Jan. 20, 1959 M. E. MILLER ET AL 2,869,953

CABINET

Filed June 10, 1955 3 Sheets-Sheet 1

Fig. 1.

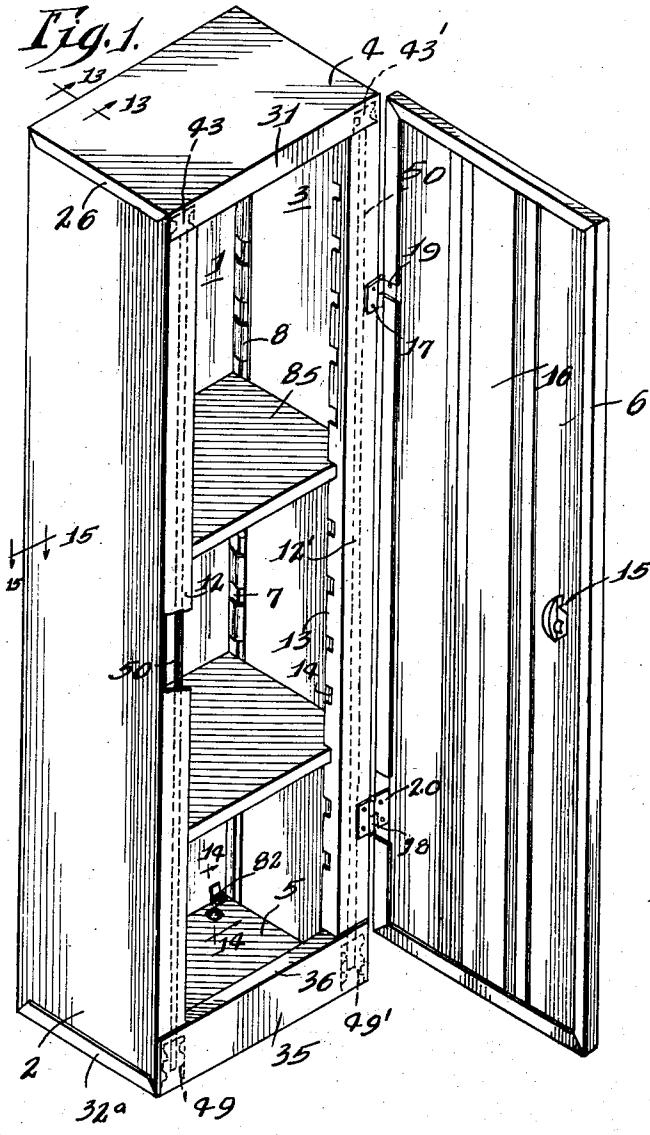


Fig. 13.

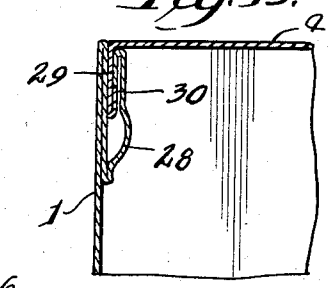


Fig. 14

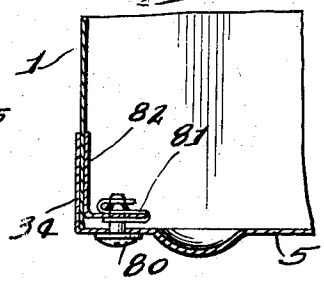


Fig. 15

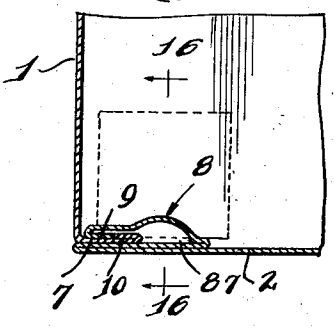
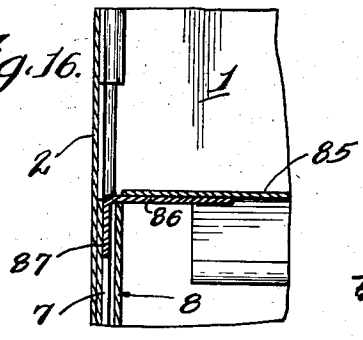


Fig. 16.



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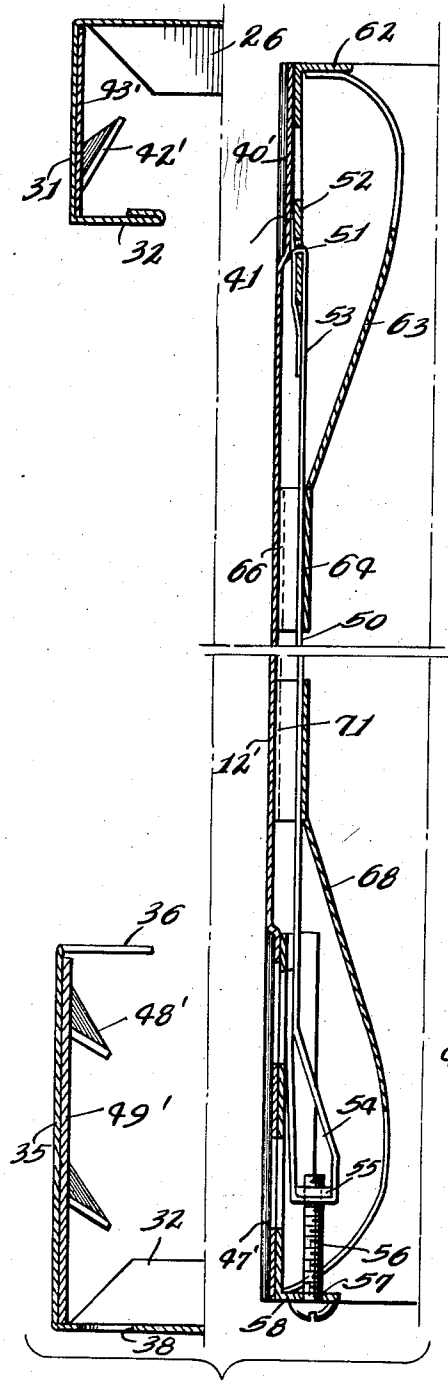
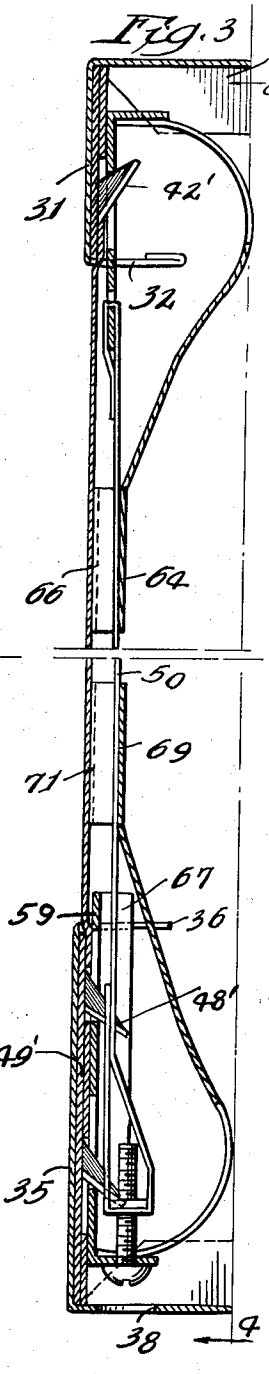
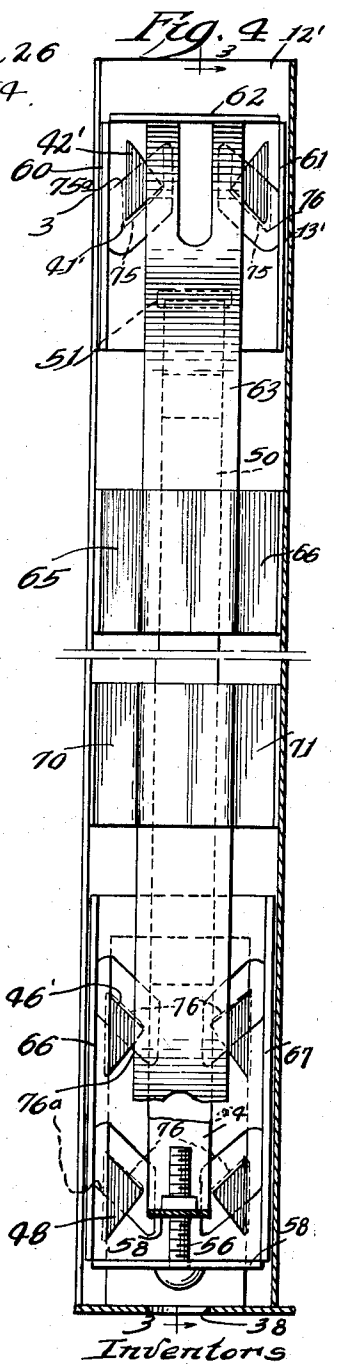


Fig. 2





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CABINET

Filed June 10, 1955 3 Sheets-Sheet 3

Fig. 5

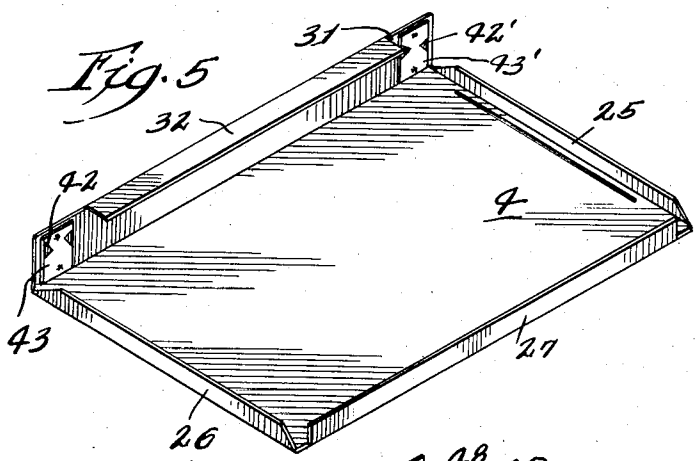


Fig. 9

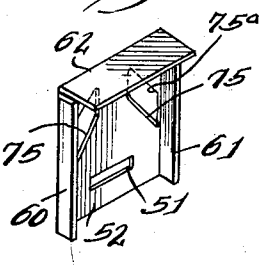


Fig. 6

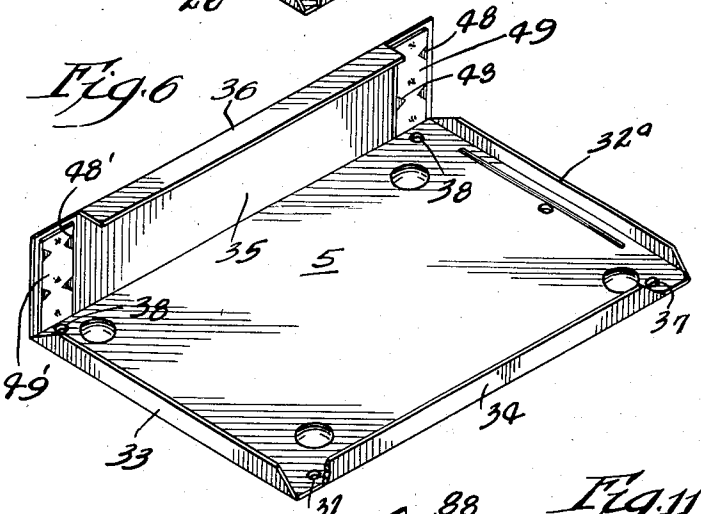


Fig. 10

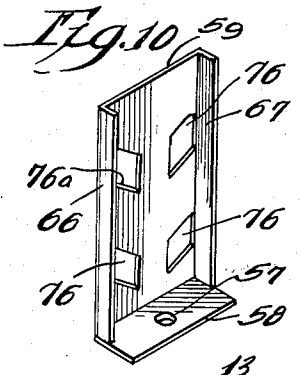


Fig. 7

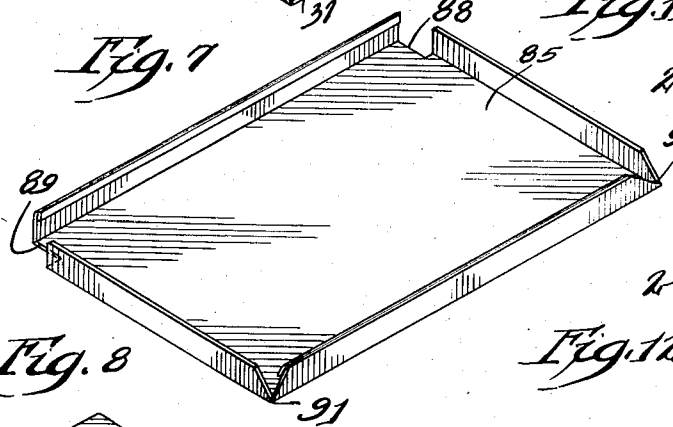


Fig. 11

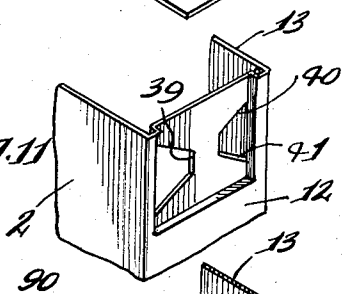


Fig. 8

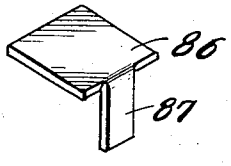
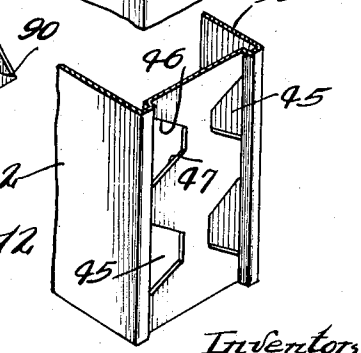


Fig. 12



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United States Patent Office 2,869,953 Patented Jan. 20, 1959

2,869,953

CABINET

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Application June 10, 1955, Serial No. 514,505

11 Claims. (Cl. 312—263)

This invention relates to a cabinet and, more particularly, to a cabinet which may be easily assembled into an extremely rigid structure.

An object of this invention is to provide a new and improved cabinet.

Another object of the invention is to provide a cabinet having top and bottom panels formed with inwardly directed flanges at their front which form, in part, the front of the cabinet and which are secured to the remainder of the cabinet structure with the flanges held tightly against the adjacent cabinet structure by a transverse clamping action.

Another object of the invention is to provide a cabinet structure having a back panel, two side panels with inwardly directed channels at their front edges, generally rectangular top and bottom panels having means at their rear for connection with the back panel and inwardly directed flanges at their front edges which lie against the ends of said channels and extend across the width of the cabinet, an elongated member mounted in each channel and terminating adjacent the top and bottom thereof, top and bottom fastener plates slidably guided in each of said channels and operatively connected to said member, a base plate secured to the inside of each flange adjacent its ends, a plurality of inclined projections extending rearwardly from each of the base plates, and means on said fastener plates shaped to coact with the projections and draw the top and bottom panels toward each other and draw the flanges transversely against the panels as the fastener plates are drawn toward each other, and means acting between the fastener plates and the strap for tightening the strap and drawing the plates toward each other.

The objects of the invention generally set forth, together with other ancillary advantages, are attained by the construction and arrangement shown by way of illustration in the accommpanying drawing, in which:

Fig. 1 is a perspective view in elevation of a cabinet disclosing the invention with the door shown in open position;

Fig. 2 is a vertical broken sectional view similar to Fig. 3 with the parts exploded to more clearly illustrate the invention;

Fig. 3 is a vertical broken sectional view similar to Fig. 2 showing the parts in assembled relation and taken along the line 3—3 in Fig. 4;

Fig. 4 is a vertical sectional view of the structure shown in Fig. 3 taken from within the cabinet and looking forwardly along the line 4—4 in Fig. 3 with parts broken away;

Fig. 5 is a perspective view of the top panel in inverted position;

Fig. 6 is a perspective view of the bottom panel;

Fig. 7 is a perspective view of a shelf in inverted position;

Fig. 8 is a perspective view of a shelf-supporting bracket;

Fig. 9 is a perspective view of a top fastener plate to which a strap may be connected;

Fig. 10 is a perspective view of a bottom fastener plate;

Fig. 11 is a broken-away perspective view of the upper end of an inwardly directed channel formed on a side panel;

Fig. 12 is a broken-away perspective of the lower end of an inwardly directed channel formed on a side panel;

Fig. 13 is a fragmentary cross section in elevation taken along the line 13—13 in Fig. 1 showing the attachment between the top and back panels;

Fig. 14 is a fragmentary cross section in elevation taken along the line 14—14 in Fig. 1 showing the attachment between bottom and back panels;

Fig. 15 is a fragmentary horizontal section taken along the line 15—15 in Fig. 1 showing the attachment between the back panel and a side panel, and;

Fig. 16 is a fragmentary vertical section taken along the line 16—16 in Fig. 15 and showing a shelf bracket in operative relationship with a shelf.

While this invention is susceptible of embodiment in many different forms, there is shown in the drawings and will herein be described in detail an illustrative embodiment of the invention with the understanding that the present disclosure is to be considered as an exemplification of the principles of the invention and is not intended to limit the invention to the embodiment illustrated. The scope of the invention will be pointed out in the appended claims.

The cabinet is shown in assembled relation in Fig. 1 and is composed of a plurality of parts. The cabinet includes a back panel 1, side panels 2 and 3, top panel 4 and a bottom panel 5. A door 6 may also be used.

As shown in Figs. 1 and 15, the back panel 1 has a vertically-extending flange 7 at each edge which extends forwardly into locking relationship with a series of yieldable fasteners indicated generally at 8 which are formed by appropriately bending an inwardly-turned section of the material forming a side panel. The edge 9 of each fastener 8 is turned to form a catch which engages an end 10 of the back panel flange 7. The fastener structure 8 securely locks the back 1 with the side panels 2 and 3.

Each of the side panels 2 and 3 are formed at their front with an inwardly turned flange 12 and 12', respectively, which have their free edges 13 and 13' formed at a right angle and notched as indicated at 14 to form a support for the front edge of adjustably supported shelves. Guide channels for receiving fastener structure described hereinafter are formed by the flanges 12 and 12', their edges 13 and 13' and the side panels 2 and 3.

As shown in Fig. 1, the door 6 may be provided with a latch mechanism indicated generally at 15 and has a vertically-extending re-enforcing panel 16 to impart rigidity thereto. Upper and lower hinge plates 17 and 18 may be secured as by welding to the flange 12' and cooperating hinge plates 19 and 20 are fastened to the door panel 6 and each carry a downwardly-extending hinge pin which may connect to the hinge plates 17 and 18 and support the door panel 6 on the cabinet flange 12'.

The top panel 4 has downwardly-turned side flanges 25 and 26 which are arranged to lie closely adjacent the side panels 2 and 3, respectively, and a back flange 27 which fastens to the back panel 1. This connection is shown in Fig. 13 wherein a continuous fastener indicated generally at 28 formed by appropriately shaping a portion of the material forming the back panel 1 at its top has an edge 29 engageable with an edge 30 integral with the top panel 4. An inwardly directed front flange 31 on the top panel 4 is arranged to overlie the top of the front flanges 12 and 12' of the side panels and the flange

31 has a section 32 which extends rearwardly between the front flanges 12 and 12'.

The bottom panel 5 has upwardly directed side flanges 32a and 33 and a back flange 34 which are arranged to lie closely adjacent the bottom edges of the side panels 2 and 3 and back panel 1, respectively.

The panel 5 has a front flange 35 extending inwardly against the lower edges of the flanges 12 and 12' and has a rearwardly directed section 36 disposed therebetween. There are also back openings 37 and front openings 38 which enable the insertion of a screw driver through the panel for assembly purposes.

The top of the front flange 12 is depressed, as shown in Fig. 11, and provided with openings 39 having upper and lower edges 40 and 41 through which a pair of projections or teeth 42 carried by a base plate 43 secured to flange 31 extend. The teeth are inclined upwardly away from the front flange 31 of the top panel 4 and the upper faces thereof form cam surfaces.

The bottom of the side flange 12 is similarly depressed, as shown in Fig. 12, and provided with openings 45 having upper and lower edges 46 and 47 through which a plurality of projections or teeth 48 may extend. The teeth are formed from a base plate 49 which is secured to the front flange 35 of the bottom panel and extend downwardly away therefrom with their lower faces forming cam surfaces.

The flange 12' is constructed similarly to flange 12 and it is believed sufficient to identify corresponding parts in Figs. 2, 3 and 4 with the correspondingly-primed reference numerals and the same has also been done with respect to the tooth elements carried by the top and bottom panels and which are associated with the side flange 12'.

Each of the guide channels at the front of the cabinet have an elongated inextensible member 50 which may be in the form of a metallic strap extending for substantially the entire height of the cabinet. Each of the straps are similar as are the mechanisms associated therewith and, therefore, the mechanisms associated wtih the channel formed by guide flange 12' and shown in Figs. 2, 3, 4, 9 and 10 will be described hereinafter, it being understood that substantially similar mechanisms are associated with the other guide channel.

The upper end of the strap 50 is passed through an opening 51 in an upper fastener plate 52 and fastened therearound as shown at 53. The lower end of the strap is formed into a loop indicated at 54 in which is received a nut 55 which threadably receives a bolt 56 extended through an opening 57 in a flange 58 provided on the lower fastener plate 59. The flange 58 constitutes a member which transmits tension from strap 50 to the fastener plate 59.

The upper fastener plate 52 is formed with side flanges 60 and 61 which guide the plate for sliding movement in the guide channel formed by the front flange 12', the side panel 3 and the in-turned free edge 13'. An upper flange 62 is turned inwardly to provide an abutment for a bifurcated bent leaf spring 63 which has a transverse base 64 grooved to provide a guide channel for the strap 50 and having portions 65 and 66 for securing the spring to the channel.

The bottom fastener plate 59 has flanges 66 and 67 for slidably guiding the plate in the channel and the flange 58 provides an abutment for another bifurcated bent leaf spring 68 which has a base portion 69 providing a guide channel for the strap 50 and portions 70 and 71 for securing the spring to the channel. The springs 63 and 68 function to hold the fastener plates in outer limit positions and against the channel faces formed by flange 12' and maintain the strap 50 in relatively taut condition.

The upper fastener plate 52 and the lower fastener plate 59 are provided with openings 75 and 76 having upper edges 75a and lower edges 76a, respectively, for receiving the teeth 42' and the teeth 48' which are extended through the openings 39 and 45 formed at the top and bottom of the channel. The edges 75a and 76a in the fastener plates are formed at an angle approximately the same as the base of the teeth.

It is intended that the cabinet sections may be furnished in a disassembled or knocked-down condition and will be assembled in the desired place of use. In assembly of the cabinet, the side panels 2 and 3 will be connected to the back panel 1 by aligning these parts and snapping the fasteners 8 on the side panels into engagement with the back panel flanges 7. The top panel 4 will then be aligned with the back panel 1 and the edge 30 of the top panel slipped into the fastener 28 with the side flanges 25 and 26 lying outside the side panels 2 and 3. As shown in Figs. 1, 2 and 3, the front flange 31 of the top panel will overlie flanges 12 and 12', and with the upper fastener plate in its top position, the teeth 42 and 42' will be inserted through the openings 39 and 39' in the top of the flanges. The teeth are also extended through the openings 75 in the upper fastener plates.

The bottom panel 5 is then positioned with respect to the back and side panels and the teeth 48 and 48' are passed through the openings 45 and 45' in the bottom of the flanges 12 and 12' and also through the openings 76 in the bottom fastener plates. The rear of the bottom panel is secured to the back panel 1 by means of bolts 80 which extend through the back openings 37 in the bottom of the panel and screw into threaded clips 81 mounted on L-shaped brackets 82 secured to the back panel adjacent each edge thereof.

The bolts 56 may then be turned to shorten the distance between the upper and lower fastener plates through the straps 50 and bring the inclined edges 75a and 76a of the openings 75 and 76 in said plates into contact with the inclined faces of the teeth carried on the top and bottom panels. The straps 50 are in a slack condition when the top and bottom panels are assembled with the back panel and side panels and turnnig of the bolts takes up the slack to make the straps form connections having a fixed length. Continued turning of the bolts 56 shifts the fastener plates inwardly toward each other and edges 75a and 76a of the fastener plate openings travel down the teeth cam surfaces to pull the flanges 31 and 35 rearwardly. This functions to secure the top and bottom panels to the remainder of the cabinet structure and to exert a transverse clamping action which brings the front flanges of the top and bottom panels tightly against the flanges 12 and 12'. The door panel 6 may then be mounted to complete the cabinet.

As shown in Figs. 1, 7, 8 and 16, one or more shelves 85 may be mounted in the cabinet after it has been assembled. A bracket 86 having a tab 87 may be inserted in the loop formed by the fasteners 8 at the back corners of the cabinet to form a support for the rear cut-out sections 88 and 89 of the shelf and the front corners 90 and 91 of the cabinet fit within the notches 14 formed in the free edges 13 and 13' of the flanges 12 and 12'.

We claim:

1. A cabinet having a back panel interlocked with side panels formed with inwardly directed channels at their front edges, top and bottom panels provided with inwardly directed front flanges extending across the upper and lower ends of the cabinet, means for securing the top and bottom panels to the side panels and for transversely drawing the flanges against the channels including, base plates on the flanges having rearwardly directed teeth provided with inclined faces, recesses at the ends of said channels for receiving the base plates with the teeth extending into the channels, upper and lower fastener plates slidably disposed in said channels, guide flanges on said fastener plates for guiding said plates in the channels, spring members fastened in said channels for urging the fastener plates toward the ends of the channels and the channel faces and having base portions formed as guides, a plurality of elongated inextensible straps, there being one strap in each channel and slid-

ably confined within said base portion guides, means associated with each strap comprising a connection at one end of the strap to said upper fastener plate, a nut carried by the lower end of the strap, a flange on the lower fastener plate provided with an opening, and a bolt extended through the opening and threaded in the nut, and means defining surfaces on said fastener plates engageable with the inclined faces of the teeth to draw the top and bottom panels toward each other and the front flanges against the channels when the bolts are advanced in their respective nuts to draw the fastener plates toward each other.

2. A cabinet having a back panel and side panels formed with inwardly directed channels at their front edges, top and bottom panels provided with inwardly directed front flanges extending across the upper and lower ends of the cabinet, means for fastening the top and bottom panels to the side panels and for drawing the flanges against the channels including, rearwardly directed teeth on the flanges having cam surfaces extending into said channels, upper and lower fastener plates slidably disposed in said channels, means for slidably guiding said fastener plates in the channels, spring members fastened in said channels for urging the fastener plates toward the ends of the channels and having base portions formed as guides, a plurality of elongated inextensible members, there being one member in each channel slidable in said base portion guides, means associated with each member comprising a connection at one end of the member to said upper fastener plate, threaded means carried at the lower end of the member, a flange on the lower fastener plate provided with an opening, and a bolt extended through the opening and engageable with the threaded means, and means defining surfaces on said fastener plates engageable with the cam surfaces of the teeth to draw the top and bottom panels toward each other and transversely clamp the front flanges against the channels when the bolts are advanced to draw the fastener plates toward each other.

3. A cabinet having a back panel, two side panels with inwardly directed coextensive channels at their front edges, generally rectangular top and bottom panels having means at their rear for connection with the back panel and inwardly directed flanges at their front edges which lie against the upper and lower ends of said channels and extend across the width of the cabinet, a pair of elongated straps associated one with each of said channels and disposed therein, a fastener plate at each end of a channel with the plates in a channel operatively connected to each end of the associated strap, a base plate at each lateral end of the flanges secured to the inside face thereof, the base plates carried by the bottom panel flange having rearwardly projecting teeth provided with faces extending downwardly away from the flange and the base plates carried by the top panel flange having rearwardly projecting teeth with faces extending upwardly away from the flange, means defining openings in the channels through which the teeth extend, means defining surfaces on said fastener plates engageable with said teeth faces to pull the top and bottom panels toward each other as the fastener plates are moved toward each other and pull the flanges against the channels, and means for drawing the fastener plates toward each other including an upstanding bolt threadably mounted in a nut carried by an end of the strap and having its head engageable with one of said fastener plates so that rotation of the bolt draws the plates toward each other.

4. A cabinet assembly having, in combination, side panels with inwardly-directed channels at their front edges, top and bottom panels having inwardly-directed flanges at their front edges which lie against the upper and lower ends of said channels and extend across the width of the cabinet, a pair of elongated members associated one with each of said channels and disposed therein, a fastener plate at each end of a channel with the plates in a channel operatively connected to each end of the associated member, rearwardly projecting teeth on the bottom panel flange provided with faces extending downwardly away from the flange and rearwardly projecting teeth on the top panel flange with faces extending upwardly away from the flange, means defining openings in the channels through which the teeth extend, means on said fastener plates engageable with said teeth faces to pull the top and bottom panels toward each other as the fastener plates are moved toward each other and pull the flanges laterally against the channels, and means for drawing the fastener plates toward each other including mechanism between one of said fastener plates and said member.

5. A cabinet having a back panel, two side panels with inwardly bent coextensive channels at their front edges, generally rectangular top and bottom panels having means at their rear for connection with the back panel and inwardly directed coextensive flanges at their front edges which lie against the ends of said channels and extend across the width of the cabinet, an elongated strap associated one with each of said channels and disposed thereon, a plurality of fastener plates positioned one at each end of the channels, a base plate secured to the inside of each flange adjacent its ends, a plurality of inclined projections extending rearwardly from each of the base plates, means on said fastener plates engageable with the projections, and means including connections between the fastener plates and straps for holding the top and bottom panels against the side panels and the top and bottom flanges against the channels.

6. A cabinet assembly having two side panels with inwardly bent channels at their front edges, top and bottom panels having inwardly directed flanges at their front edges which overlie the ends of said channels, an elongated member associated one with each of said channels and disposed therein, a plurality of fastener plates positioned one at each end of the channels, a plurality of inclined projections extending rearwardly from each of the flanges, means defining openings in said fastener plates for receiving the projections, and means including connections between the fastener plates and elongated members for drawing the fastener plates toward each other to clamp the top and bottom panels to the side panels and transversely clamp the top and bottom flanges against the channels.

7. A cabinet having a back panel and side panels, top and bottom panels having inwardly directed flanges at their front edges forming part of the cabinet front, an elongated member associated one with each side panel, a plurality of fastener plates positioned one at each end of the side panels, a plurality of inclined projections extending rearwardly from each of the flanges, means on said fastener plates engageable with the projections, and means including connections between the fastener plates and elongated members for drawing the fastener plates toward each other to pull the projections toward each other to clamp the top and bottom panels to the side panels and transversely clamp the top and bottom flanges against the side panels.

8. A cabinet having a back panel and side panels, an end panel having an inwardly directed flange at its front edge forming part of the cabinet front, a plurality of fastener plates positioned one at each end of the side panels adjacent said end panel movable relative to the side panels, a plurality of inclined projections extending rearwardly from said flange, means on said fastener plates engageable with the projections, means for moving said fastener plates relative to the side panels to pull the projections in a direction to clamp the end panel to the side panels and transversely clamp said flange against the side panels, and means for maintaining the fastener plates in their moved positions.

9. A cabinet having back and side panels, top and

bottom panels having inwardly directed flanges at their front edges which extend across and form part of the cabinet front, a plurality of fastener plates positioned one at each end of the side panels, interengaging relatively movable cam means on the fastener plates and said flanges operable to clamp the top and bottom panels to the side panels and transversely clamp the top and bottom flanges against the side panels when the fastener plates associated with a side panel are drawn toward each other, and means for drawing the fastener plates associated with a side panel toward each other.

10. A cabinet assembly having side panels with inwardly directed front flanges, an end panel having an inwardly directed flange at its front edge which overlies the end of said front flanges and extends across the front of the cabinet, and relatively movable interengaging means on the end panel flange and side panels for forcibly drawing

the end panel against the side panels and simultaneously in a transverse direction drawing the flange on the end panel against the front flanges to interconnect the panels into a rigid, stable structure.

11. A cabinet assembly as defined in claim 10 wherein said relatively movable interengaging means includes cam members, and selectively operable means for moving said members relative to each other.

References Cited in the file of this patent

UNITED STATES PATENTS

1,251,719	Wege	Jan. 1, 1918
1,669,073	Albach	May 8, 1928
1,798,182	Vance	Mar. 31, 1931
2,483,606	Albach	Oct. 4, 1949
2,591,172	Lundine	Apr. 1, 1952