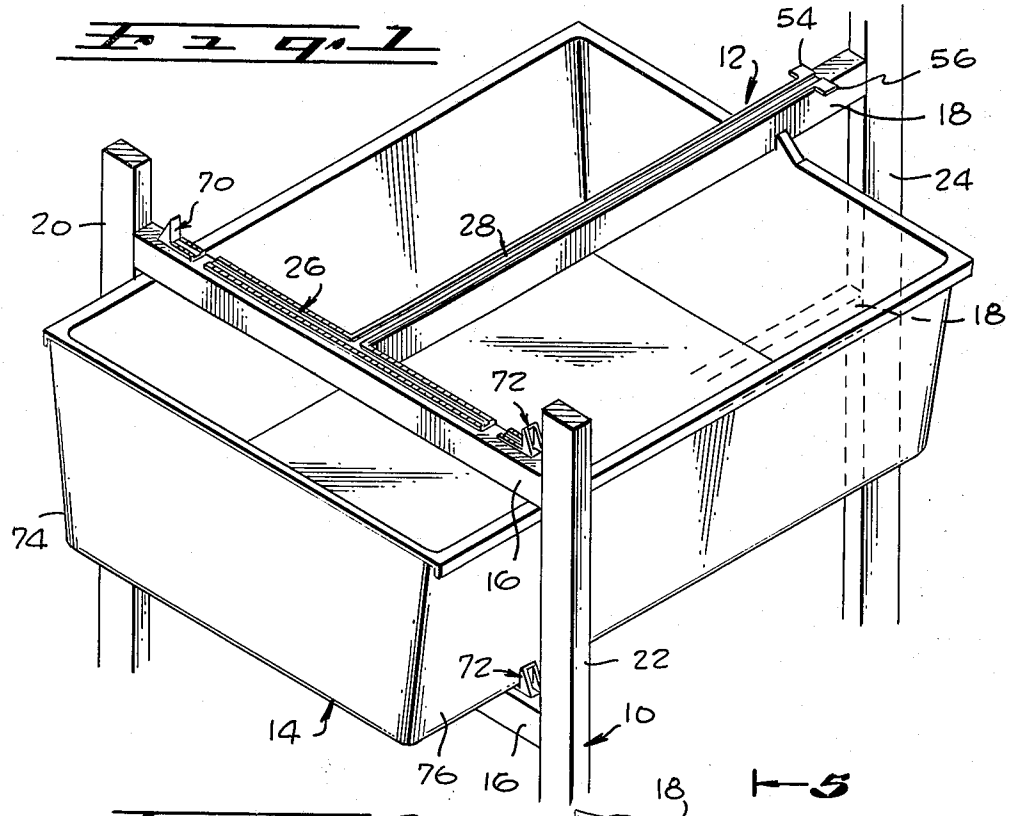
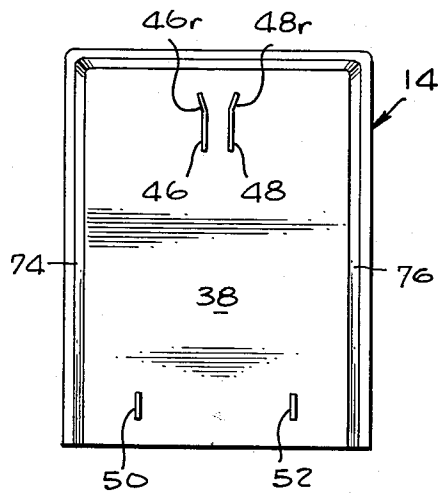


Fig. 6



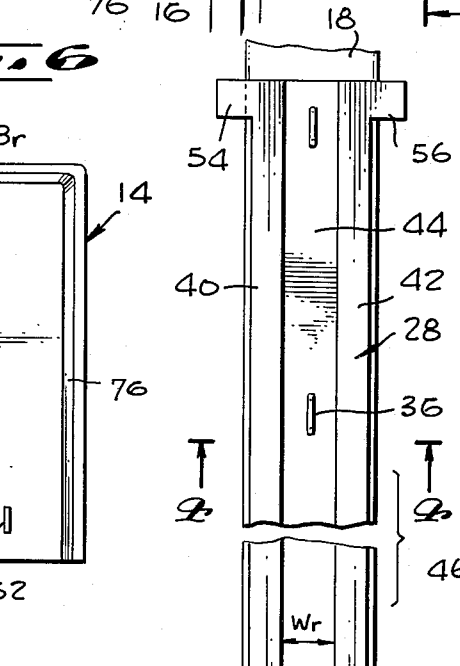


Fig. 3

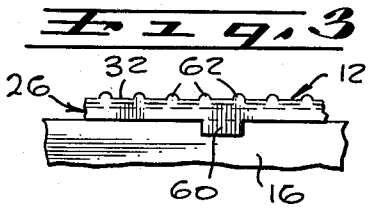


Fig. 4

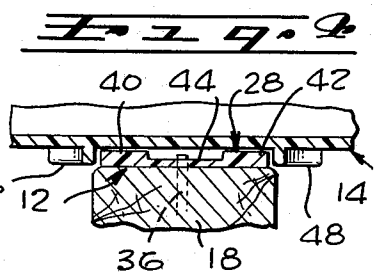


Fig. 2

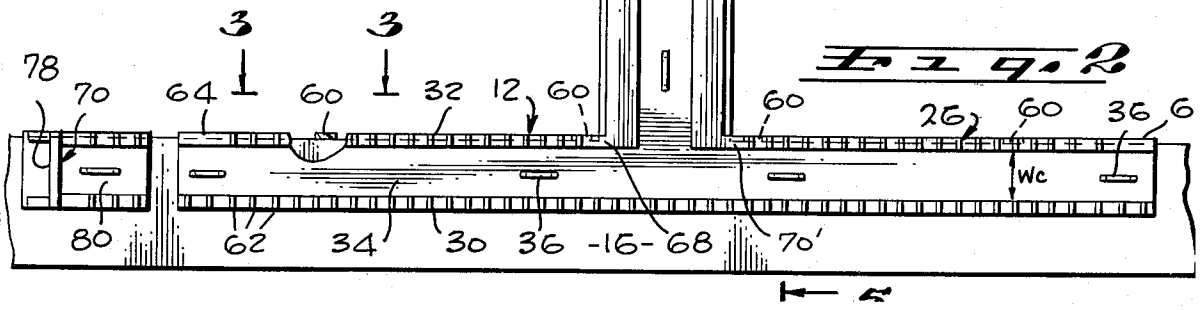


Fig. 5

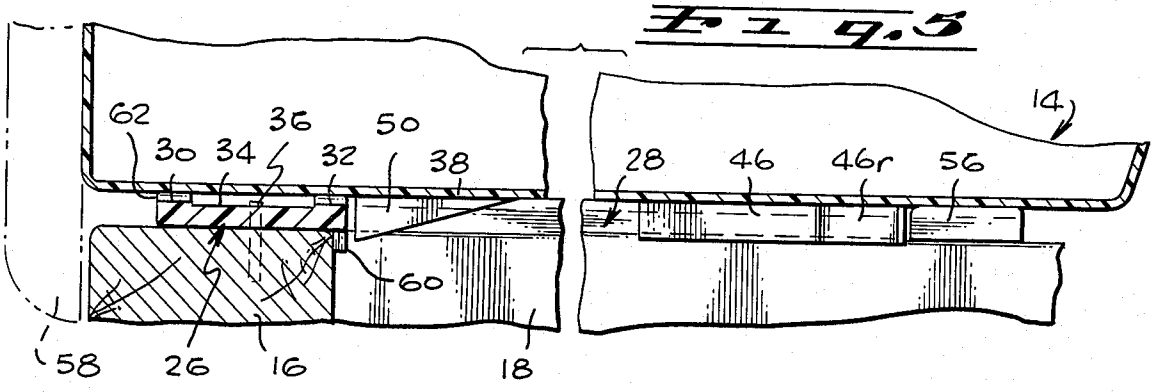


Fig. 7

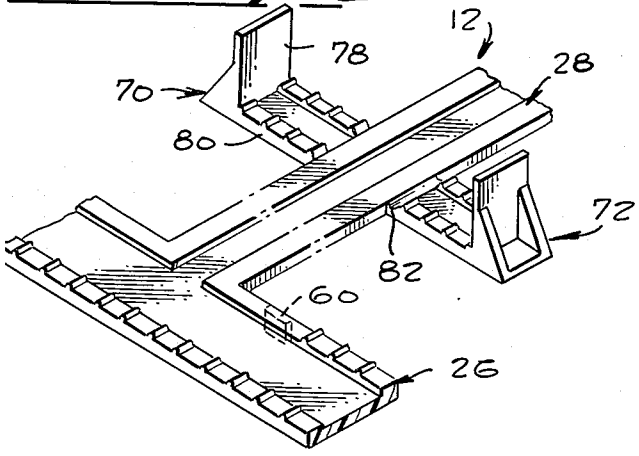
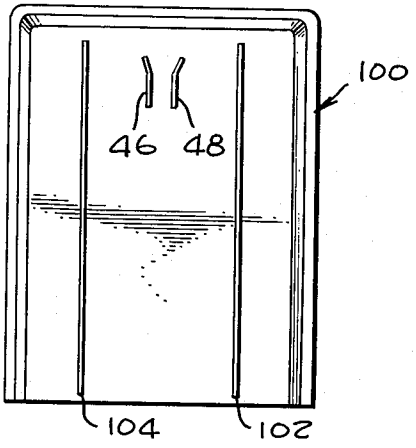


Fig. 8



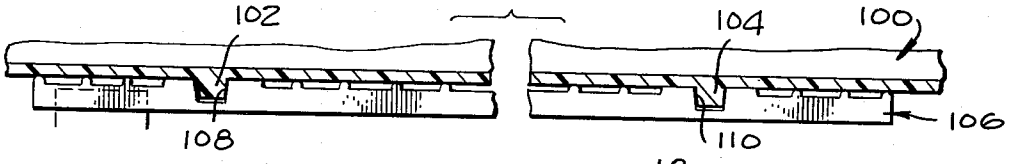


Fig. 9

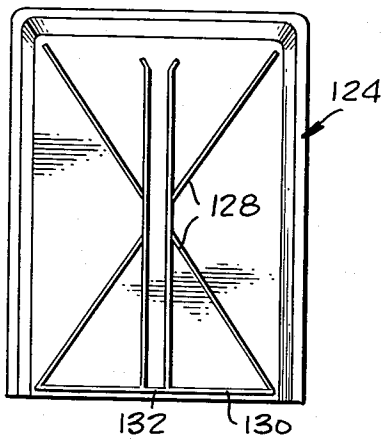


Fig. 10

Fig. 11

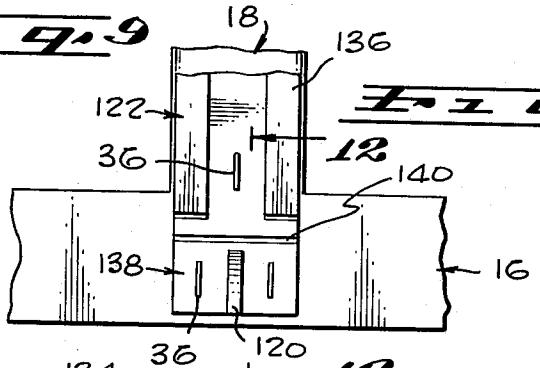
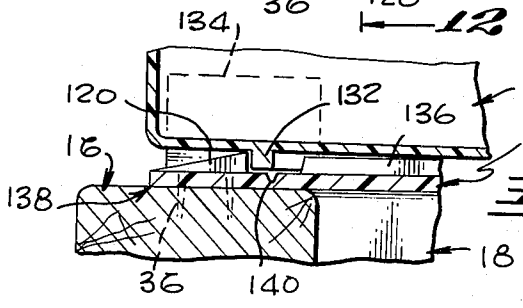


Fig. 12



DRAWER ASSEMBLY

BACKGROUND OF THE INVENTION

This invention relates to drawer assemblies.

One type of low cost drawer assembly that has found increasing use in mobile homes, includes a wooden frame and plastic drawers that are molded with guides for stable sliding in the wooden frame. The acceptability of the drawer assemblies can be increased by constructing them so that the drawer slides with a minimum of friction and noise, and so that the stops that limit rearward drawer movement and accidental drawer opening operate with a minimum of noise. Heretofore, drawer bearings that reduced friction and noise involved several additional parts which required considerable extra labor to install. The added expense often prevented the use of such bearings, particularly in drawer assemblies for low cost homes.

SUMMARY OF THE INVENTION

In accordance with one embodiment of the present invention, a drawer guide is provided which reduces friction and noise and which can be produced and mounted at very low cost. The guide is a thin injection-molded member of T-shape which is designed to be mounted on a chest frame that has a laterally extending sill beam at the front and a runnersupporting beam extending rearwardly from the middle of the sill beam. The T-shaped member forms a cross arm and runner which each have thin web portions at the middle and thick opposite edge portions. This permits staples or other fasteners to be driven through the web portions, with their heads lying below the edge portions on which the drawer slides. The rear end of the runner has a pair of laterally extending stops for abutting a pair of guide walls on a drawer, to limit the rearward movement of the drawer into the chest.

The novel features of the invention are set forth with particularity in the appended claims. The invention will best be understood from the following description when read in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of a portion of a drawer assembly constructed in accordance with the present invention;

FIG. **2** is a plan view of a guide member of the assembly of FIG. **1**;

FIG. **3** is a view taken on the line **3—3** of FIG. **2**;

FIG. **4** is a view taken on the line **4—4** of FIG. **2**;

FIG. **5** is a view taken on the line **5—5** of FIG. **2**, with a drawer in place on the guide member;

FIG. **6** is a bottom view of the drawer of the assembly of FIG. **1**;

FIG. **7** is a partial perspective view of the guide member with corner members integral therewith;

FIG. **8** is a bottom view of a drawer constructed in accordance with another embodiment of the invention;

FIG. **9** is a partial front view of another guide member and the drawer of FIG. **8**;

FIG. **10** is a bottom view of a drawer constructed in accordance with still another embodiment of the invention;

FIG. **11** is a partial plan view of another guide member for use with the drawer of FIG. **10**; and

FIG. **12** is a view taken on the line **12—12** of FIG. **11**, and with the drawer in place.

DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. **1** illustrates a drawer assembly of the invention, which includes a chest frame **10**, guide members **12** mounted on the chest frame, and drawers **14** slideable into the chest frame on the guide members. The frame **10** includes a series of laterally extending sill beams **16** at the front of the frame, a series of runner beams **18** extending rearwardly from the centers of the sill beams, and three posts **20, 22,** and **24** for holding the sill beams and runner beams at vertical spacings. The beams **16,** 18 and posts **20–24** are normally constructed of wood, while the drawers **14** are constructed of vacuum formed or injection molded plastic. The drawers **14** can be installed directly on the wooden frame without the guide members **12,** but this results in considerable friction as the plastic slides on the wood and also results in considerable noise that suggests low quality construction. The guide members **12** reduce the friction and noise, and they can be produced and installed at very low cost. In many cases, the guide members **12** can be utilized with drawers and frames originally designed for use without the guide members.

The guide member **12** is of a T shape, with a cross arm **26** which is designed to mount on a sill beam **16,** and with a runner **28** extending rearwardly from the center of the cross arm **26** and designed to mount on the runner-supporting beam **18** of the chest frame. Referring also to FIGS. **2–6,** it can be seen that the cross arm **26** includes thick front and rear edge portions **30,** 32 and a thin web portion **34** connecting them. The use of the thin web portion **34** permits the cross arm to be fastened to the sill beam **16** with fasteners such as staples **36** without danger that the top or head of the staple will scrape along the drawer. As shown in FIG. **5,** the drawer **14** has a bottom wall **38** which is slideably supported on the thickened edge portions **30, 32** of the cross arm. When the staples **36** are driven through the web **34** into the sill beam **16,** the heads of the staples lie below the thickened edge portions **30, 32** and do not interfere with smooth drawer sliding. In a similar manner, the runner **28** is provided with thickened edge portions **40, 42** that are connected by a thin middle web portion **44.** The staples **36** can similarly be projected through the web portion **44** of the runner so that the heads of the staples lie below the bottom wall **38** of the drawer. The widths W_c and W_r of the webs **34, 44** of the cross arm and runner are each preferably more than ¼ inch, to permit the reception of a common staple gun therebetween so that the staples can be securely projected through the webs with their heads lying close to the top of the webs.

The T-shaped guide member **12** is constructed of a low friction material such as a polyethylene plastic. Such a material not only reduces sliding friction so that the drawer slides in a smoother manner, but also minimizes the amount of noise that is created. Noise is minimized not only because of the reduction in friction, but also because the noise amplitude is reduced in transmission between the guide strip and chest frame **10** so that less noise is transmitted from the frame to the surrounding air and therefore less noise is heard.

The drawer **14** has a form, at the bottom, which is best shown in FIG. **6.** A pair of runner-straddling guide

walls 46, 48 extend from the bottom wall 38 near the rear end thereof. The straddling walls 46, 48 prevent the rear end of the drawer from moving sidewardly. The rear ends 46r, 48r of these walls curve apart to facilitate the insertion of the drawer into the frame. The drawer also has a pair of ship locks 50, 52 near the front for preventing accidental opening of the drawer. The ship locks 50, 52 are utilized primarily in recreational vehicles that are often moved, to prevent accidental opening of the drawers. The ship locks 50, 52 have front ends that lie behind the cross member 26 when the drawer is fully inserted into the frame. The ship locks prevent the drawer from opening unless the drawer is first lifted so that the ship locks 50, 52 lie above the level of the cross arm 26 and can clear it. The guide member 12 is constructed to engage the ends of the runner-straddling walls 46, 48 and the ship locks 50, 52 to accurately position the drawer and minimize noises.

The runner 28 of the guide member is formed with a pair of stops 54, 56 at its rear end that project laterally from opposite sides of the runner. The stops 54, 56 are designed to engage the rear end portions 46r, 48r of the runnerstraddling walls of the drawer to limit rearward movement of the drawer into the chest frame. The stops 54, 56 are especially useful with a drawer of the type shown in FIG. 1 which does not have an attached decorative front panel that can hit the sill beams 16 to limit rearward movement of the drawer into the frame. The stops 54, 56 eliminate the need for auxiliary stops that would otherwise have to be provided to limit rearward movement of the drawer so the bottom of the drawer never passes behind the cross arm 26. The fact that the stops 54, 56 are molded integrally with the guide member 12 means that their position is accurately fixed, so that the position of the fully inserted drawer can be accurately fixed in a simple manner. Even in those cases where a decorative front panel, such as panel 58 in FIG. 5, is utilized, the stops 56 can be provided to engage the drawer walls 46, 48.

The rear edge portion 32 of the cross arm serves to limit rearward movement of the drawer not only to prevent accidental opening of the closed drawer, but also to prevent the drawer from being pulled out so far that it falls out of the chest frame. When the drawer is pulled out far, the front ends of the runner-straddling walls 46, 48 engage the rear edge 32 of the cross arm. In order to assure that the drawer walls 46, 48 will abut the plastic cross arm 26 rather than the sill beam 16, the cross arm should be located so it extends slightly behind the rear of the sill beam. This is assured by providing locating lugs 60 that extend downwardly from a position near the rear of the cross arm. A workman can mount the cross arm accurately on the frame by locating the cross arm with the lugs 60 abutting the rear surface of the sill beam. The lugs 60 not only accurately position the rear edge of the cross arm, but also accurately position the stops 54, 56 which can determine the rearward position of the drawer.

The front and rear edge portions 30, 32 of the cross arm are provided with numerous slots which form upstanding nubs 62. The nubs 62 contact and slideably support the bottom wall 38 of the drawer. The nubs 62 provide a smaller area of sliding contact of the drawer on the guide and minimize the entrapment of abrasive particles between themselves and the drawer, allowing such particles to pass through the slots formed between the nubs. The nubs are formed along the entire rearward edge portion 32 of the cross member except at the outer ends 64, 66 where the ship locks 50, 52 of the drawer abut the cross arm, and at the inner portions 68, 70 where the front ends of the runner-straddling walls 46, 48 of the drawer can abut the cross arm.

The stability of the drawer position can be enhanced by providing corner guides 70, 72 on the sill beam 16 for engaging the opposite side walls 74, 76 of the drawer. Each corner guide 70, 72 has an upstanding portion 78 that actually engages the drawer sides and a bottom portion 80 that is similar to the cross arm 26 of the guide member 12 and which can be mounted by a staple in a similar manner. The corner members can be molded integrally with the runner of the guide member 12, as illustrated in FIG. 7, with a narrow break off portion 82 formed between them. The narrow break off portions 82 form gates in molding of the guide member, and the placement of the corner members on either side of the runner balances the flow of material. A workman can therefore handle a single member which includes all plastic portions. The workman can first install the guide member 12 by stapling it in position, then break off the corner members 70, 72 at the break off lines 82, and then staple each corner member in position. This minimizes the number of parts and the amount of reaching and handling by workmen, so that installation is further simplified and is performed more economically.

FIGS. 8 and 9 illustrate another drawer and guide member construction which eliminates the need for corner members. The drawer 100 has a pair of laterally spaced guide strips 102, 104 extending along most of the length of the drawer. The guide member 106 has a pair of longitudinally-extending slots 108, 110 for receiving the guide strips 102, 104 to minimize lateral shifting of the drawer and eliminate the need for corner guides.

FIGS. 10, 11 and 12 illustrate still another drawer and guide member construction wherein a ship lock 120 is formed on the guide member 122. The drawer 124 is constructed with bracing ribs that include a pair of diagonal ribs 128 and a transverse front rib 130. The front rib 130 includes a rib portion 132 lying at the center of the drawer, which is a lateral location devoid of rib portions behind the front rib portion 132. The drawer is supported on a pair of corner guides 134 similar to the corner guides 78 described above, and is also supported on the runner 136 of the guide member so the ribs 128, 130 normally do not interfere with rearward sliding of the drawer. However, as the drawer 124 approaches its fully installed position, the front rib portion 132 rides over the tapered ship lock 120 and falls down behind it, as illustrated in FIG. 12, so that the drawer then cannot accidentally open. Where the ship lock feature is not wanted, the front guide member portion 138 containing the ship lock 120 can be broken off at 140 and discarded prior to installation of the guide member.

Thus, the invention provides a drawer assembly which minimizes friction and noise to provide a "quality" feel, and at very little additional expense. This is accomplished by utilizing a guide member 12 with a cross arm and runner that each have narrow web portions where fasteners are projected through and with thicker edge portions that serve as bearing surfaces for the drawer. The runner has end stops that serve to limit

rearward movement of the drawer. The cross arm has locating lugs that facilitate accurate positioning and which enable positioning with the rear edge of the cross arm slightly behind the sill beam of the chest frame. The cross arm is formed with numerous slots in the thickened edge portions that form narrow nubs for slideably supporting the drawer.

Although particular embodiments of the invention have been described and illustrated herein, it is recognized that modifications and variations may readily occur to those skilled in the art and consequently it is intended that the claims be interpreted to cover such modifications and equivalents.

What is claimed is:

1. A drawer guide adapted to be used with a chest frame that has a sill, comprising:

an elongated cross arm of a low friction material for mounting on said sill, said arm having a thin middle web portion and front and rear edge portions that are thicker than the middle portion so they lie at a greater height than the middle portion;

said edge portions having a plurality of slots that form nubs therebetween for slideably supporting a drawer, whereby to minimize entrapment of abrasive particles between the drawer and cross arm.

2. A drawer and guide adapted to be used with a chest frame that has a sill, comprising:

an elongated cross arm of low friction material for mounting on said sill, said arm having a thin middle web portion and front and rear edge portions that are thicker than the middle portion so they lie at a greater height than the middle portion; and

a drawer with a bottom wall and a pair of laterally spaced guide strips depending from the bottom wall and extending in a direction along the length of the drawer; and wherein

said cross arm has a pair of slots extending perpendicular to the length of the cross arm and positioned to receive said guide strips of said drawer.

3. A drawer apparatus adapted to be used with a chest frame that has a sill and a runner-supporting portion extending rearwardly from the sill, comprising:

a runner having a thin elongated portion for mounting on the runner-supporting portion of a chest frame, and having a rearward end with at least one laterally extending stop; and

a drawer having a bottom wall for riding on said runner and a pair of runner-straddling portions projecting from the bottom wall and laterally spaced to lie close to opposite sides of the runner, at least one of said portions having a rear end that abuts said laterally extending stop to limit the rearward movement of the drawer into the chest frame.

4. The drawer guide described in claim **3** wherein:

said runner has a pair of thick edge portions extending along its length and that are connected by a web which is thinner than said edge portions, whereby to permit the mounting of the runner by fasteners driven through the web so the fastener tops lie below the edge portions of the runner.

5. The drawer guide described in claim **3** wherein:

the bottom wall of said drawer has a downwardly-extending rib portion near the front of the drawer, said bottom wall being devoid of downwardly extending ribs directly behind said rib portion; and including

a ship lock coupled to the front end of said runner and tapered in height so that the rear end of the ship lock has a greater height than the front end thereof, said ship lock located at the same lateral position as said rib portion, so that as the drawer is slid into the chest frame the rib portion rides over the ship lock and then falls down behind the ship lock.

6. A chest assembly comprising:

a chest frame which includes a plurality of vertically spaced sill beams and a plurality of runner beams extending rearwardly from the centers of the sill beams;

a plurality of T-shaped bearing members of smooth low-friction material, each including a cross arm lying on a sill beam and a runner lying on a runner beam, said cross arm having thick forward and rearward edge portions connected by a thin center portion, and said runner having thick laterally-spaced edge portions connected by a thin center portion;

a plurality of fasteners projecting through the thin center portions of the cross arm and runner and into the sill and runner beams, said fastener having heads that project above the thin center portions to heights less than the tops of the thick edge portions; and

a plurality of drawers having bottom walls slideably engageable with thick edge portions of the cross arms and runners, and each having a pair of runner-straddling walls lying on either side of the runner.

7. The chest assembly described in claim **6** wherein:

each of said runners has a pair of end stop portions extending from laterally opposite sides of the rear end of the runner, said end stop portions positioned to abut the rear ends of the runner-straddling walls to limit the rearward sliding of the drawer.

8. A drawer guide and chest frame combination comprising:

a chest frame having a sill of a wood-like material that can be easily penetrated by a fastener having a pointed shank;

an elongated cross arm disposed on said sill, said cross arm constructed of low friction plastic-like material which is easily penetrated by a fastener having a pointed shank, said arm having a thin middle web portion and front and rear edge portions that are thicker than the middle portion so they lie at a greater height than the middle portion; and

a plurality of fasteners with shanks that are pointed at their ends and that project through the thin web portion of the cross arm into the sill, said fasteners having heads that lie above the thin web portion but at heights less than the tops of the front and rear edge portions, whereby to enable rapid staple-gun mounting or the like.

9. The drawer guide described in claim **8** wherein:

said arm has a plurality of locating lugs extending downwardly from the rear edge portion and abutting the rear of the chest frame sill, said rear edge of said cross arm lying behind the rear of said sill.

10. A drawer and guide apparatus adapted to be used with a chest frame that has a sill beam and a runner-support extending rearwardly from the center of the sill beam, comprising:

a thin T-shaped bearing member of low friction material having an elongated runner for mounting on the runner-support and an elongated cross arm at the front of the runner for mounting on the sill beam, said runner having a pair of end stops projecting laterally from opposite sides of the rear end of the runner; and

a drawer with a bottom surface and a pair of runner-straddling walls thereon spaced apart by slightly more than the spacing of said edge portions of said runner and positioned so that the rear ends of said runner-straddling walls hit the end stops when the drawer is slid into the chest frame.

11. A drawer and frame combination comprising:

a chest frame having a sill with a center portion and opposite ends, and having a runner-support extending rearwardly from the center of the sill;

a thin T-shaped bearing member of low friction material having an elongated runner mounted on the runner-support and having an elongated cross arm at the front of the runner mounted on the center portion of the sill;

a pair of corner members mounted on said sill beyond the opposite ends of the cross arm and extending higher than the arm; and

a drawer with a bottom surface slideable on the cross arm, side walls with bottoms spaced apart slightly less than the spacing of the corner members, and a pair of runner-straddling walls;

said side walls angled from the vertical so that the bottoms of the side walls are closer together than the tops of the side walls, and said corner members having upstanding portions spaced inward from either end of said sill to closely engage the bottoms of the side walls and short bottom portions of approximately the same height as said T-shaped bearing member and lying under the drawer.

* * * * *