Nov. 18, 1952 C. HOFFMANN 2,618,524

FOLDABLE TABLE WITH LEG LATCH MEANS

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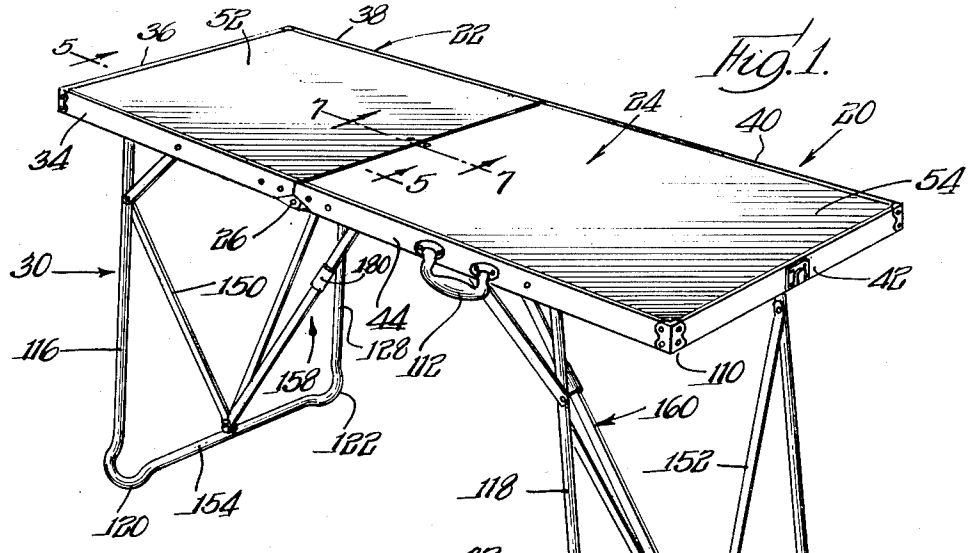


Fig. 2.

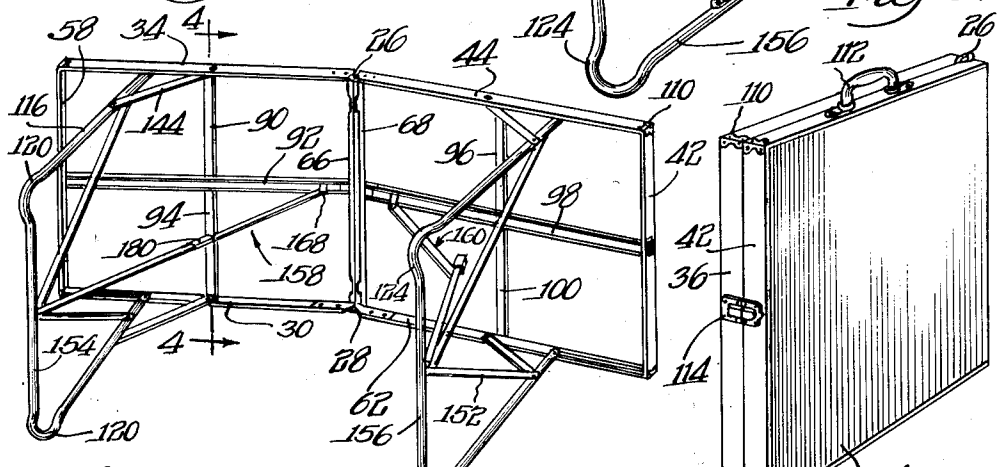


Fig. 3.

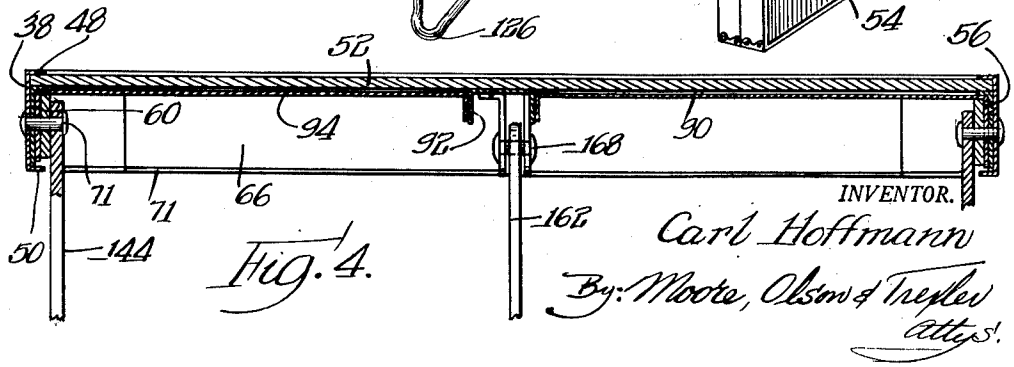


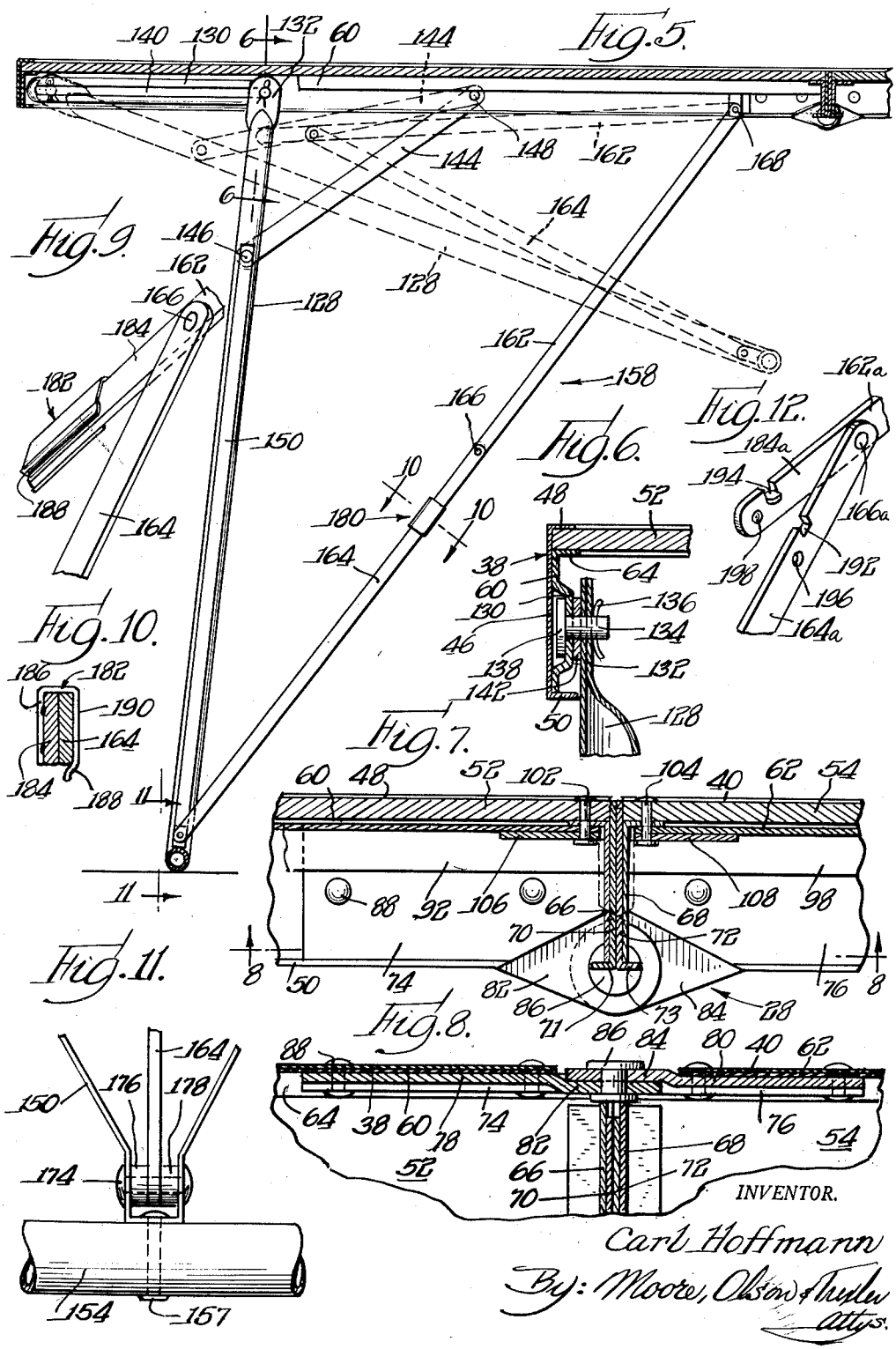
Fig. 4.

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FOLDABLE TABLE WITH LEG LATCH MEANS

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FOLDABLE TABLE WITH LEG LATCH MEANS

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This invention relates to furniture and more particularly to portable folding tables.

An important object of the present invention is to provide a folding table of improved and simplified construction; more specifically stated, it is an object of the invention to provide a folding table whose moving parts are simpler and more rugged in construction and which is easier to set up and to fold.

Another object of the invention is to provide an improved table top and top frame construction.

Still another object of the invention is to provide in a table of the type described an improved folding leg structure; more specifically, it is an object to provide a more sturdy and more easily operated folding leg structure.

Yet another object of the invention is to provide in a table of the type described an improved reinforcing brace and brace lock.

Various other objects, advantages and features of the invention will be apparent from the following specification taken in conjunction with the accompanying drawings wherein a preferred embodiment is set forth for purposes of illustration.

In the drawings, wherein like reference numerals have been used to refer to like parts throughout:

Figure 1 is a perspective view of a folding table made in accordance with and embodying the principles of the invention, the table being shown in the unfolded operative position;

Figure 2 is a perspective view of the table shown in Figure 1 with the table placed in position for folding with one leg in the partially folded position;

Figure 3 is a perspective view of the table shown in Figures 1 and 2 in the fully folded condition;

Figure 4 is a partial end view in cross section of the table shown in Figure 2 substantially as seen in the direction of the arrows along the line 4—4 thereof;

Figure 5 is a partial side view in cross section of the table shown in Figure 1 substantially as seen in the direction of the arrows along the line 5—5 thereof;

Figure 6 is an enlarged partial cross sectional view of a leg hinge substantially as seen in the direction of the arrows along the line 6—6 of Figure 5;

Figure 7 is a partial enlarged view in cross section of a table top hinge substantially as seen in the direction of the arrows along the line 7—7 of Figure 1;

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Figure 8 is a partial enlarged view partly in cross section of the hinge construction shown in Figure 7 substantially as seen in the direction of the arrows along the line 8—8 thereof;

Figure 9 is a partial perspective view of the reinforcing brace and brace lock used in the present invention;

Figure 10 is an enlarged view in cross section of the reinforcing brace lock shown in Figure 5 substantially as seen in the direction of the arrows along the line 10—10 thereof;

Figure 11 is a partial enlarged end view of the connection between a table leg and its associated reinforcing braces; and,

Figure 12 is a partial perspective view of another form of reinforcing brace and brace lock which may be used in the present invention.

Referring to the drawings and more particularly to Figures 1 and 2 thereof, there is shown a folding table generally designated by the numeral 20 made in accordance with and embodying the principles of the present invention. The table comprises generally a pair of table top sections 22 and 24 which are hinged together as at 26 and 28, and a pair of supporting leg structures 30 and 32 which support the ends of top sections 22 and 24 respectively.

The table top sections 22 and 24 are bounded on their outer edges by three channel-shaped members 34—36—38 and 40—42—44 respectively. Channel-shaped members 34 through 44 comprise a relatively wide channel portion provided with shorter flange portions on either edge thereof. Referring more particularly to Figure 6, it is seen that channel-shaped member 38 comprises a wide central channel member 46 which has formed on the edges thereof shorter flange members 48 and 50. Channel-shaped members 34, 36, 42 and 44 are similarly constructed.

The load carrying panels 52 and 54 of the table top sections 22 and 24 respectively comprise sheets of wood, plastic, fiber board or other suitable structural materials. The panels 52 and 54 are held in horizontally extending grooves formed by the cooperation of the upper flange of channel-shaped members 34 through 44 and the upper flanges of a plurality of channels which are positioned within channel-shaped members 34 through 44. More specifically, L-shaped members 56, 58, 60 and 62 are provided to cooperate with the channel-shaped members 34, 36, 38 and 40 respectively. Channel-shaped members 42 and 44 are also supplied with similar channel-shaped members not shown in the drawings.

As may be best seen in Figure 6, one edge of

the panel section 52 is supported between the top flange 48 and a flange 64 formed on the upper edges of the channel-shaped member 38 and the L-shaped member 60 respectively. The other two outside edges of panel 52 are similarly supported on the upper and lower sides thereof by corresponding flange members. This construction firmly holds the panel 52 in position and supports all the points on the outer periphery thereof. Such a construction gives a good support for the panel section 52 without the use of any fastening member such as nails or screws. As is well known in the art, the application of screws and nails to the outer periphery of various plywoods and fiber boards is most unsatisfactory since the sheet material tends to split or the fastening members tend to pull out. The present construction allows the use of such materials in table tops without any of the attendant disadvantages of the aforementioned fastening devices. The panel section 54 is similarly supported along the periphery of three of its edges by flange members forming a part of the table top frame.

The table top sections 20 and 22 are hinged to each other at points 26 and 28 by a structure which is illustrated in detail in Figures 7 and 8. These figures are enlarged views of hinge 28, hinge 26 being identical in construction. The abutting edges of panels 52 and 54 are supported on their lower sides by the flange of L-shaped members 66 and 68 respectively which are positioned within and lie against a second set of juxtaposed L-shaped members 70 and 72. Flanges 71 and 73 are formed on the bottom of the L-shaped members 70 and 72 respectively and support the lower edges of the L-shaped members 66—68. The upper edges of members 70 and 72 extend up to and embrace the juxtaposed edges of the panel sections 52 and 54. Referring to Figure 8, there are shown longitudinally extending flanges 74 and 76 which are formed upon the ends of the members 70 and 72 respectively and which lie parallel to the length of the table within the table top frame. There is provided a pair of overlapping hinge members 78 and 80 that are riveted or otherwise suitably fastened between members 38, 60 and 74 and 40, 62 and 76 respectively such as by rivets 88. It is to be understood that other suitable fastening devices may be used in place of the rivets 88. The ends 82 and 84 of the hinge members 78 and 80 overlap and are apertured to receive a pin 86 which holds the end sections in hinged relationship.

Suitable bracing for the center of the expanse of panel sections 52 and 54 is provided in the form of a plurality of perpendicularly disposed members 90—92—94 and 96—98—100 respectively. The members 92 and 98 are channel-shaped in cross section and are fastened to the main table top frame. Referring to Figure 7, there is shown an enlarged view of the manner in which the inner ends of members 92 and 98 are fastened in position. A pair of rivets 102 and 104 is provided, which passes through the table top panels 52 and 54 respectively, through the flange of members 66—68, through the central portion of members 92, 98 and a pair of spacer plates 106 and 108 respectively. The brace members 90, 94, 96 and 100 are provided with laterally extending flanges at the ends thereof, which flanges are suitably secured to the frame members such as by welding.

A plurality of cornice pieces 110 is used to connect the main frame members one to another. A suitable fastening device such as rivets passes through the cornice pieces and both frame members. The cornice pieces in addition to joining the frame members cover the junction thereof and provide a neat, ornamental appearance, presenting no sharp edges. Mounted adjacent the mid-portion of frame member 44 is a handle 112 which is used to carry the table when it is in the folded position shown in Figure 3. A latch 114 attached to frame members 36 and 42 serves to hold the table in the folded position.

Support for the table in the unfolded position is provided by the pair of leg structures 30 and 32, each of which comprises generally a metal tube 116, 118 bent into substantially U-shape with the corners thereof bent outwardly to form supporting feet 120, 122, 124 and 126. Figures 5 and 6 show the manner in which one of the legs 128 of tube 116 is attached to the table top frame. The other three legs are similarly attached. The frame member 60 is bent outwardly as at 130 away from the web portion 46 of the frame member 38 whereby to form a passage therebetween. The upper end of the tubular leg 128 is flattened as at 132 and provided with an aperture therethrough which receives a headed axle member 134 held in position by a cotter pin 136. A head 138 of axle part 134 is adapted to ride within the passage formed between frame members 38 and 60, the axle part 134 passing through an elongated slot 140 cut in the portion 130. A washer 142 is positioned between the flattened portion 132 of leg 128 and the frame member 60. This construction gives a sliding and pivotal connection between the leg 128 and the frame members whereby to allow the leg to slide along the slot 140 and pivot with respect to the frame as shown by the dotted lines in Figure 5.

The leg 128 is also connected to the frame by a strut member 144, one end of which is pivotally connected to leg 128 as at 146, the other end of which is pivotally connected to the frame members 38 and 60 as at 148 by any suitable means such as rivets. The strut 144 in cooperation with the right-hand end of slot 140 limits the extent to which the lower end of leg 128 can swing downwardly and to the left, as viewed in Figure 5. Due to the sliding connection between the upper end of leg 128 and the table top frame, it will be seen that strut 144 does not prevent leg 128 from moving to the folded position.

The leg members 116 and 118 are triangularly braced by V-shaped members 150 and 152 respectively. The lower ends of the V-shaped members 150 and 152 are connected to bight portions 154—156 of the tubes 116, 118 by rivets 157 or any other suitable fastening device. The upper ends of the members 150, 152 are connected to the legs by the same rivet which fastens the bracing strut to the leg. Referring more particularly to Figure 5, it will be seen that one of the upper arms of member 150 is attached to leg 128 by the rivet which attaches strut 144 to leg 128. This triangular form of bracing gives a particularly sturdy leg structure which resists all types of distortions.

There also is provided a pair of leg braces 158 and 160 for the leg members 116 and 118 respectively. There is shown in Figure 5 a detailed view of the construction of brace 158, brace 160 being similarly constructed. Brace 158 comprises generally two members 162 and 164 which are

hinged together as at 166. The other end of members 162 is pivotally connected to the table top frame as at 168, and the other end of member 164 is pivotally connected as shown in detail in Figure 11. A pin 174 passes through the arms of V-shaped support member 150 near the point at which member 150 is attached to bight portion 154 of the leg structure 116. One end of member 164 is pivotally connected to pin 174 and is positioned thereon by a pair of washer or spacer members 176 and 178 which are placed on either side of member 164 between the arms of the V-shaped support 150. Since the brace members 162 and 164 are hinged at 166, they do not prevent the support member 116 from being folded toward the closed position as shown by dotted lines in Figure 5. When the legs are in the unfolded position shown in solid lines in Figure 5, the brace 158 limits the extent to which the bottom of the support member 116 can move toward the left and through the action of a locking member 180 prevents an inadvertent movement by the support member 116 toward the closed position.

Details of construction of the locking member 180 are shown in Figures 9 and 10. The locking structure comprises a strip of metal 182 bent into substantially U-shape with the U-shape cross section being of such dimensions as to surround the brace members 162 and 164 in their juxtaposed position. As may be best seen in Figure 9, brace member 162 extends past the pivot point 166 as at part 184, and it is to part 184 that the U-shaped strip 182 is fastened by any suitable means such as by welding along one of the legs 186 of the U-shaped cross section. A cam and catch portion 188 is formed on the free end of the other leg member 190 of the U-shaped metal part 182. The member 188 is bent inwardly toward the two brace members 162—164 whereby to hold them in the juxtaposed position, as may be seen in Figure 10. The arm 190, however, is resilient enough to allow the brace members 162 and 164 to be folded or broken at point 166 without the necessity of manually unlocking the lock member 180. Similarly when the leg structure is unfolded, the cam action of member 188 allows the brace members 162 and 164 to go to the fully extended position, engaging the locking member 180 by merely exerting a slight pushing force.

Another form of locking mechanism for the brace 158 is shown in Figure 12. The brace members 162*a* and 164*a* are similar to corresponding members 162 and 164, member 162*a* having a portion 184*a* extending past the pivot point 166*a* which corresponds to part 184. Brace member 164*a* has a slot formed therein as at 192 which is adapted to receive an ear 194 which is struck from and extends laterally with respect to part 184*a*. Means is provided for locking brace in the operative position comprising an aperture 196 formed in brace member 164*a* which is so positioned and is of a shape to receive a stud 198 formed on extension 184*a* of brace member 162*a*. When the brace is in operative position the ear 194 rests in slot 192 and stud 198 holds the brace members in this position by engaging the aperture 196. The extension 184*a* is resilient enough to be bent outwardly sufficiently to allow the stud 198 to pass across the face of brace member 164 and thereby enter aperture 196. The stud 198 is preferably formed with a rounded surface to facilitate unlocking the brace by merely exerting pressure on the underside of the brace upward-

ly in a manner similar to that in which the lock shown in Figures 9 and 10 is operated.

Referring now to Figure 5, the manner of holding the support members 116 and 118 will be described in detail. With the support member in the unfolded position as shown in solid lines, to fold the legs, the brace structure 158 is first broken or folded at point 166 by exerting a force or pressure upwardly toward the left against either brace member 162 or 164, preferably near the hinge point 166. The brace lock 180 will release upon the application of a slight force, and the pivot point 166 will move upwardly to the left. The upper end of leg 128 riding on the support pin 134 will move to the left in slot 140. The brace member 144 will also pivot upwardly about the point 148, and simultaneously relative pivotal movement will take place between the leg 128 and brace 144 about point 146. The leg 128 and its associated parts will move upwardly through the position shown in dotted lines in Figure 5, and finally the leg will come to rest within the frame member 60 to form a compact, folded structure.

When support members 30 and 32 have both been moved to the folded position, the table top sections 20 and 22 may be folded at the hinge points 26 and 28 to the position shown in Figure 3. After the lock 114 has been closed, the table is ready to be conveniently transported by grasping the handle 112.

There has been provided a table of simple yet strong and ornamental construction which exhibits a relatively large surface when set up yet which can be folded to a relatively small, compact, easily-handled unit. The improved leg mounting gives sturdy support for the table top, the leg structure being capable of being folded easily and safely into a compact relationship with the table top.

Although a preferred embodiment of the invention has been shown for purposes of illustration, it is to be understood that various changes may be made in the specific embodiment set forth without departing from the spirit of the invention. The invention is accordingly not to be limited to the particular embodiment shown and described but only as indicated in the following claims.

The invention is hereby claimed as follows:

1. In a folding table having swingable legs, a bracing means comprising a pair of bracing members hingedly connected to one another, one end of one of said bracing members being pivotally connected to one of the legs of said table, one of the ends of the other of said bracing members being pivotally connected to said table, a portion on one of said bracing members extending past the pivotal connection between said bracing members, and engaging means attached to said portion and adapted to releasably engage the other of said bracing members, said engaging means including a resilient member extending laterally from, thence generally along one side of said portion for receiving the other of said members, said resilient member having cam means engageable with the other of said bracing members.

2. A table top comprising a substantially rectangular load supporting panel, a frame extending around three sides of said panel, said frame including a bight portion extending substantially perpendicularly with respect to the surface of said load supporting panel, a first flange extending substantially perpendicularly with respect to said bight portion and overlying one of the sur-

faces of said panel, and a second flange extending substantially perpendicularly with respect to said bight portion and overlying the other surface of said panel, said first and second flanges being substantially coextensive with said frame and being spaced apart a distance substantially equal to the thickness of said panel, said flanges gripping said panel around the aforementioned three sides thereof to support said panel.

3. A table comprising a pair of substantially rectangular frames, hinge means interconnecting said frames along one edge thereof, a support assembly for each of said frames including a substantially U-shaped support member, said support member having a bight portion and a pair of legs attached at one end thereof to said bight portion, the free ends of said legs being slidably and pivotally mounted on said frame, a strut member pivoted at one end to said frame at a point disposed between said hinge means and the point of connection of said leg to said frame and at the other end to one of said legs, a pair of bracing members hingedly connected to one another, one end of one of said bracing members being pivotally connected to the bight portion of said support member, one of the ends of the other said bracing members being pivotally connected to said frame, and locking means to lock said bracing members in bracing position, said support member in the supporting position being inclined downwardly and away from said hinge means whereby the weight of the table holds the support member in the supporting position.

4. A support assembly for a table having a frame, comprising a substantially U-shaped support member having a bight portion and a pair of legs attached at one end thereof to said bight portion, the other ends of said legs being pivotally and slidably mounted on the frame, a strut member, one end of said strut member being pivoted on the frame and the other end of said strut member being pivotally connected to one of said legs, a pair of bracing members hingedly connected to one another, one end of one of said bracing members being pivotally connected to said bight portion, one of the ends of the other of said bracing members being pivotally connected to the frame, and locking means to lock said bracing members in bracing position to hold said support member in supporting position.

5. In a table construction, a substantially rectangular load supporting panel, a frame extending around three sides of said panel, said frame including a plurality of channel members having a bight portion extending substantially perpendicularly to said load supporting panel, said channel members having flanges extending perpendicularly from said bight portion and overlying one surface of said panel, a panel retaining member disposed within each of said channel members, each of said panel retaining members having a flange extending substantially parallel to the flange of its associated channel member, the flanges of said panel retaining members overlying another surface of said panel, said first mentioned and said second mentioned flanges being spaced apart a distance substantially equal to the thickness of said panel, said flanges gripping and supporting said panel around the edges thereof.

6. A table, comprising a pair of substantially rectangular load supporting panels disposed with their edges in juxtaposed relationship, a pair of frames, each surrounding the other edges of one of said panels, hinge means interconnecting said frames along adjacent edges thereof, each of said frames including a pair of opposed channel members and a cross channel member, said channel members having upstanding bight portions extending substantially perpendicularly to said panels, flanges extending normally from said bight portions and overlying one surface of said panels, a panel securing member disposed within each of said channel members, each of said panel securing members having a flange extending substantially parallel to said first mentioned flanges and overlying a second surface of said panels, said load supporting panels being gripped and supported between said first and second mentioned flanges, the panel securing members disposed within said opposed channel members, each having a web portion spaced laterally from the bight portion of its associated channel member to provide a housing, each of said spaced web portions having an elongated slot therein, a support assembly for each of said frames including a generally U-shaped support member having a cross portion and a pair of legs attached to one end of said cross portion, pivot pins having enlarged heads slidably disposed within each of said housings, said pins having portions extending through said slots and secured to free ends of said legs for pivotally and slidably mounting said support members to said frames so that said support members may be swung from an open supporting position into a folded position within bounding planes of said frames.

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