

- [54] **DRAWER WITH SNAP-ON FRONT PANEL**
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1,093,023	4/1914	Alta	20/92.7 X
3,639,027	2/1972	Higdon	312/204
3,401,980	9/1968	Nicholas	24/230 SL
3,545,712	12/1970	Ellis	287/20.924
3,403,641	10/1968	Baker	108/152
3,490,797	1/1970	Platte	287/20.924

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 [58] Field of Search 287/20.925, 56, 20.924, 287/92 T, 92 D; 24/230 F, 230 SC, 230 SL; 312/330, 140, 204

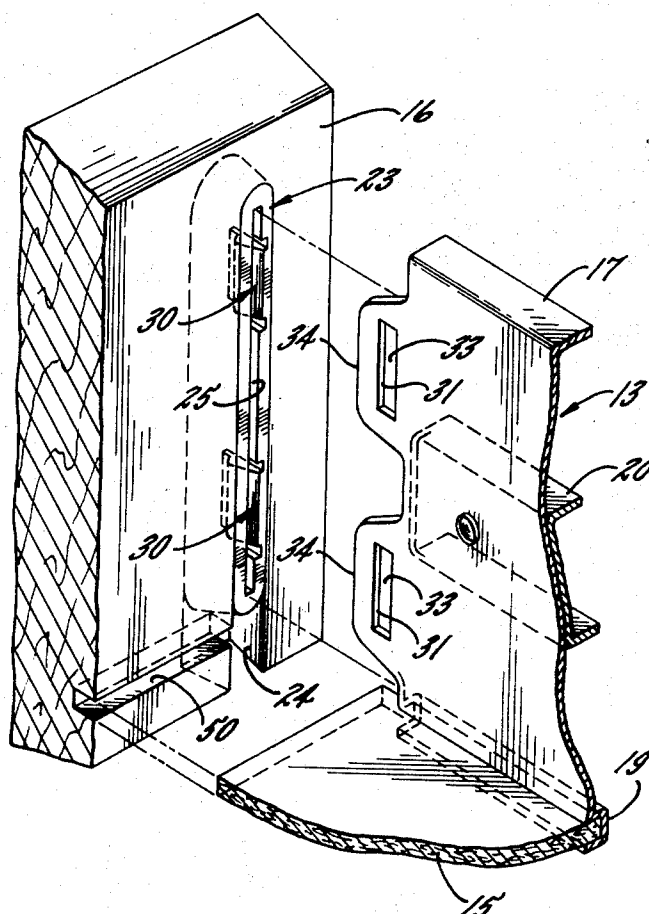
[56] **References Cited**
UNITED STATES PATENTS

3,542,447	11/1970	Himmelreich	312/204
3,534,517	10/1970	Kann	108/111

[57] **ABSTRACT**

Elongated plastic clips are fitted into dovetail slots in the front panel of the drawer and receive the forward ends of the side panels with a snap fit to lock the panels rigidly together. The bottom panel fits into a groove in the front panel and prevents endwise removal of the clips from the slots.

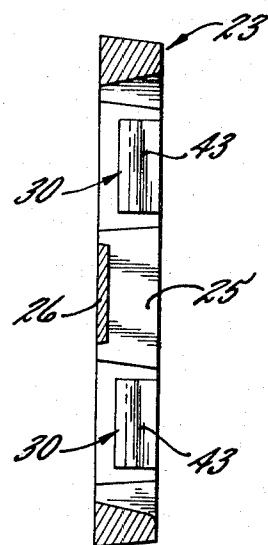
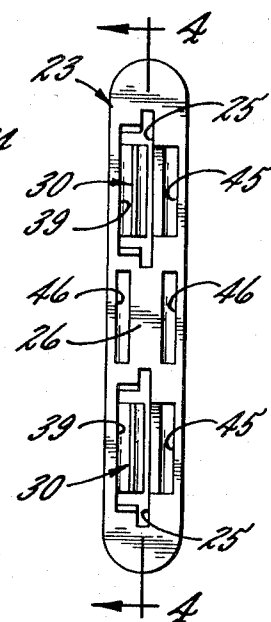
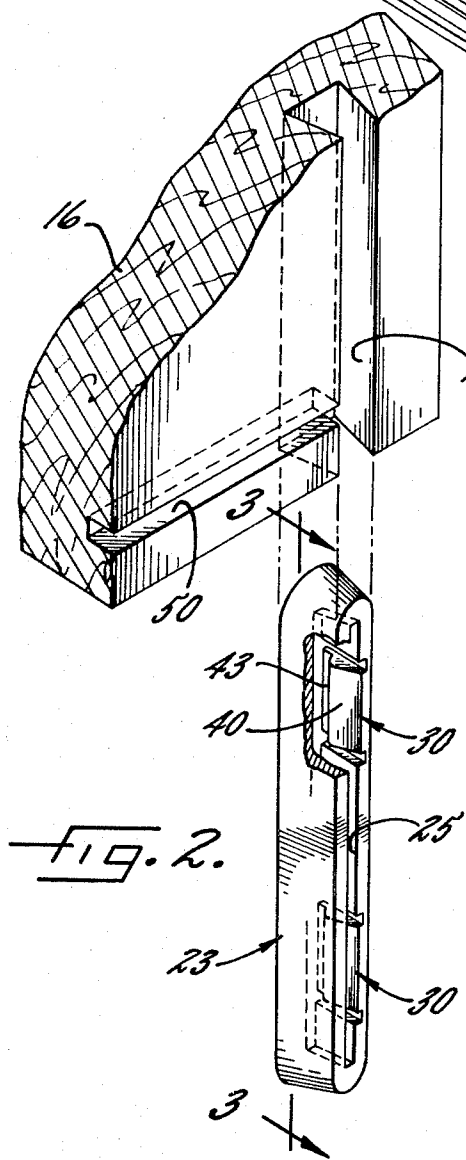
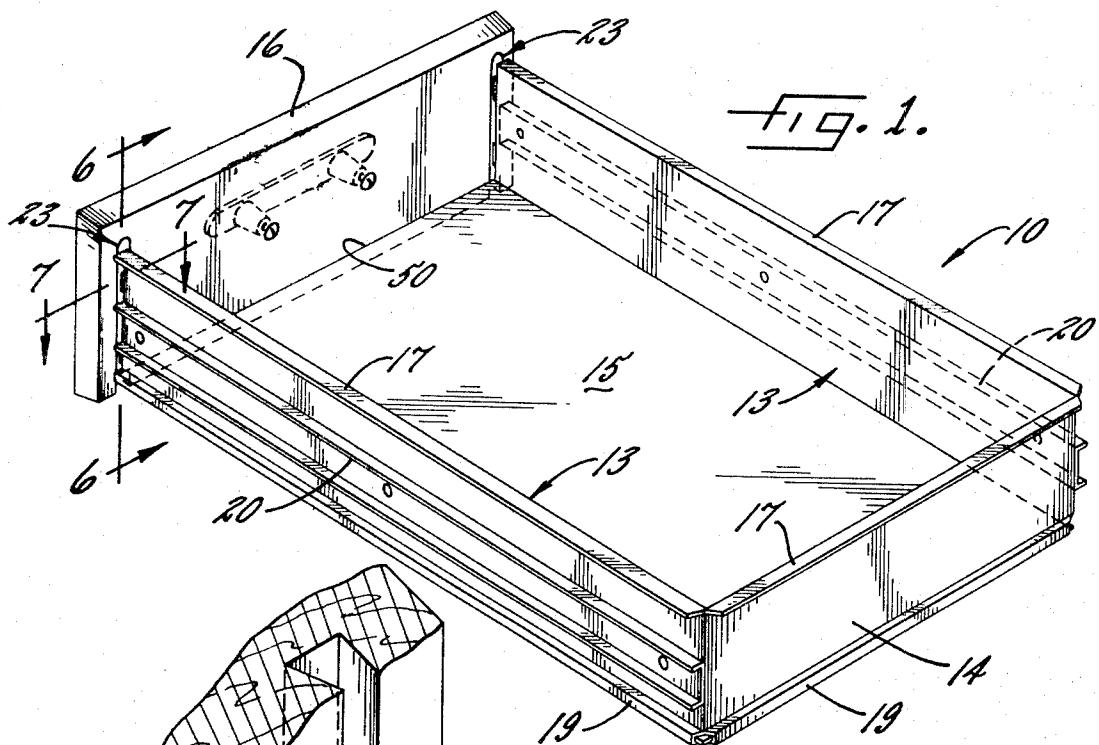
8 Claims, 7 Drawing Figures



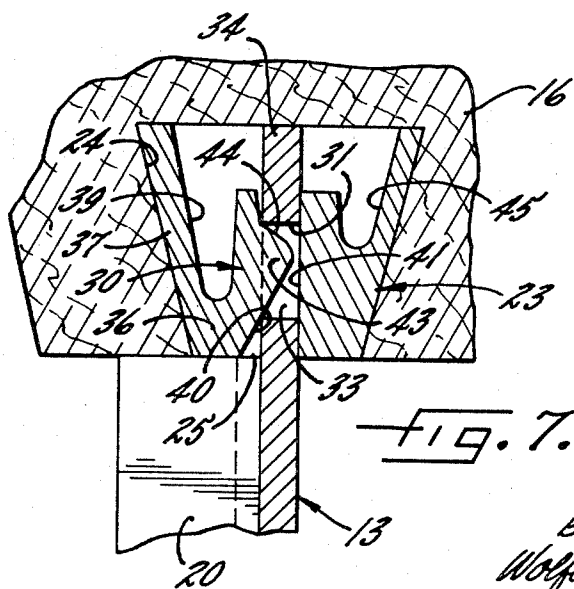
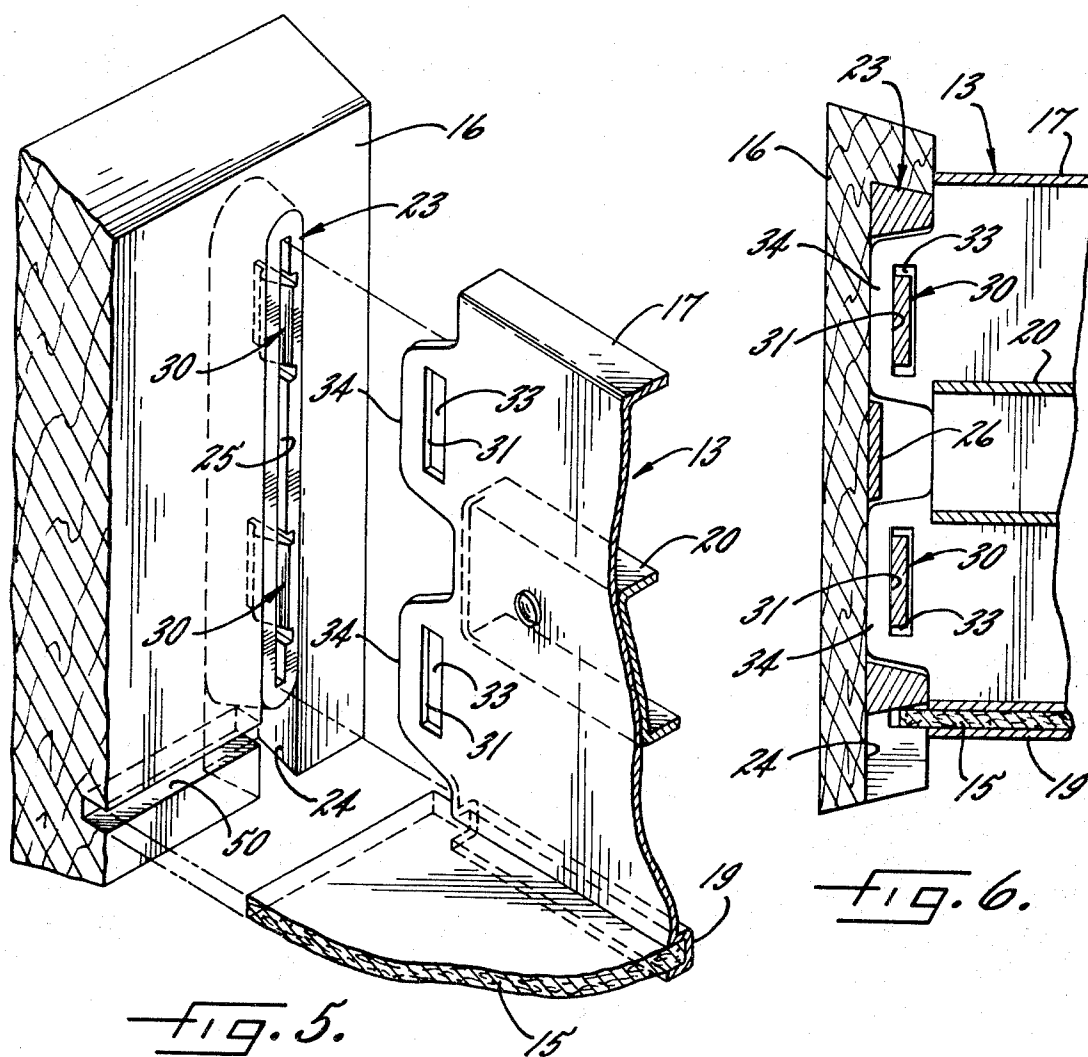
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DRAWER WITH SNAP-ON FRONT PANEL

BACKGROUND OF THE INVENTION

This invention relates to a clip for interconnecting two panels at right angles to one another and, more particularly, to a clip which enables the front panel of a drawer to be snapped onto and interconnected with the side panel of the drawer. A clip of this general type is shown in U.S. Pat. No. 3,542,447.

SUMMARY OF THE INVENTION

The general aim of the present invention is to provide a new and improved clip of the above character which may be installed more easily and which holds the panels interlocked more securely than prior clips of the same general type.

Another object is to provide a clip which is particularly suitable for use in interconnecting the panels of a drawer whose front panel is made of decorative wood and whose side panels are made of metal.

Still another object is to provide a clip which coacts with the front and side panels to lock a separate bottom panel in place as an incident to snapping the front panel onto the side panels, the bottom panel serving in turn to finally anchor the clip to the front panel.

A more detailed object is to achieve the foregoing through the provision of novel clips adapted to be inserted endwise into slots opening out of one edge of the front panel and shaped to prevent movement of the clips broadwise of the panel. After the bottom panel has been assembled loosely to the side panels, the latter are snapped into and interlocked with the clips and, as an incident thereto, the bottom panel interlocks with the front panel to prevent endwise removal of the clips from the slots and thereby anchor all of the panels rigidly to one another.

The invention also resides in the comparatively simple construction of the clip and in the novel construction of the front and side panels to enable rigid interlocking of the panels.

These and other objects and advantages of the invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a new and improved drawer equipped with unique clips embodying the novel features of the present invention.

FIG. 2 is an enlarged, exploded perspective view of certain parts of the drawer shown in FIG. 1.

FIG. 3 is an elevational view of one of the clips as taken along the line 3—3 of FIG. 2.

FIG. 4 is a cross-section taken substantially along the line 4—4 of FIG. 3.

FIG. 5 is an enlarged, exploded perspective view of other parts of the drawer shown in FIG. 1.

FIGS. 6 and 7 are enlarged fragmentary cross-sections taken substantially along the lines 6—6 and 7—7, respectively, of FIG. 1.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

As shown in the drawings for purposes of illustration, the invention is embodied in a drawer 10 of the type adapted to be mounted for back and forth sliding in a cabinet, desk or the like. Basically, the drawer com-

prises two side panels 13, a rear panel 14, a bottom panel 15 and a decorative front panel 16 which herein is made of wood.

The side panels 13 and the rear panel 14 are integral with one another and are formed as a result of placing a pair of right angular bends in an elongated and initially straight strip of extruded metal such as aluminum so as to convert the midportion of the strip into the rear panel and to convert the end portions of the strip into the side panels. As an incident to extruding the metal strip, an outturned flange or rib 17 (FIG. 5) is formed along the upper margin of the strip and the resulting side and rear panels and an additional outwardly protruding rib 19 defining an inwardly opening channel is formed along the lower margin of the panels. While both ribs tend to rigidify the panels, the outwardly turned top rib 17 also eliminates sharp edges at the tops of the panels and enhances the overall appearance of the drawer 10. The bottom panel 15 of the drawer is fitted edgewise into the channel defined by the bottom rib 19 and is held by such rib against vertical and sidewise shifting. The bottom panel preferably is made of wood, imitation wood or plastic.

Elongated tracks 20 (FIGS. 1 and 5) are fastened to the outer sides of the side panels 13 and coact with rollers (not shown) on the sides of the cabinet to guide the drawer 10 for back and forth sliding. For simplicity, the tracks have been shown as being riveted to the side panels but the tracks preferably are mounted in the manner disclosed in the copending U.S. application of Lloyd L. Anderson and Richard L. Bildahl, Ser. No. 159,882, Filing Date July 6, 1971 and entitled Drawer With Guide Tracks, such application being assigned to the assignee of the present invention.

Preferably, the manufacturer of the various components of the drawer 10 ships the components flat to the cabinet maker and the latter assembles the side and rear panels 13 and 14 to the bottom panel 15 and the front panel 16. That is, the extruded aluminum strip (with the tracks 20 attached) is straight and flat as shipped to the cabinet maker who bends the strip to form the side panels 13 and the rear panel 14 and then assembles these panels with the bottom panel 15 and the front panel 16. In assembling the front panel, clips 23 are used to enable the front panel to be snapped on and locked to the side panels.

The present invention contemplates the provision of new and improved snap-type clips 23 which not only hold the front panel 16 anchored more securely to the side panels 13 than previous clips but which also enable quicker and easier assembly of the front panel to the side panels. This is achieved by forming the clips to coact with the front panel in such a manner that the front panel positively holds the clips while the side panels are being snapped in and locked to the clips. As an incident to locking the side panels in the clips, the bottom panel 15 locks the clips to the front panel to anchor the panels and the clips rigidly together and to prevent subsequent disassembly of the panels.

In the present instance, the drawer 10 is equipped with two of the clips 23, one clip being used to anchor one of the side panels 13 to one end portion of the front panel 16 and the other clip being used to anchor the other side panel to the opposite end portion of the front panel. Each clip herein comprises an elongated piece of resiliently yieldable material such as polypropylene or other relatively rigid but resilient plastic. To accom-

moderate the clips, the rear side of each end portion of the front panel 16 is formed with a vertically extending slot 24 (FIG. 2 and FIGS. 5 to 7) which opens out of the lower edge of the panel so that the clips may be inserted endwise into the slots from the lower edge of the panel. As shown in FIGS. 2 and 7, each slot is of dovetail cross-section with the narrow end of the slot being located adjacent the rear face of the front panel. Each clip 23 is formed with a complementary cross-section with the rear face of the clip being narrower than the forward face. The size of each clip corresponds closely to that of the associated slot and thus, after the clip has been inserted endwise into the slot, the walls of the slot prevent the clip from moving either broadwise or lengthwise of the front panel.

For the purpose of receiving the forward edge portions of the side panels 13, the rear face of each clip 23 is formed with a continuous slit 25 (FIGS. 2 and 5) located midway between the sides of the clip and terminating just short of the upper and lower ends of the clip. At the top and bottom portions of the clip, the slit 25 extends the full depth of the clip and opens out of the front face of the clip. At the midportion of the clip, a web 26 (FIGS. 3 and 4) spans the front face of the clip and closes off the front of the slit. When the side panels 13 are assembled to the front panel 16, the forward edge portions of the side panels are telescoped edge-wise into the slits 25 in the clips. As an incident to such telescoping, interfitting elements in the slits and on the forward edge portions of the side panels interlock automatically with one another and prevent the side panels from being withdrawn reversely from the slits.

Herein, the above-mentioned interfitting elements comprise hinged lips 30 (FIGS. 2 and 7) on the clips 23 and coacting shoulders 31 on the forward edge portions of the side panels 13. Advantageously, each shoulder 31 is defined by the forward edge of a rectangular opening 33 (FIG. 5) formed through a tab 34 projecting forwardly from the forward margin of the side panel 13. Each side panel herein is formed with two such apertured tabs which are located between the top rib 17 and the bottom rib 19, the ribs terminating just short of the tabs. The tabs 34 and the openings 33 are formed simply by stamping the aluminum strip after the latter has been extruded and cut to the proper length.

Each clip 23 is formed with two of the hinged lips 30 and the latter are spaced vertically from one another by a distance approximately equal to the spacing between the two openings 33 in the forward edge portion of each side panel 13 so that the forward free edge portions of the lips may snap into the openings and interlock with the edges 31 when the tabs 34 are telescoped into the slit 25. As shown in FIGS. 6 and 7, the lips 30 are approximately the same length as the openings 33 and each is hinged on its rear side at 36 (FIG. 7) to one side wall 37 of the clip, a groove 39 between the lip and the side wall permitting the lip to flex resiliently about the hinge and toward the side wall. From the hinge 36, the rear surface 40 of the lip converges forwardly toward the opposite side 41 of the slit 25 and nearly closes off the slit when the lip is extended from the hinge and is unstressed. Near its forward free edge portion, the lip is formed with a protruding shoulder 43 adapted to snap into the opening 33 and having a forward surface 44 positioned to interlock with the forward edge 31 of the opening. To facilitate flexing of the lips and the side walls of the clips, grooves 45 (FIGS.

3 and 7) are formed in the forward face of the clip at the side of the slit opposite the lips. Additional grooves 46 (FIG. 3) are formed in the forward face of the midportion of the clip and are located on opposite sides of the slit.

In order to assemble the drawer 10, the cabinet maker first bends the extruded metal strip to convert the latter into the side panels 13 and the rear panel 14. Thereafter, the bottom panel 15 is inserted edgewise into the front of the channel defined by the lower rib 19 and is slid rearwardly until the rear edge of the bottom panel abuts the rear panel 14. The bottom panel thus is captivated against moving in all directions except forwardly.

Next, the clips 23 are inserted endwise into the slots 24 by pushing the clips upwardly from the lower edge of the front panel 16 (see FIG. 2). Because of the snug dovetail fit between the clips and the slots, the clips are retained frictionally against falling endwise out of the slots and are captivated against movement either broadwise or lengthwise of the front panel.

As the final step of assembly, the side panels 13 with the attached bottom panel 15 are moved forwardly toward the front panel 16 to insert the tabs 34 into the slits 25 in the clips 23 (see FIG. 5). As the tabs telescope into the slits, the forward edges of the tabs engage the inclined rear surfaces 40 (FIG. 7) of the lips 30 and cam the lips laterally about the hinges 36 against the resiliency of the plastic material thereby to resiliently load the lips. With continued telescoping of the tabs, the openings 33 move into alignment with the shoulders 43 on the lips and the shoulders snap into the openings to cause the forward surfaces 44 of the shoulders to interlock with the forward edges 31 of the openings and thereby prevent the tabs from being withdrawn rearwardly from the slits. Upon exertion of any force tending to separate the front panels and the side panels, the plastic side walls adjacent the grooves 39 and 45 are wedged inwardly by the walls of the dovetail slots 24 and force the shoulders 43 even more tightly into the openings 33. The side panels thus are anchored very rigidly to the clips to prevent the front panel from being pulled away from the side panels.

As the tabs 34 telescope into the slits 25, the forward edge of the bottom panel 15 moves into a narrow groove 50 (FIG. 5) which extends horizontally across the lower edge portion of the rear face of the front panel 16 and which intersects the slots 24 just below the clips 23. As the tabs interlock with the clips, the bottom panel lodges in the groove 50 and prevents any vertical movement of the side panels and the clips. Accordingly, the bottom panel locks the clips in the slots 24 and prevents the clips from being withdrawn from the lower ends of the slots. Thus, the side panels 13, the bottom panel 15, the front panel 16 and the clips 23 all coact to hold the panels in rigidly but easily assembled relation.

In the assembled drawer 10, the ends of the top and bottom ribs 17 and 19 abut the rear side of the front panel 16. In addition, the clips 23 and the bottom panel 15 close up the slots 24 and the groove 50, respectively. The drawer thus has an attractive and well-constructed appearance.

From the foregoing, it will be apparent that the present invention brings to the art a new and improved drawer 10 with unique clips 23 which are held in place by the front panel 16 as the latter and the side panels

13 are snapped together and which then are automatically locked in place by the bottom panel 15. Each clip of the pair is identical to the other clip and is symmetrical from top to bottom. As a result and because of the apertured tabs 34, either clip can be used at either side of the drawer and need not be installed with a particular vertical orientation since the openings 33 in the tabs will accommodate the lips 30 regardless of whether the lips are located on the inboard or the outboard sides of the slots 24. While the clips can be used in conjunction with drawers made of various materials, they are particularly effective for use in assembling a drawer having metal side panels and a wood front panel.

We claim as our invention:

1. The combination of first and second panels and a clip for interconnecting said panels at right angles to one another, an elongated slot formed in one side of said first panel and opening out of one edge of such panel, said slot having opposed side walls which converge toward one another upon progressing toward said one side of said first panel, said clip comprising an elongated piece of resiliently yieldable material sized for endwise insertion into said slot from said one edge of said first panel and having a cross-sectional shape complementary to that of said slot so as to be captivated by the walls of said slot and held by such walls against movement broadwise of said first panel, a slit formed in and extending along said clip intermediate the sides thereof for telescopically receiving one end portion of said second panel, and coacting elements formed integrally with said clip within said slit and formed integrally with said one end portion of said second panel and interlocking with a snap fit as an incident to insertion of said one edge portion into said slit.

2. A drawer comprising upright front and side panels and a clip for interconnecting said panels at right angles to one another, a slot formed in the rear side of said front panel and opening out of the lower edge of such panel, said clip comprising a piece of resiliently yieldable material adapted to be inserted into said slot from the lower edge of said front panel and being captivated by the walls of said slot so as to be held thereby against movement broadwise and lengthwise of said front panel, a slit formed in and extending along said clip for telescopically receiving one end portion of said side panel, a resiliently yieldable lip hinged integrally to said clip and projecting into said slit, and a shoulder on said one end portion of said side panel and positioned to in-

terlock with the free edge portion of said lip with a snap fit as an incident to moving past said lip when said end portion is telescoped into said slit.

3. A drawer as defined in claim 2 in which said slot and said slit extend generally vertically of said front panel, said slot being formed with a dovetail cross-section and having upright side walls which converge rearwardly so that the narrow end of said slot is located at the rear side of said front panel, said clip having a complementary cross-section and fitting snugly in said slot.

4. A drawer as defined in claim 2 in which said slot extends vertically of said front panel, and further including a groove formed in the lower edge portion of the rear side of said front panel, extending horizontally across such panel, and intersecting said slot, and a bottom panel connected to said side panel and having its forward edge portion fitted into said groove to prevent vertical movement of said side panel relative to said front panel, part of said bottom panel underlying said clip to prevent removal of said clip out of the lower open end of said slot.

5. A drawer as defined in claim 4 further including a channel extending along the inner side of the lower edge portion of said side panel and receiving the adjacent side edge of said bottom panel.

6. A drawer as defined in claim 2 in which said shoulder is formed by the forward edge of an opening formed in the forward end portion of said side panel.

7. A drawer as defined in claim 6 in which said lip is hinged to the rear portion of said clip adjacent one side of said slit and includes a rear surface converging toward the other side of said slit, the forward end of said side panel engaging said surface as an incident to be inserted into said slit and hinging said lip laterally to permit the forward free edge portion of the lip to snap reversely into said opening upon continued insertion of said side panel into said slit.

8. A drawer as defined in claim 2 in which said side panel is formed with upper and lower ribs extending along its top and bottom margins, at least one tab located between said ribs and projecting forwardly from said side panel beyond said ribs so as to fit into said slit while permitting the forward ends of said ribs to abut the rear side of said front panel, said shoulder being located on said tab.

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