

Oct. 16, 1962

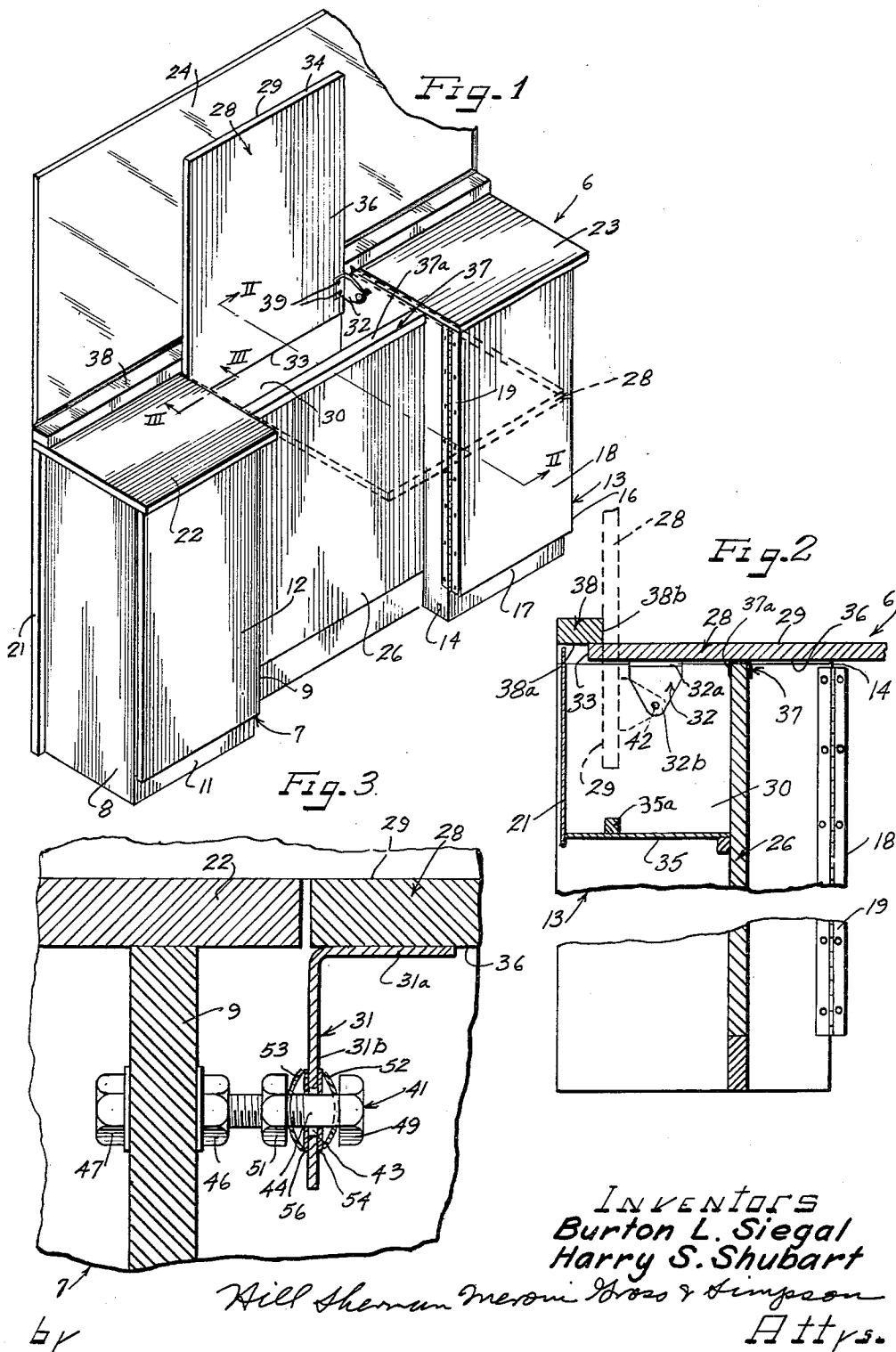
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3,058,795

CABINET WITH HINGED TOP

Filed Nov. 19, 1959

2 Sheets-Sheet 1



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Fig. 4

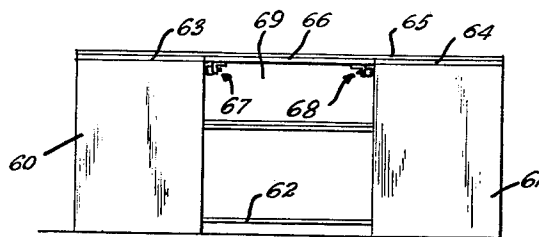


Fig. 5

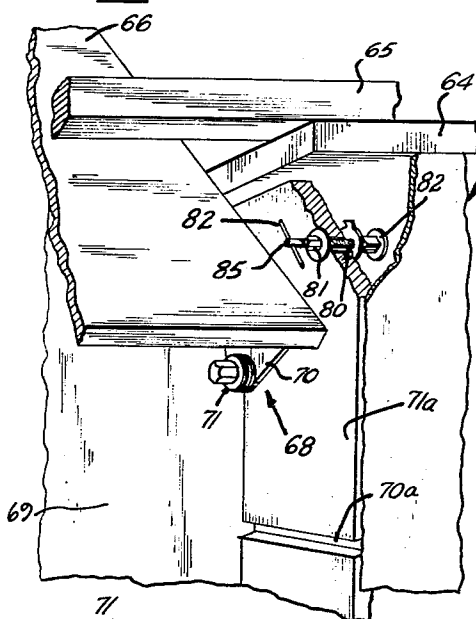


Fig. 6

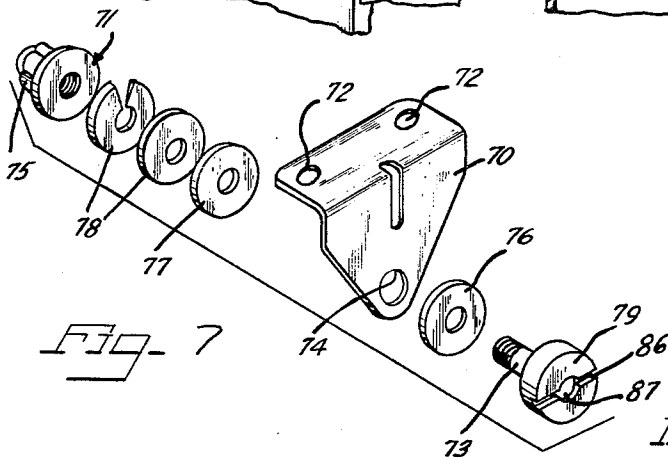
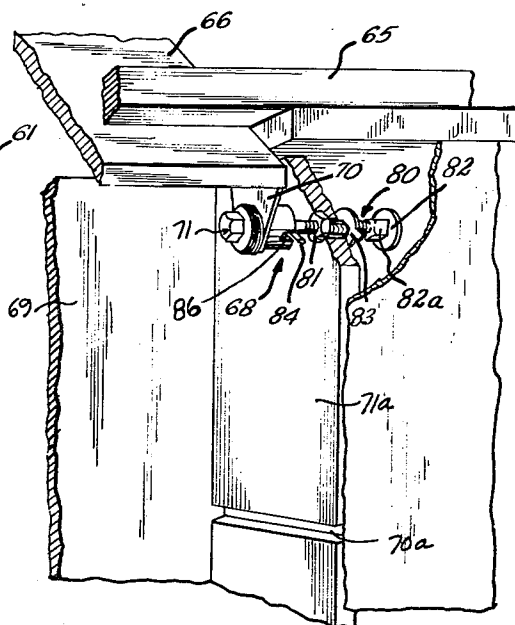


Fig. 7

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## CABINET WITH HINGED TOP

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The present invention relates to improvements in cabinet structures, and more particularly to an improved support for a top panel of a cabinet which may be pivoted between a lowered horizontal position and a raised position.

The invention particularly contemplates use in a cabinet such as used for a beautician's vanity or booth, having compartmented side sections with a space therebetween and a central panel which may project beyond the front edge of the cabinet to cover an area between the side sections. The cover provides a sealing lid for the area between the side sections and may be utilized to hide a storage space or a functional unit, such as a wash basin between the side sections to present a neat, sanitary appearance to the patron when not in use. At the rear of the cabinet a mirror is usually located, and the cabinet panel or lid is raised in a substantially vertical position parallel to the mirror when the cabinet is in use.

An object of the present invention is to provide an improved cabinet structure with a pivotal lid which is supported in an improved manner to withstand the application of severe forces and weight such as caused by a user resting his weight on the extreme edge or by severely forcing the lid rearwardly when moving to a raised position.

Another object of the invention is to provide an improved hinge and support structure for a cabinet panel or lid of the type described wherein the forces on the lid in lowered position are transmitted directly to the cabinet without placing a damaging stress on the lid support hinge.

A further object is to provide an improved hinge structure combined with a supported panel and cabinet wherein the hinge creates resistance to pivotal movement and permits limited movement in radial directions and wherein the panel is afforded resilience against lateral forces and twisting forces.

Another object of the invention is to provide an improved cabinet structure with a pivotal lid between side sections wherein the lid can be simply and easily pivotally mounted in place so that it need not be pivotally supported during handling or shipment and can be readily installed when it arrives at its destination.

Another object of the invention is to provide an improved hinge assembly wherein the working parts may remain assembled but the hinge can be easily disconnected and reconnected to the relatively pivotal members.

Another object of the invention is to provide an improved cabinet assembly of the type described wherein the top panel can be easily inserted from the back of the cabinet and the hinges connected by members which slide axially inwardly from the side sections.

Another object of the invention is to provide a hinge structure for a top panel of the type described and which will permit it to rest in raised or elevated position without falling and without placing an undue damaging stress on the hinge, or without tearing the hinge loose from the panel.

Other objects and advantages will become more apparent with the teachings of the principles of the invention and the disclosure of the preferred embodiment thereof in the specification, claims and drawings, in which:

FIGURE 1 is a perspective view of a cabinet structure embodying the principles of the present invention;

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FIGURE 2 is a vertical sectional view taken substantially along line II-II of FIGURE 1, and particularly illustrating the positions of the cabinet top panel;

FIGURE 3 is an enlarged fragmentary vertical sectional view taken substantially along line III-III of FIGURE 1, and particularly showing details of hinge structure;

FIGURE 4 is a rear elevational view of a cabinet assembly, similar to FIGURE 1, and employing another form of the hinge;

FIGURES 5 and 6 are enlarged detailed perspective views illustrating successive steps in attaching the top panel or lid to the cabinet; and

FIGURE 7 is a perspective view shown in exploded form of the parts of the hinge.

As shown on the drawings:

FIGURE 1 shows a typical beautician's vanity or cabinet 6 embodying the principles of the present invention. The cabinet includes a pair of divided compartmented cabinet sections 7 and 13. The first cabinet section 7 includes side walls 8 and 9 and a front wall 11. The front wall is open and is provided with a swinging door 12 mounted on a hinge, not shown.

The second cabinet section 13 has side walls 14 and 16 with a front wall 17. The front wall is open and is provided with a swinging door 18, mounted on a hinge 19 which is connected to the edge of the door 18, and to the side wall 14.

The cabinet sections 7 and 13 are separated or horizontally spaced so as to provide a space therebetween. The sections are secured to each other to fix their positions, such as by a crossbar, not shown, and a back panel 21 which is removably attached. An intermediate panel 26 may extend between the sections. As will be appreciated by those skilled in the art, the intermediate panel may be provided with a drawer or an open compartment, or the space may contain a sink or similar appliance which is covered during periods of inactivity by a top panel or lid 28 and which is exposed by raising the panel 28. In the form illustrated, the panel 26 forms the front of a bottle supporting compartment 30, also referred to as a shampoo caddy, with the back 21 forming the back of the compartment and a shelf 35 forming the bottom. A bar 35a strengthens the shelf and prevents bottles from being set back on the shelf where they would be struck by the top panel 28. At the back of the cabinet is a mirror 24 which extends upwardly and is suitably mounted to the cabinet, or to a wall behind the cabinet.

The cabinet sections 7 and 13 are provided with top walls 22 and 23, preferably having an upper finished surface of a moisture and heat resistant Bakelite plastic or the like so as to be well suited to use in a beautician establishment or the like, and so as to be resistant to fluids which are likely to come into contact therewith. The top panel or lid 28 is formed of a similar construction and may have a finished upper surface 29.

The top panel 28, during periods of inactivity, is usually positioned by the operator in the lowered position, as indicated by the dotted line illustration of FIGURE 1, and by the solid line illustration of FIGURE 2. When the area between the side sections 7 and 13 is to be exposed, to obtain access to the sink or other functional element which may be located therebetween, the panel is raised to elevated position, as indicated by the solid line position of FIGURE 1 and by the dotted line position of FIGURE 2.

As illustrated in FIGURE 1, the panel 28 has a rear edge 33 which is located at the back of the cabinet, and has a front or forward edge 34 which projects outwardly from the cabinet when the panel is in lowered position. It will be recognized that in use, stresses may be placed

on the parts supporting the panel by an individual resting his weight on the panel in the lowered position. This may especially appear in commercial use, such as wherein the cabinet is used in a beauty parlor, and a patron rests on the top edge while lifting herself out of a chair. Stress on the supporting parts for the panel may also occur when the panel is forced rearwardly to elevated position. Support hinges for panels of the type heretofore used were frequently damaged by such occurrences. These support hinges normally required the provision of latching devices for holding the panel in the upright position, which required additional parts, and which frequently also became damaged by forces applied to the panel.

In the present arrangement, the pivotal support for the panel is so arranged that no stresses are applied directly to the support when the panel is in the horizontal lowered position, and the panel automatically rests in the raised position, and the stresses applied to the hinge support are in a direction so that they are least likely to damage the hinge support or its connection to the panel.

The panel 28 is supported by a pair of hinge members 31 and 32 connected to the lower surface 36 of the panel adjacent the rear edge 33. The hinge members are constructed so as to guide the panel in its movement between lowered and elevated position, but do not support the weight of the panel nor resist the forces thereon in lowered position, and sustains only a portion of the forces in elevated position.

The upper edge of the intermediate panel 26 forms a first limit or a support bar 37 which extends across the space between the cabinet sections 7 and 13, and intermediate panel 26 is, of course, rigid and is attached at its edges to the side walls 9 and 14. The intermediate panel has its top edge covered with a vinyl cap strip 37a which supportingly engages the lower surface 36 of the top panel in lowered position, as illustrated particularly in FIGURE 2. The support bar 37 is spaced rearwardly from the outer front edge 34 of the panel.

Extending across the top and back of the cabinet is a second support or limit bar 38 which is suitably secured to the cabinet such as by being attached to the top surfaces of the top walls 22 and 23 of the cabinet sections. This second support bar 38 has a lower surface 38a which supportingly engages the top surface 29 of the panel at the rear edge thereof when the panel is in lowered position, as illustrated in FIGURE 2.

This forms a cantilever support for the top panel in lowered position and any forces applied to the panel are transmitted directly to the support bars 37 and 38. As will be seen from the further description of the hinge members 31 and 32, they are so constructed that they will not have to support forces applied to the front top surface of the panel in lowered position.

When the panel 29 is pivoted upwardly to elevated position, the front surface 38b of the support bar 38 supportingly engages the top surface 29 of the panel 28. This holds the panel in elevated position wherein it is substantially vertical. In this position, the panel is spaced from the mirror 24 so that the operator may easily grip the panel for again moving it to lowered position. The panel will automatically remain in elevated position, inasmuch as the hinge suspension is spaced laterally from the lower surface, and the center of gravity of the panel is rearwardly of the hinge support.

Each of the hinge members 31 and 32 are identical in construction and, therefore, only the hinge member 31 need be described in full detail. The hinge members have a flat base or plate portion 31a and 32a, respectively, which is attached to the lower surface 36 of the top panel. For purposes of attachment, fasteners, such as screws 39, extend through openings in the plate section of the hinge and are turned into the wood of the panel. It will be appreciated that forces applied to the panel drawing it away from the hinge would normally tend to tear the screws from the wood, and it is a feature of the present

invention that no direct stress will occur between the panel and hinge, and forces applied to the panel will not occur in a direction to tend to separate the hinge and panel.

The hinges each have a bracket portion 31b and 32b which is integral with the plate portions 31a and 32a, and the bracket portions extend at right angles to the plate portions, and outwardly from the undersurface of the panel. The bracket portions each are pivotally supported on hinge pins 41 and 42 for guiding the hinges in pivotal movement. The hinge pin 41 is secured to the side wall 9 of the cabinet section 7, and the hinge pin 42 is secured to the side wall 14 of the cabinet section 13.

As illustrated by the hinge 31 and the hinge pin 41, each of the hinge brackets are constructed so that the hinge has a limited degree of lateral freedom whereby the pivotal axis may be laterally displaced from its normal pivotal position. This accommodates lateral shifting of the rear edge of the panel, and permits stresses to be taken up by the parts of the cabinet which support the panel without the stresses being sustained by the hinge.

The hinge also provides resilient resistance to forces in the plane of the top panel laterally of the cabinet, and resiliency against twisting forces. Also shocks are not directly transmitted between parts of the hinge.

As illustrated in FIGURE 3, the lateral freedom above referred to is afforded hinge 31 by an enlarged hinge pin receiving opening 43 extending laterally through the bracket portion 31b. The hinge pin 41 is illustrated in the form of a bolt with its shank 44 passing through the opening 43 in the hinge bracket portion. The opening is substantially larger than the diameter of the shank of the bolt to permit lateral movement of the hinge relative to the hinge pin 41.

The hinge pin or bolt 41 is secured to the side wall 9 by passing through an opening drilled therethrough and being held by nuts 46 and 47, threaded on the shank 44 of the bolt and drawn tight against opposing sides of the wall. The bolt has a head 49 at one end and an adjustable nut 51 is threaded on the bolt. Between the hinge bracket and the bolt head is a resilient spring washer 52, and a similar resilient spring washer 53 is located between the nut 51 and the other side of the bracket portion of the hinge. Flat surfaced washers 54 and 56 are located between the resilient washers and the bracket portion of the hinge. The adjustable nut is drawn up to place a tension on the spring washers.

The resilient spring washers hold the hinge snugly with respect to the hinge pin, thereby obtaining a snug supporting pivotal guide for the panel, even though the enlarged openings for the hinge pins permit lateral shifting of the hinges with respect to the pins to prevent stresses thereon. The spring washers also create a frictional drag on the panel as it is pivoted, giving the feel of a solid mechanism. They also reduce the force with which the lid drops. This frictional resistance also reduces the chance of the lid being accidentally jarred from its raised position, as shown in FIGURE 1. The spring washers coacting with the enlarged openings and smaller bolt provide resilient resistance to forces against the sides of the panel and twisting forces. They also act as shock absorbers preventing the direct transmission of shock forces between hinge parts.

The nuts 46 and 47 can be adjusted to shift the panel 28 laterally to center it in the opening. If the centering feature is not needed, a length of tubing can replace nuts 46 and 51, and they can be eliminated.

In operation, the cabinet of the type shown at 6 in FIGURE 1 is utilized in beauty parlor operations or the like, and the lid or top panel 28 is in the horizontal or lowered position shown by the broken lines in FIGURE 1 during periods of inactivity. When access to the center portion is desired, the top panel or lid 28 is raised to the elevated position, as shown in the solid position of FIGURE 1. In the lowered position, any forces or

weights which are placed on the top surface of the panel are supported by a cantilever support for the panel comprising a first support bar 37 which supportingly engages the undersurface 36 of the panel, and a second support bar 38 which supportingly engages the upper surface. When the panel is swung upwardly to the elevated position, it is guided by the hinges 31 and 32 supported on the hinge pins 41 and 42. When it reaches the elevated position, the panel engages the side surface 38b of the support bar 38, and any additional force applied to the undersurface of the panel will apply a force against the hinge which is directed toward the hinge pin which forces the panel against the flat plate portions 31a and 32a of the hinges. This force places no stress on the fasteners which secure the hinges to the panel. When the panel is in the raised or elevated position, it rests on the hinge pins 41 and 42, and its center of gravity is rearwardly of the hinge pins to cause it to rest against the side surface 38b of the support bar and remain in the elevated position without danger of falling. Lateral freedom is permitted by limited relative displacement between the hinge members and their support pins by the oversized openings receiving the hinge pins. The lateral freedom afforded the hinge is especially useful in the lowered position, such as illustrated in FIGURE 2, wherein shifting of the parts can occur without placing stress on the hinge.

FIGURES 4 through 7 illustrate a modified form of the hinge and FIGURE 4 shows a cabinet as viewed from the rear. The cabinet has side sections 60 and 61 which are joined by a crossbar 62 and by a limit bar 65. The side sections have tops 63 and 64 and a top panel or lid 66 is pivotally mounted therebetween, supported on hinges 67 and 68. In its lower position, the top panel 66 is supported in a cantilever fashion on the top edge of an intermediate panel 69 and the bar 65.

To prevent stress on the parts, the lid or top panel 66 is not installed on the cabinet before shipment. The panel 66 can then be packed flat within a shipping carton. The hinge arrangement of FIGURES 4 through 7 permit simple and rapid attachment of the top panel when the cabinet arrives at its destination.

Since the hinge assemblies 67 and 68 are substantially identical in construction, only one need be described.

Between the side sections 60 and 61 and beneath the top panel 66 behind the intermediate panel 69 is a bottle compartment formed with a bottom and a back which are removed from the cabinet in FIGURES 4, 5 and 6. The bottom is conveniently attached by sliding in a groove 70a in the wall 71a of the side section 61. A back is removably attached to the backs of the side sections to complete the bottle compartment. Removal of the bottom and the back provides a space for sliding the top panel 66 upwardly beneath the bar 65 for connection of the hinges. This can be usually done with the top panel 66 being guided between the tops 63 and 64 of the side sections and without chance of the hinges damaging the finished surfaces of the tops.

Each of the hinges, as illustrated by the hinge 68 includes a bracket 70 with a pivot member or pivot pin assembly 71 pivotally attached thereto. The bracket has a base portion with holes 72 for securing to the back side edges of the top panel 66.

A pivot or hinge pin 73 inserts into an enlarged opening 74 in the bracket 70 which is substantially larger than the pin 73 so as to permit lateral movement therein. The hinge pin 73 is threaded and receives a nut 75. Friction washers 76 and 77, of a fiber material such as known by the trade name Micarta are positioned on each side of the bracket 70. Additional washers 78 are slid over the hinge pin 73 and the nut 75 is adjustably tightened on the hinge pin to draw the friction washers 76 and 77 against the side of the flange to provide a friction resistance to rotation of the hinge pin within the flange. This affords the aforescribed resistance which reduces the force with which the lid drops and creates a

frictional drag on the panel as it is pivoted. One of the washers 78 is a split spring washer and is a wear compensating washer which maintains a tension on the friction washers with wear. The nut 75 is tightened with a measured torque and a liquid sealant placed on the threads.

The pin 73 is provided with a pin extension or a mounting pin 80 which is received by the head 79 of the pivot pin. The mounting pin 80 is axially slidably mounted in an opening in the side wall 71a of the side section 61. A similar mounting pin of course is mounted in the side wall of the other side section for the hinge 67 so that the two mounting pins can be slid inwardly to attach the hinges 67 and 68 and mount the top panel 66.

The mounting pin is threaded and receives a nut 81 which when tightened draws the mounting pin axially toward the hinge. The mounting pin has a head 82 with a squared shank 82a that slides in a locking washer 83 which is non-rotationally mounted to the surface of the wall 71a and which has a square hole. The wall 71a may be of wood or of a compressed cellulose material with the locking washer 83 having ears that sink into the wall. This holds the mounting pin against rotation so that relative rotation will occur between the pivot pin 73 and the flange.

As the nut 81 is wrenched the end 85 of the mounting pin slides into an opening 87 in the head 79 of the pivot pin. The mounting pin carries a crossbar 84 which is received by cross slot 86 in the head of the pivot pin thus locking the pivot pin against rotation.

Thus at the time of installation the top panel 66 is slid upwardly into position, as shown in FIGURES 5 and 6, and the mounting pins drawn inwardly to mount the pivot pins.

Thus it will be seen that we have provided an improved cabinet structure and support for a lid or panel on the cabinet which meet the objectives and advantages hereinbefore set forth. The support arrangements including the hinges are capable of long operating life and they are inexpensive to manufacture and easy to assemble.

We have, in the drawings and specification, presented a detailed disclosure of the preferred embodiments of our invention, and it is to be understood that we do not intend to limit the invention to the specific forms disclosed, but intend to cover all modifications, changes and alternative constructions and methods falling within the scope of the principles taught by our invention.

We claim as our invention:

1. A hinge for a cabinet structure or the like comprising a bracket for attachment to a first cabinet element, a pivot member for attachment to the bracket, means defining an opening through said bracket for receiving said pivot member, said opening being substantially larger than said pivot member, means yieldably holding said pivot member in position in said opening, a support pin for attachment to a second cabinet element and said pivot member so that the cabinet elements will be guidably positioned but will yield with force and movement of said pivot member to the side of said opening, and means for releasably attaching said support pin to said pivot member.

2. A cabinet structure comprising in combination cabinet sections having top walls and having vertical side walls in spaced apart facing relationship, a top panel positioned between said top walls for pivotal movement about a rear edge between a lowered horizontal position substantially flush with said top walls and an elevated position extending substantially vertical above said top walls, a supporting hinge means attached to the rear of said panel and attached to said cabinet sections, a horizontal panel support bar attached at its ends to said side walls and positioned to be in supporting engagement with the lower surface of said panel in lowered position, and a horizontal limit bar attached to the top surfaces of said cabinet sections having a side surface positioned

to be in surface engagement with the top surface of said panel at a location slightly above the top walls of the cabinet sections when said panel is in substantially vertical position, said bar having a lower surface positioned to be in surface engagement with the top surface of said panel in lowered position to provide support for the panel in both positions.

3. A cabinet structure comprising in combination cabinet sections having top walls and having vertical side walls in spaced apart facing relationship, a top panel positioned between said top walls for pivotal movement about a rear edge between a lowered horizontal position substantially flush with said top walls and an elevated position extending substantially vertically above said top walls, a resilient pivotal support hinge means connected between the cabinet sections and the rear edge of said panel, a horizontal panel support bar attached at its ends to said side walls and positioned to be in supporting engagement with the lower surface of said panel in lowered position, and a horizontal limit bar attached to the top surfaces of said cabinet sections having a side surface positioned to be in surface engagement with the top surface of said panel at a location slightly above the top walls of the cabinet sections when said panel is in substantially vertical position, said bar having a lower surface positioned to be in surface engagement with the top surface of said panel in lowered position to provide support for the panel in both positions.

4. A cabinet structure comprising in combination cabinet sections having top walls and having vertical side walls in spaced apart facing relationship, a top panel positioned between said top walls for pivotal movement about a rear edge between a lowered horizontal position substantially flush with said top walls and an elevated position extending substantially vertical above said top walls, a resilient pivotal support hinge means connected between the cabinet sections and the rear edge of said panel, said hinge means including a bracket element and a pin element extending through an opening in the bracket element larger than the pin element to permit lateral movement of the pin element, and including spring washers on the pin element frictionally engaging the sides of the bracket element with means for adjustably holding the washers against the bracket elements, a horizontal panel support bar attached at its ends to said side walls and positioned to be in supporting engagement with the lower surface of said panel in lowered position, and a horizontal limit bar attached to the top surfaces of said cabinet sections having a side surface positioned to be in

surface engagement with the top surface of said panel at a location slightly above the top walls of the cabinet sections when said panel is in substantially vertical position, said bar having a lower surface positioned to be in surface engagement with the top surface of said panel in lowered position to provide support for the panel in both positions.

5. A cabinet structure comprising in combination a first cabinet side section, a second cabinet side section spaced laterally from the first section, a top panel to be positioned in the space between said side sections, a pair of hinge members attached at the sides of said top panel, support pins on the cabinet side sections movable axially inwardly to a support position connected to the hinge members, and movable axially outwardly to a release position disconnected from the hinge members to permit removal of the panel, and locking means for holding the support pins in said support position.

6. A cabinet structure comprising in combination a first cabinet side section, a second cabinet side section spaced laterally from the first section, a top panel to be positioned in the space between said side sections, a pair of hinge members attached at the sides of said top panel, threaded support pins on the cabinet side sections movable axially inwardly to a support position connected to the hinge members, and movable axially outwardly to a release position disconnected from the hinge members to permit removal of the panel, and threaded nut members on each of said pins positioned inside of the cabinet side sections and adapted to be threaded outwardly on the pins for engaging the side sections and holding the support pins in said support position.

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