Dec. 20, 1955 W. R. SNIDER 2,727,800

STEEL CABINET

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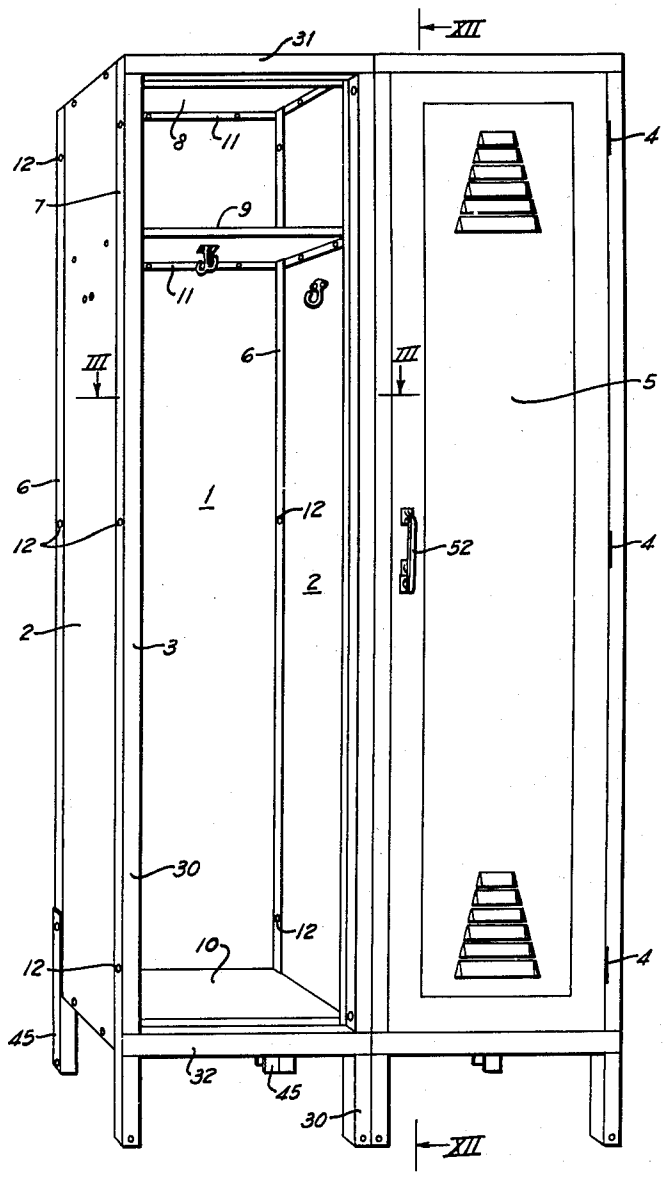


Fig. 1

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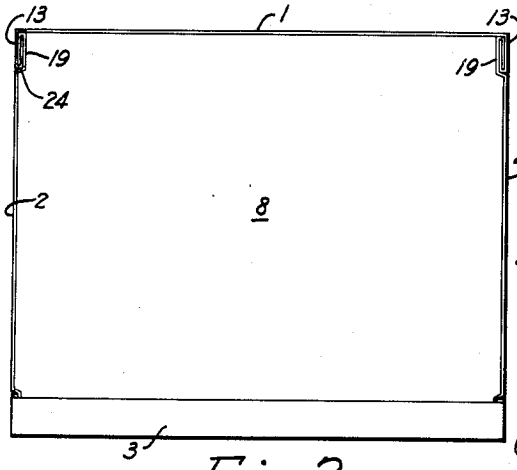


Fig. 2

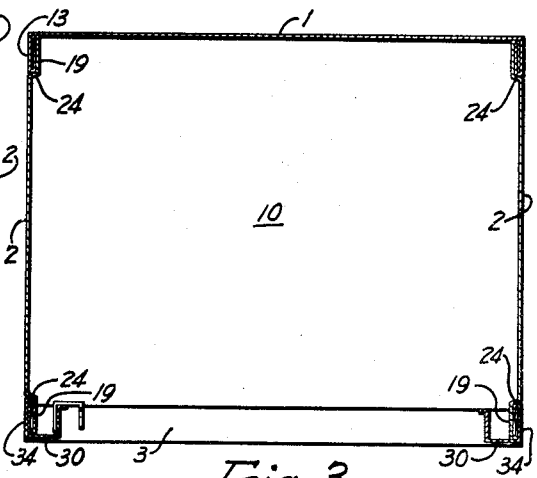


Fig. 3

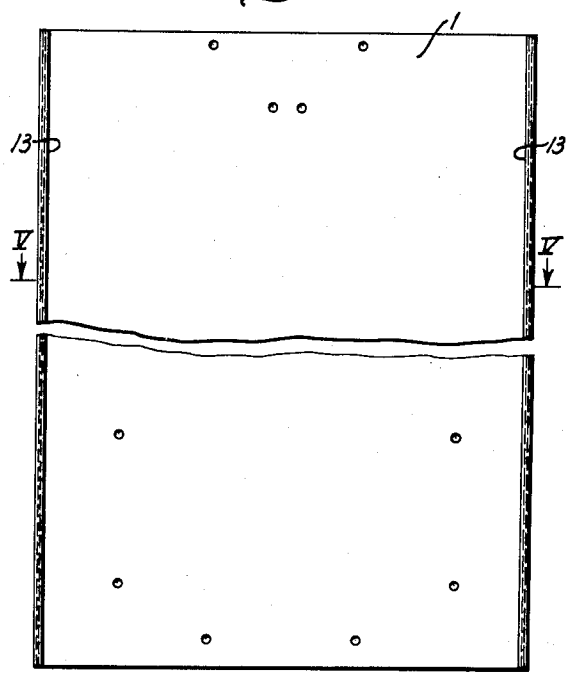


Fig. 4

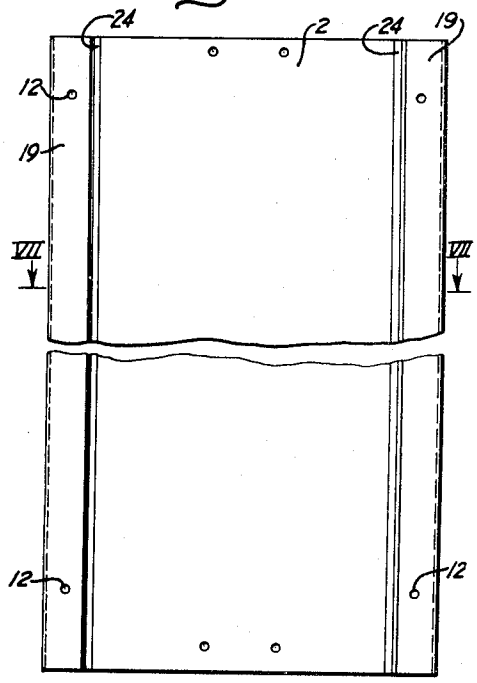


Fig. 6

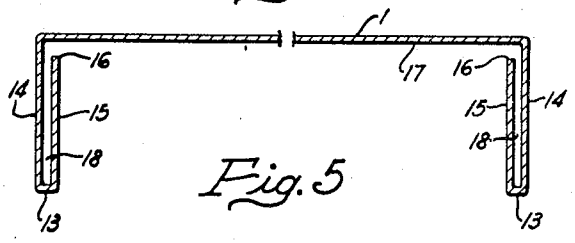


Fig. 5

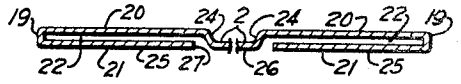


Fig. 7

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STEEL CABINET

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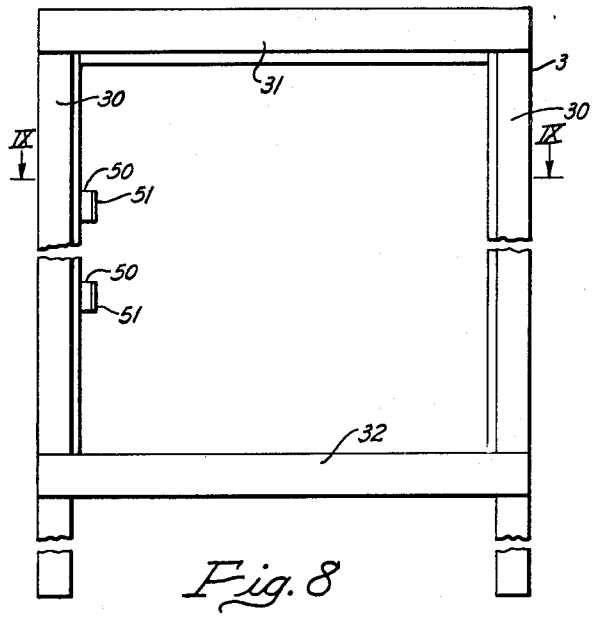


Fig. 8

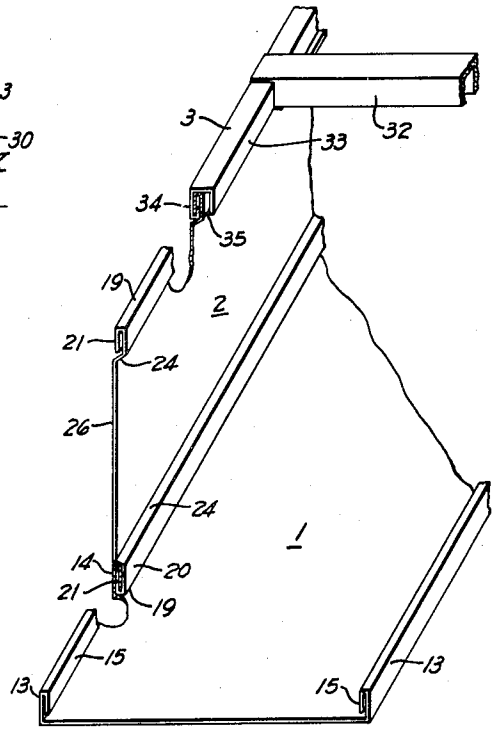


Fig. 10

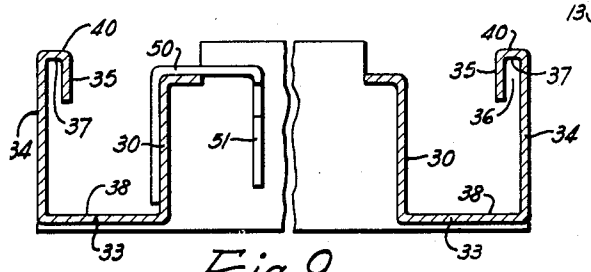


Fig. 9

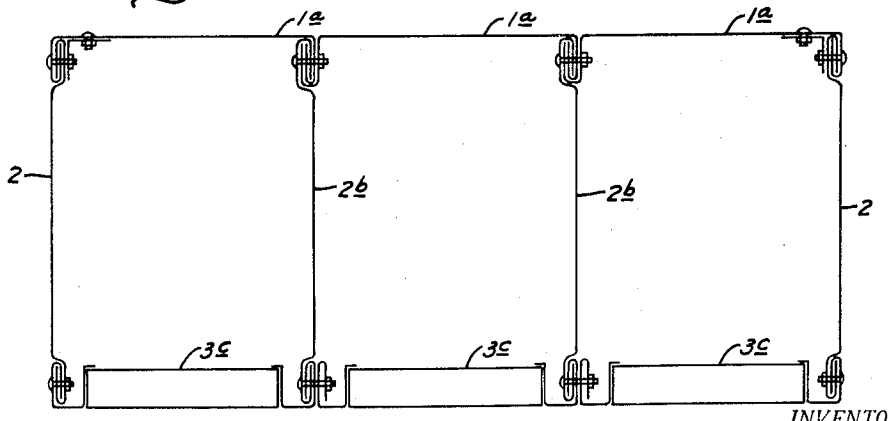


Fig. 11

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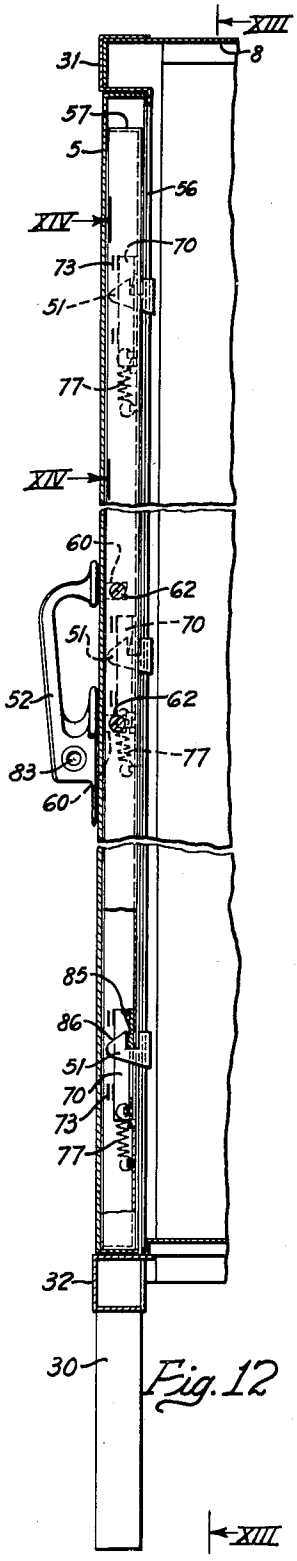


Fig. 12

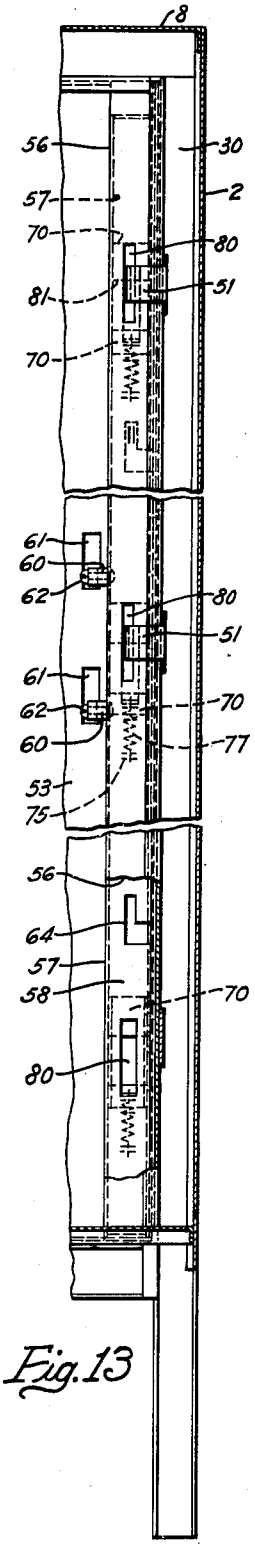


Fig. 13

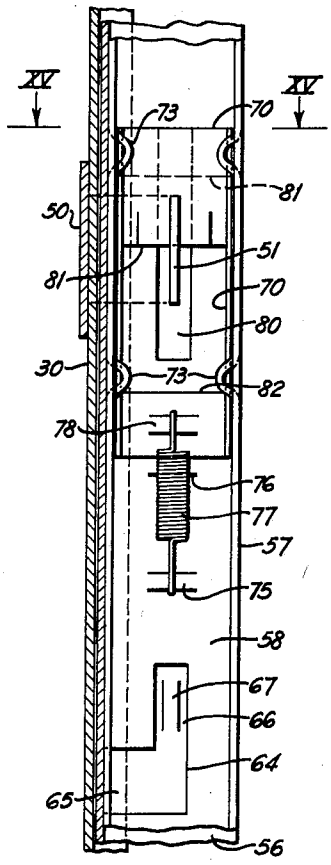


Fig. 14

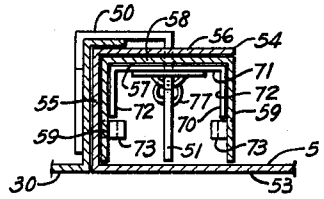


Fig. 15

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STEEL CABINET

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Application September 21, 1953, Serial No. 381,345

2 Claims. (Cl. 312—255)

This invention relates to steel cabinets of the locker type, and, more particularly, is directed to improvements which facilitate their assembly and provide a more rigid and pilfer-proof construction.

Metal locker cabinets are commonly fabricated from sheet metal back and side panels which are secured together along their longitudinal edges by fastening elements, a front panel or frame having a door hinged thereon being secured along the longitudinal edges of the side panels at the front thereof through which access to the cabinet is had. Cabinets of this type are not entirely satisfactory since the panels of which they are constructed warp and sag in use and this makes it difficult to maintain cabinets aligned with each other where the use of plural cabinets is called for. In addition, the manner in which the longitudinal edges of the panels are secured together by fastening elements makes conventional cabinet constructions subject to pilferage since unauthorized access may be had by springing the corners of the panels in the space between adjacent fastening elements. Moreover, the large number of fastening elements required for securing the panels together increases the time required for assembly of the cabinet and its ultimate cost of production.

One of the principal objects of this invention is to provide an improved metal locker cabinet which may be assembled in less time than conventional cabinet structures and which provides a stronger and more rigid structure which is pilfer-proof. To this end, the front and side panels as well as the door-bearing frame at the front of the cabinet are provided with flanges along their longitudinal edges which are engaged by a lengthwise sliding movement of the panels and frames relative to each other to provide a tight interlocking connection which extends along the entire length of the panels at each corner of the cabinet. In a manner to be described, the panel flanges at each corner of the cabinet have a U-shape and each flange includes a lip as one arm of its U-shape which is received in the space between the arms of the U-shaped flange of the adjacent panel to which it is connected. In this manner, the panels are secured together along their entire length by a tight U-turn linkage or interlocking connection at the corners of the cabinet which makes pilferage by separation of the panels at the corners of the locker practically impossible.

A further object of the invention is to provide an improved arrangement of locking mechanism for securing the cabinet door in closed position. This mechanism comprises a handle operated channel mounted for sliding movement longitudinally of the door which carries channel shaped detents movable longitudinally of the mounting channel for operative engagement with a stationary cam shaped latch carried by the door frame in such manner that the door may be closed and locked even though its handle is held against movement relative to the door by the clasp of a lock.

Other objects and advantages of the invention will become apparent from the following description.

In the drawings there is shown a preferred embodiment of the invention. In this showing:

Fig. 1 is a perspective view of two metal cabinets constructed in accordance with the principles of this invention, the door of one of the cabinets being removed to show its interior construction;

Fig. 2 is a top plan view of one of the cabinets shown in Fig. 1;

Fig. 3 is a horizontal sectional view of one cabinet taken substantially along the line III—III of Fig. 1;

Fig. 4 is a plan view of a back panel looking at the inner side thereof, a portion of the panel being broken away centrally thereof;

Fig. 5 is an enlarged sectional view taken along the line V—V of Fig. 4, a central portion being broken away;

Fig. 6 is a plan view of a side panel looking from the outer side thereof, the center portion of the panel being shown broken away;

Fig. 7 is an enlarged sectional view taken substantially along the line VII—VII of Fig. 6, the center portion of the panel being broken away;

Fig. 8 is a front elevational view of the frame at the front of the cabinet, the door being omitted and parts of the frame being shown broken away;

Fig. 9 is a sectional view taken along the line IX—IX of Fig. 8;

Fig. 10 is a fragmentary perspective view illustrating the manner in which the interlocking connections at the corners of the cabinet are made by sliding the panels longitudinally relative to each other;

Fig. 11 is a diagrammatic view illustrating a modification adapting the principles of the invention to a cabinet construction formed of plural tiers;

Fig. 12 is a sectional view taken substantially in the plane XII—XII of Fig. 1; and

Figs. 13, 14 and 15 are respectively sectional views taken substantially in the plane of the lines XIII—XIII, XIV—XIV and XV—XV.

In the above explanation of the drawings as well as in the following description, the terms inner and outer are used in a directional sense corresponding respectively to the interior and exterior of the cabinet.

In Fig. 1 of the drawings, two identical cabinets are shown in side by side relation, the door of one of the cabinets being removed to show the interior thereof. Each of the cabinets comprises a back panel **1**, side panels **2** and a door frame **3** at the front. In the finished cabinet the frame **3** is provided with hinges **4** supporting a sheet metal door **5** for pivotal movement to and from a closed position with respect to the cabinet. In a manner to be described, the side panels **2** are provided with an interlocking connection along the entire length of their rear edges **6** with the back panel and with a similar interlocking connection along the entire length of their front edges **7** with the frame **3**. After assembly of the panels **1** and **2** and the frame **3** with respect to each other, the cabinet is completed by applying a top **8**, a hat shelf **9** and a bottom **10**, the parts **8**, **9** and **10** being constructed of sheet metal and having flanges **11** which are secured by fastening elements (not shown) to the panels **1** and **2**. While fastening elements are not required to prevent separation of the interlocking connections along the edges **6** and **7**, openings **12** are provided at spaced intervals therethrough for the reception of fastening elements (not shown) to prevent longitudinal displacement of the panels **1** and **2** and frame **3** with respect to each other.

The flanged construction of the panels **1** and **2** and frame **3** which provide the interlocking connection along the corners of the cabinet is shown in Figs. 4 through 9.

Referring to Figs. 4 and 5, the panel 1 is shown as comprising a flat metal sheet having U-shaped flanges 13 extending along each of its longitudinal edges. The U-shaped flanges 13 have their open ends adjacent and opening toward the body of the panel 1 to which they are connected. Each of the flanges 13 comprises a flange arm 14 arranged normal to and integrally connected with the body of the panel 1 and a flange arm 15 connected to the outer end of the arm 14 and its end 16 spaced from the inner surface 17 of the panel 1. The flange arm 15 in effect constitutes a lip which extends inwardly from the outer edge of the flange arm 14. The flange arms 14 and 15 are parallel and are spaced from each other to provide a space 18 therebetween for a purpose to be described, the space 18 having a depth slightly larger than the thickness of the metal from which the panels 1 and 2 are formed.

Referring to Figs. 6 and 7, the side panel 2 is shown as comprising a flat metal sheet having flanges 19 of U-shape extending along its longitudinal edges. The open ends of the U-shaped flanges 19 open toward the body of the panel 2. As best shown in Fig. 7, each of the flanges 19 comprises a flange arm 20 which forms an extension of the body of the panel 2 at one edge thereof and which has its other flange arm 21 extending inwardly from its outer edge in the form of a lip. The flange arms 20 and 21 are parallel and spaced from each other to provide a space 22 having a depth slightly greater than the thickness of the metal from which the panels 1 and 2 are formed for a purpose to be described. The panel 2 has an offset 24 at its point of connection with the inner edges of the flange arms 20. The offsets 24 are provided so that the surfaces 25 of the flange arms 21 lie in substantially the same plane as the outer surface 26 of the center body portion of the panel 2. The purpose of the offsets 24 is to provide a smoother surface along the outer surface of the cabinet than would be had by omitting the offsets 24. The offsets 24 also act as abutments preventing movement of the flanges 13 and other flanges on the frame 3 in a manner to be described. The inner edges 27 of the outer flange arms or lips 21 are spaced from the offsets 24 for a purpose to be described.

Referring to Figs. 8 and 9, the frame 3 is shown as comprising spaced longitudinally extending side members 30 having transversely extending bracing members 31 and 32 rigidly secured thereto at the top and bottom. The members 30 extend below the bottom member 32 to provide cabinet legs. As shown in Fig. 9, each of the longitudinally extending members 30 comprises a channel fabricated from sheet metal having its web 33 positioned at the front of the cabinet and one of its channel arms 34 positioned at the side of the cabinet. The inner end of each channel arm 34 has an in-turned lip or flange 35 which is parallel to and spaced from the body of the channel arm 34 to provide a space 36 between the parts 34 and 35 which has a depth slightly larger than the thickness of the metal panels for a purpose to be described. The outer end of the channel arm 34 and the in-turned lip 35 provide a U-shaped flange for the members 30 in which the inner surface 37 of its bight is spaced from the inner surface 38 of the web 33 a distance approximately the same as the width of the side panel flanges 21. The U-shaped flanges 34—35 open toward the front of the cabinet and toward the plane of the frame 3.

The manner in which the side panels are assembled with respect to the back panel 1 and frame 3 is illustrated in Fig. 10. The assembly is effected by laying the back panel 1 on a flat surface with its flanges 13 projecting upwardly. The side panels 2 are then slid into position with the flanges 19 and 13 in interlocking engagement by sliding the lip channel arms 25 through the spaces 18 between the flange arms 14 and 15 of the channels 13, the outer ends of the flanges 19 extending through the spaces between the ends 16 of the flanges 15 and the inner surface 17 of the back panel. This places the flange 20 of each side panel on the inner surface of the cabinet, and the offset at 24 places the center portion of the panel 2 substantially in the plane of the surface of the outer flange 14 connected with the back panel 1 so that the outer surfaces of the cabinet sides are smooth over substantially their entire surface area. After assembly of both side panels 2 in this manner with respect to the back panel 1, the frame 3 is assembled in position by a sliding movement lengthwise with respect to the upper edges of the side panels 2 to interlock the U-shaped flanges 19 at the upper edges of the side panels with the U-shaped flanges 34—35 on the frame 3. Assembly of the frame 3 is effected by sliding its channel lips 35 into the spaces 22 between the flanges 20 and 21 at the upper edges of the side panels 2. The outer ends 40 of the frame U-shaped channels have abutting engagement with the offsets 24 at the upper edges of the panels 2 as viewed in Fig. 10, and the offsets 24 place the surfaces of the frame flange arms 34 in substantially the same plane as the plane of the side panel outer surfaces 26.

While the above description of the assembly of the side panels 2 with respect to the back panel 1 and frame 3 has proceeded on the basis that the panels 2 are first secured to the back panel 1, the assembly procedure may be reversed by placing the frame 3 facing downwardly on a flat surface and securing the side panels 2 to it first and thereafter assembling the back panel 1 on the upper edges of the side panels.

The assembled position of the side panels 2 with respect to the panel 1 and frame 3 is best shown in Fig. 3. From this showing, it will be noted that the various U-shaped channels on the side and back panels and on the door frame have interlocking engagement at the corners of the cabinet. Attention is particularly directed to the fact that the interlocked U-shaped flanges 19 and 13 face in opposite directions with the tips 16 of the flange lips 15 on the rear panel U-shaped flanges 13 bottomed in the bights of the rear side panel flanges 19, and with the similar tips 27 of the flanges 19 bottomed in the bights of the U-shaped flanges 13. This feature securely holds the interlocked flanges 19 and 13 against movement in one direction away from each other, and engagement of the outer ends of the flanges 13 and 19 respectively with the offsets 24 and surfaces 17 prevent separating movement of the interlocked flanges 19 and 13 in an opposite direction. In a similar manner disengagement of the interlocked U-shaped flanges 34—35 on the frame 3 and the U-shaped flanges 19 on the side panels 2 by movement in a direction transversely to their longitudinal direction of sliding assembly movement is prevented. The flange arms or lips 25 and their tips 27 bottom against the surfaces 37 and their outer ends engage with the surfaces 38 to prevent pulling movement of the frame in an outward direction with respect to the side panels. While the frame flange arms 35 do not bottom in the U-shaped flanges 19, movement of the frame in an opposite transverse direction toward the side panels is prevented by engagement of the surfaces 40 with the side panel offsets 24 at the front edges thereof. The flanges 34—35 and interlocked flanges 19 on the side panels also face in opposite directions.

After assembly of the frame and side and back panels in the manner described above, the top 8, a hat shelf 9, and bottom 10 are secured in position by fastening elements (not shown) and are effective to prevent separation of the side and back panels and frame 3 by a lengthwise sliding movement. Although it is not necessary to provide fastening elements through the interlocked sets of flanges 19 and 13, and 19 and 34—35 since such sliding movement will be prevented by the parts 8, 9 and 10, the interlocked sets of flanges are provided with the relatively few sets of transversely extending openings 12 as shown in Fig. 1 through which fastening elements may be inserted to prevent sliding disengagement of the cab-

inet panels and frame preliminary to mounting the parts 8, 9 and 10 in position.

In addition to facilitating the assembly of the cabinet, attention is directed to the fact that the interlocked sets of flanges at the corners of the cabinet provide reinforcing columns which extend the entire length of each vertical corner. This reinforcing feature provides a rigid cabinet structure which will not sag or warp in use. The interlocked sets of flanges at the corners of the cabinet further cannot be sprung apart by inserting a tool such as a screw driver and thus provide a cabinet structure which is essentially pilfer-proof.

As was indicated above, the portions of the frame side members 30 extending below the bottom cross member 32 form the front legs of the cabinet. After assembly of the cabinet, rear legs 45 are attached to the rear corners of the cabinet.

The cabinet structure described above is of the coat locker type having a single door 5. It will of course be appreciated that the principles of this invention are equally adaptable to the construction of cabinets providing locker boxes in which each cabinet unit has a plurality of vertically spaced doors, it being only necessary to provide additional shelves 9 and as many doors as there are spaces between the additional shelves.

The principles of this invention are also adaptable to the construction of locker boxes arranged in plural tiers which have a common party wall between adjacent cabinets as illustrated in the diagrammatic showing of Fig. 11. In this showing, it will be noted that the end panels 2 are constructed as described above and the back panel is formed of plural sections 1*a* with a party wall 2*b* connected to the point of connection between adjacent panels or sections 1*a*. The front frame is formed in sections 3*c*, the end ones of which are connected to the side panels 2 as described above, and which have connections to the party walls 2*b* as illustrated.

The latching mechanism for holding the door in closed position is shown in Figs. 12 through 15. Before referring to these figures, reference will be made to Figs. 8 and 9 which show the manner in which the catches or detents for latching engagement with the door carried latching mechanism are mounted on the cabinet. In this showing, the catches designated by the numeral 50 comprise metal brackets secured to the frame element 30 at the left of the cabinet which have a cam-shaped catch element 51 spaced from the inner edge of the frame element 30 and projecting toward the front of the cabinet. As shown in Fig. 1 the door has a handle 52 which is mounted for vertical movement with respect to the door for operating a latching unit in a manner to be described.

Referring to Fig. 15, the door 5 comprises a sheet metal face panel 53 having a box flange 54 along its outer vertical edge at the left of the door 5 as viewed in Fig. 1. The box flange 54 is L-shaped and comprises an inwardly projecting flange arm 55 and a flange arm 56 positioned in a plane parallel to and spaced from the plane of the door panel 53. The box flange 54 forms an enclosure for a latch unit operated by the handle 52. The latch unit comprises a U-shaped channel 57 which is mounted for vertical sliding movement in the box shaped flange 54. The channel 57 comprises a web 58 having sliding engagement with the box flange arm 56 and having arms 59 projecting forwardly toward the panel 53. As shown in Figs. 12 and 13, the handle 52 has inwardly projecting parts 60 which extend through vertical slots 61 in the door panel 53 and are secured to one of the channel flanges 59 by fastening elements 62. Movement of the handle parts 60 in the slots 61 guides the vertical movement of the channel 57 relative to the door. As a further guide for the vertical movement of the channel 57, its web is provided with L-shaped slots 64 respectively providing a horizontally extending opening 65 and a vertical opening 66. The box flange arm 56 has lanced-out portions 67 which project upwardly through the L-shaped slots 64. Prior to attachment of the handle, the U-shaped flange 57 is moved laterally into position to move the portions 65 of the L-shaped slots 64 laterally over the lance projections 67 and is then moved downwardly so that the lance projections 67 are positioned within the vertical slots 66. Thereafter, the handle is attached and the movement of its parts 60 in the slots 61 together with the movement of the lance projections 67 in the slots 66 guide the vertical movement of the channel 57.

In positions directly opposite each of the catches 51, the channel 57 mounts latches 70. Each of the latches 70 comprises a channel of U-shape mounted for vertical movement in the channel 57. Each latch channel 70 comprises a web 71 having sliding engagement with the inner surface of the mounting channel web 58 and arms 72 which project forwardly toward but terminate short of the door panel 53 as shown in Fig. 15. The sides of the mounting channel flanges 59 have plural lanced projections 73 which project inwardly over the outer ends of the latch channel arms 72 and operate to hold the latch channel against the inner mounting channel web 58.

As best shown in Fig. 14, the mounting channel web 58 has two upwardly projecting lanced projections 75 and 76 immediately below each latching channel 70. The upper lance projection 76 functions as a stop limiting downward movement of the latch channel 70 relative to the mounting channel 57, and the lower lance projection 75 provides an attachment for one end of a spring 77 which has its other end connected to a lance projection 78 extending upwardly from the latch channel web 71, the spring 77 biasing the movement of the latch channel 70 downwardly to a position engaged with the stop lance projection 76.

The door box flange arm 56 and the mounting channel web 58 are provided with aligned openings 80 of rectangular shape which extend vertically and through which the catches or detents 51 are projected when the door is moved to its closed position. The web of each latch channel 70 is removed between the horizontal lines 81 and 82 (see Fig. 14) to provide an opening through which the catch 51 is projected when the door is moved to its closed position. When the door is in its closed and latched position, the springs 77 hold the latch channels 70 in their lowermost position, as shown in Fig. 14, with the upper edge 81 of each latch channel web 71 bottomed in a notch 85 of the catch 51 projecting through the opening defined in part by the line 81 thus latching the door in its closed position.

To open the door, the handle 52 must be elevated to raise the mounting channel 57. Raising movement of the mounting channel 57 carries with it the latching channels 70 to positions in which their lower edges 81 occupy the relative position indicated by the dotted lines in Fig. 14. In this position, the bottom edge 81 will clear the upper edge of the catch 51 and the door may be swung to its open position.

The door of course may be closed by raising the handle 52 so that the lower edges 81 will clear the latches 51 as the door moves to its closed position. However, raising of the handle 52 in this manner is not necessary. The gravitational weight of the parts of the latching mechanism or a lock having its hasp extending through an opening 83 in the handle 52 may hold the handle 52 and the latching mechanism connected thereto in their lowermost position as shown in Fig. 12, and the door can still be moved to its closed and latched position. As the door moves to its closed position, each channel latch edge 81 will strike a sloping surface 86 on the catches 51 and be cammed thereby in an upward direction relative to the mounting channel 57 and operating handle 52, this upward movement being against the action of the biasing spring 77. As soon as the edges 81 move over the notches 85, the springs 77 will pull the latching channels 70 to their lower position as shown by the solid lines in Fig. 14

latching the door in its closed position. It will be noted that this latching operation is accomplished without any upward movement being imparted to the handle 52 or the mounting channel 57 operated thereby.

While I have illustrated and described a preferred embodiment of my invention, it will be understood that this is merely by way of illustration, and that various changes and modifications may be made therein within the contemplation of the invention and under the scope of the following claims.

I claim:

1. A metal locker cabinet comprising spaced side walls, an end wall interlocking with the side walls for the full length of the walls, a door frame interlocking with each side wall for the full length of the wall and extending below the side walls to form the front legs of the cabinet, a cross bar on the door frame having a portion overlapping each side wall, a bottom wall for the locker supported on the side wall overlapping portion of the door frame cross bar and secured to the side and end walls, a cross bar on the door frame forming the top face of the door frame and provided with a top flange directed inwardly, a top wall for the cabinet having a front flange disposed beneath the top cross bar top flange and side flanges secured to the side walls, and rear legs for the cabinet comprising a portion underlying the bottom wall of the cabinet and a portion overlapping the cabinet end wall and secured thereto.

2. In a sectional metal locker, a front wall comprising spaced substantially channel shaped vertical members defining the width of the locker and having the channel webs disposed transversely of the front wall, re-entrant flanges on the outer legs of the channel shaped members for interlocking engagement with the locker side walls,

the adjacent legs of the channels having opposing vertical flanges defining a door opening, a transverse member connecting the channel shaped members adjacent the lower ends thereof, said transverse member having a vertically disposed web portion overlapping the webs of the vertical members and secured thereto, inwardly turned flanges at each side of the web of the transverse member being disposed between adjacent flanges of the vertical members, the top flange of the transverse member extending beneath the inner opposing flanges of the vertical members to define the bottom of the door opening and provide a support for the floor of the cabinet, a top transverse channel shaped member connecting the tops of the vertical channel shaped members and having a vertically disposed web overlapping the web of the vertical members and horizontally disposed flanges extending between the vertical legs of vertical members, the bottom flange of the said transverse member having a downwardly disposed flange cooperating with the opposing flanges on the vertical members to define the top of the cabinet door opening.

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