

- [54] **FOLDABLE TABLE AND BENCH ASSEMBLY** 2,613,728 10/1952 Loibl, Sr. 297/139
 2,797,887 7/1957 Williams 297/167
 2,825,390 3/1958 Post 297/139
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 Dr., Cheney, Wash. 95132 2,991,829 7/1961 Post 297/139
 [22] Filed: **May 4, 1973** 3,146,025 8/1964 Heaney 248/167 X
 [21] Appl. No.: **357,207** 3,174,796 3/1965 Brown 297/159

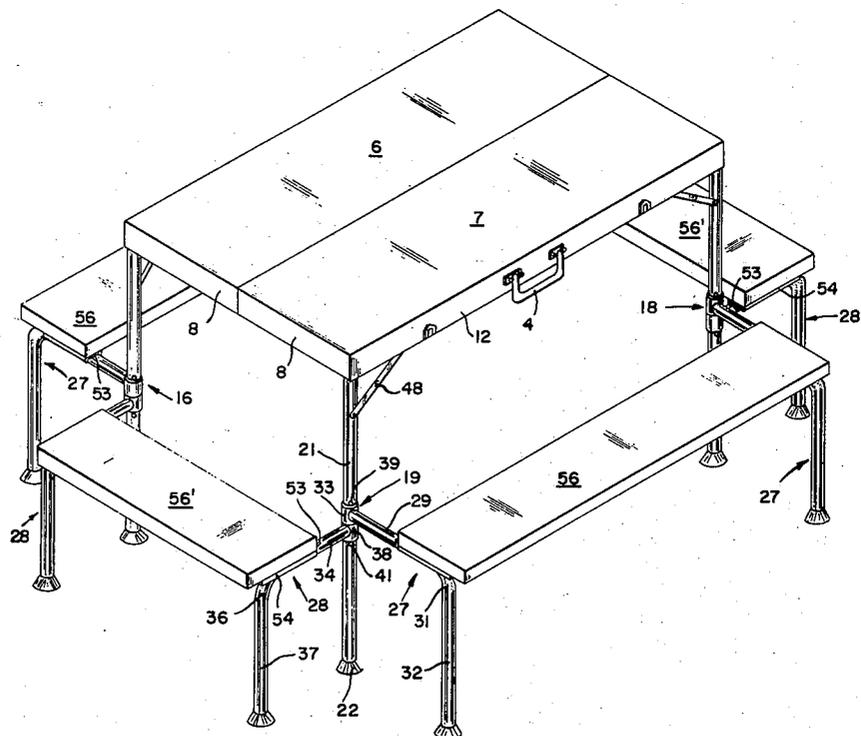
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- [52] U.S. Cl. 297/159; 108/38; 108/125;
 248/188.6; 297/139
 [51] Int. Cl. A47b 3/14
 [58] Field of Search 297/139, 17, 159, 121,
 297/42, 59; 108/35, 38, 115, 125; 248/170,
 248/166, 167, 188.6; 182/152, 151

[57] **ABSTRACT**
 Presented is a table construction that folds into a compact carrying case and which makes provision for seats in the form of benches which conveniently attach to the table construction when in extended form and which compactly store in the table construction when in folded condition.

- [56] **References Cited**
 UNITED STATES PATENTS
 2,080,982 5/1937 MacDonald 297/139

9 Claims, 13 Drawing Figures



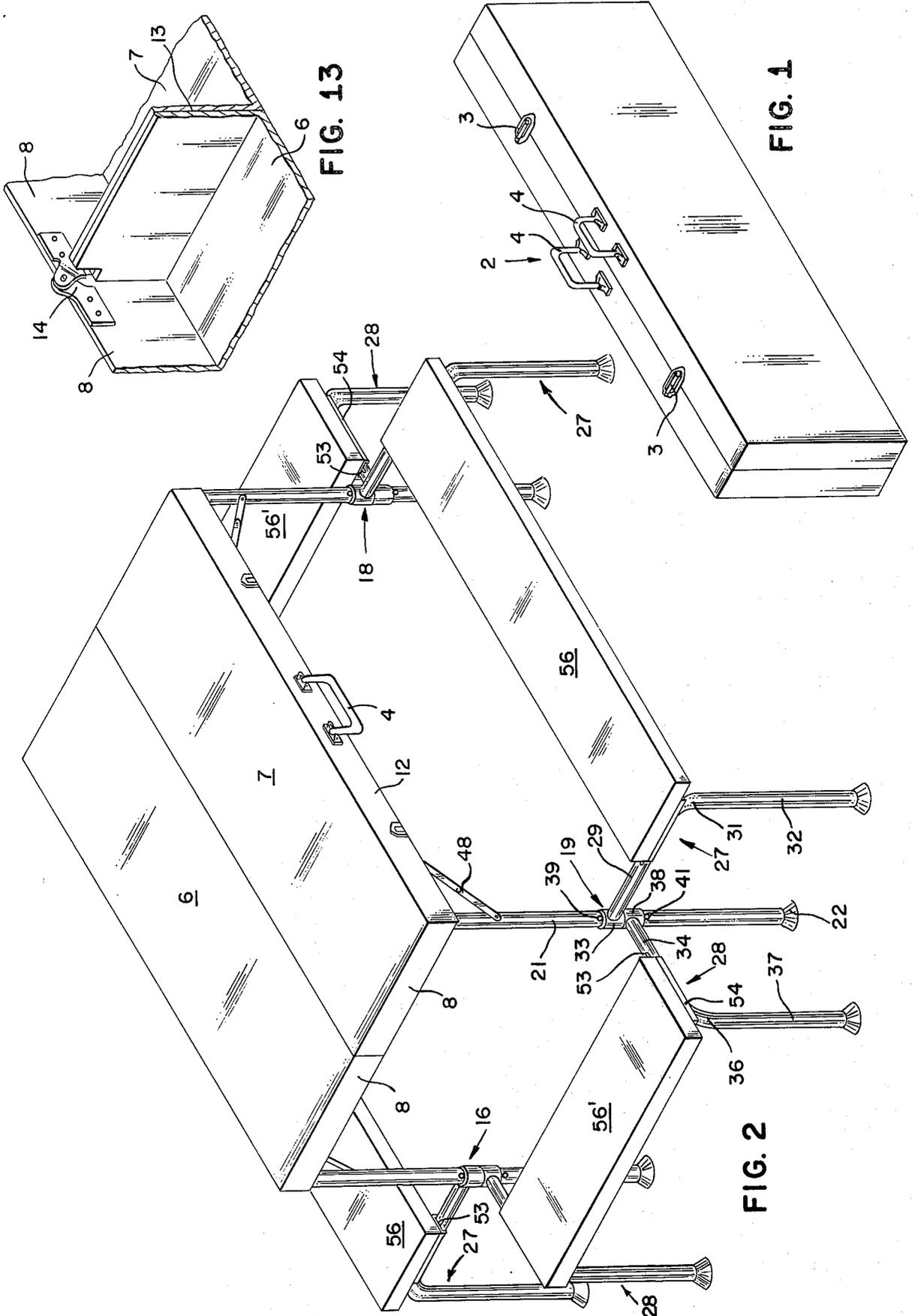


FIG. 13

FIG. 1

FIG. 2

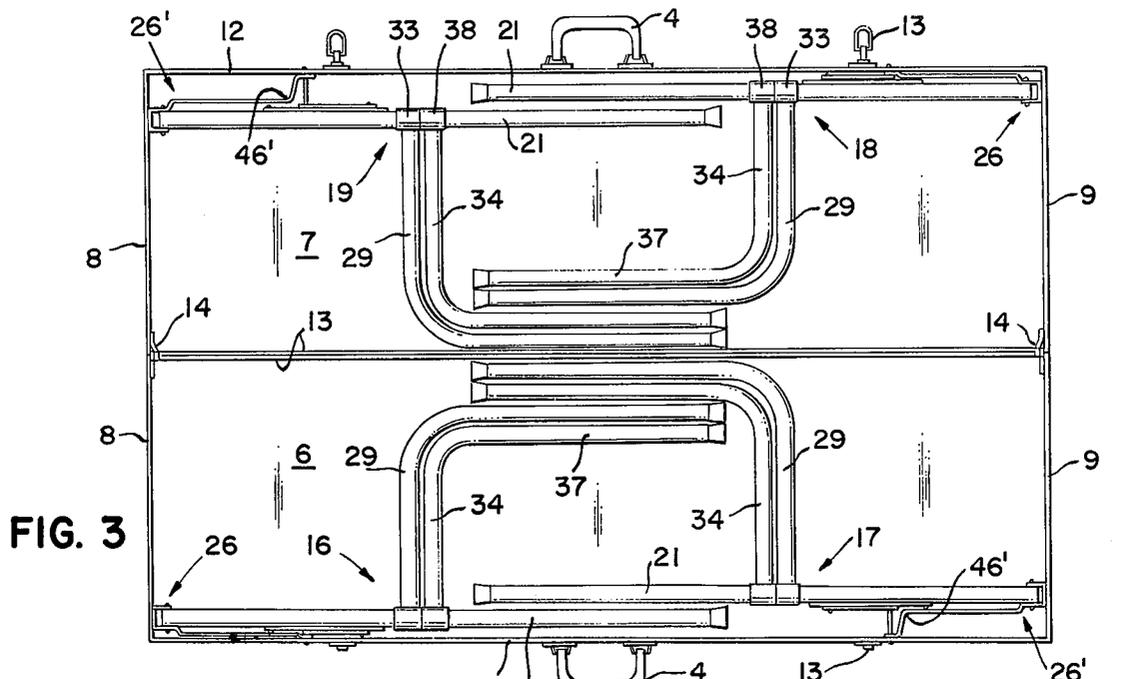


FIG. 3

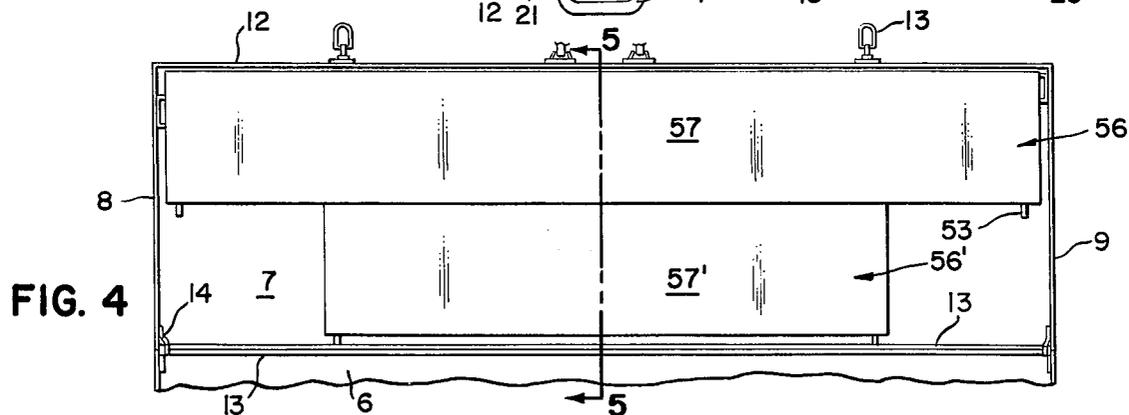


FIG. 4

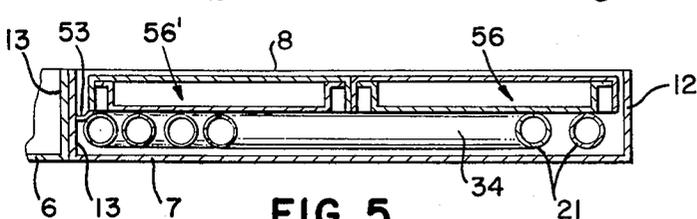


FIG. 5

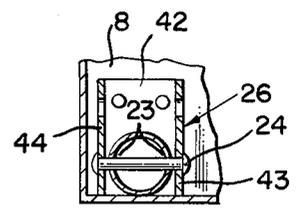


FIG. 9

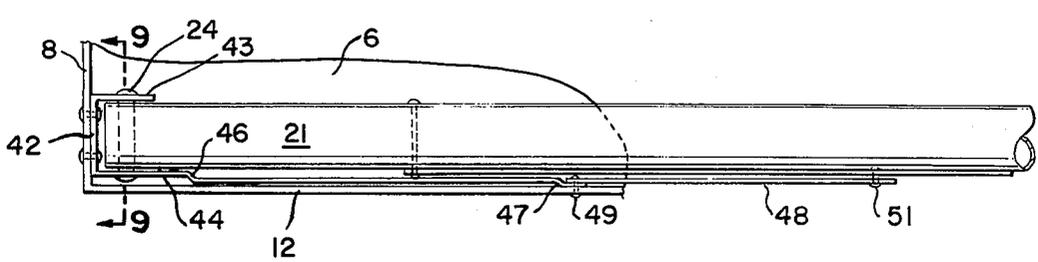


FIG. 8

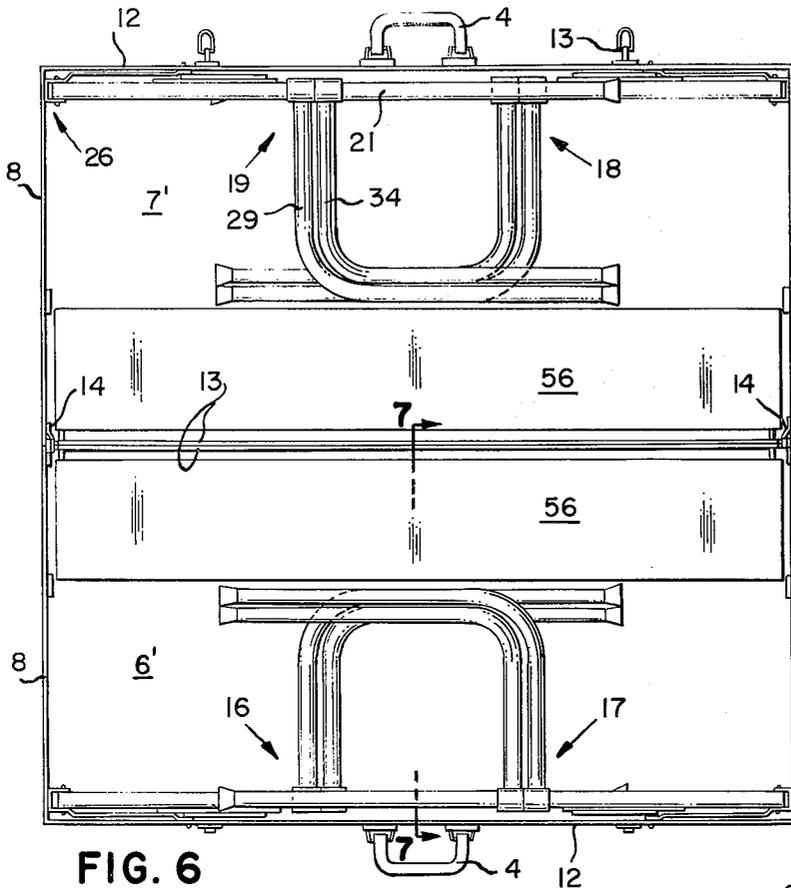


FIG. 6

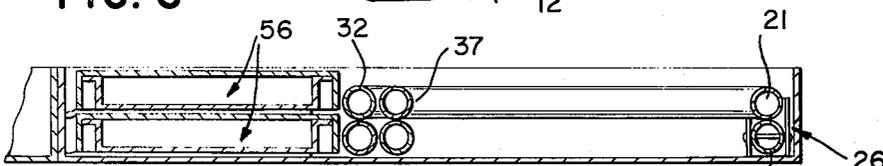


FIG. 7

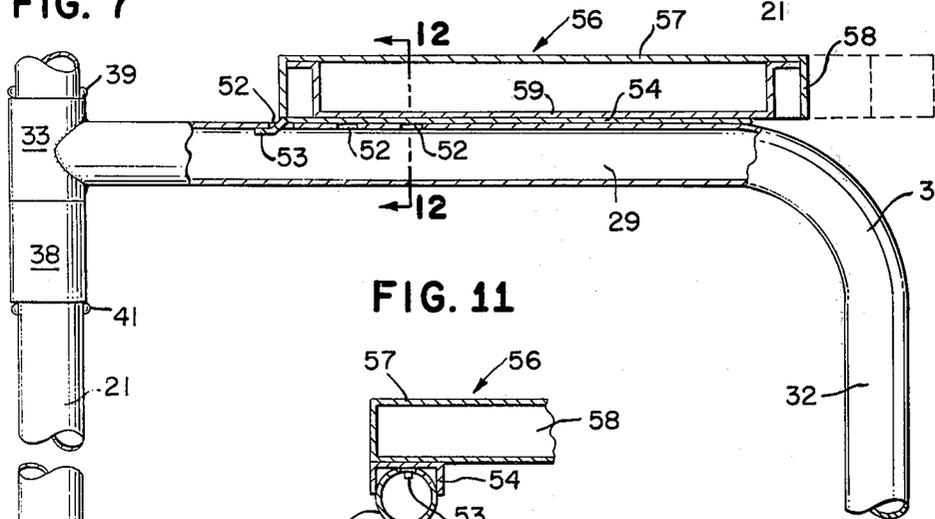


FIG. 11

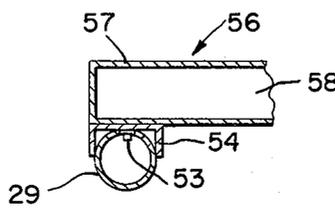


FIG. 12

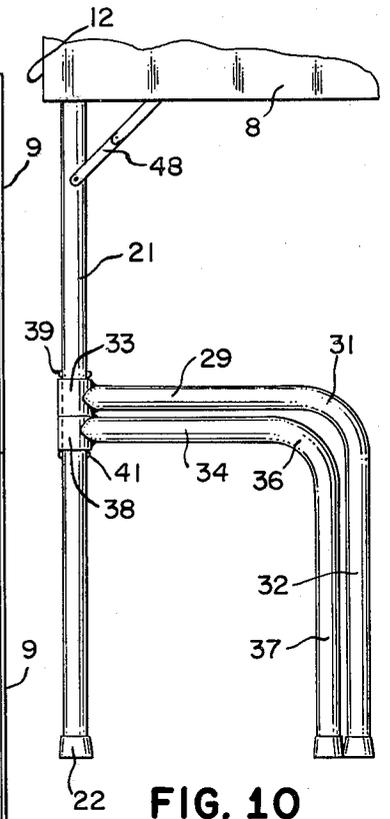


FIG. 10

FOLDABLE TABLE AND BENCH ASSEMBLY**BACKGROUND OF THE INVENTION**

Many attempts have been made to produce a foldable table which when in extended condition serves as a flat surface upon which meals may be served or upon which other types of work may be accomplished. Many such tables have successfully been produced and function quite well. However, so far as is known, all such conventional tables require auxiliary seating means apart from the table construction, thus, to the extent that tables are foldable, defeating the purpose of the foldable table, namely, its compactness for storage purposes. In foldable table structures that require such auxiliary seating, the seats or chairs must be stored apart from the table construction and are of course susceptible to loss. Accordingly, it is one of the important objects of the present invention to provide a foldable table construction incorporating means for accomplishing the seating function.

In the production of a foldable table construction, it is important that the structure not only be sturdy when used in extended condition, but that it be compact and easily carried when in folded condition. Accordingly, it is another object of the invention to provide a foldable table including means for accomplishing the seating function, which fulfills these advantages.

So far as is known, foldable tables do not exist which incorporate seating means, and which accommodate such seating means at all four sides of the table. Accordingly, it is another important object of the invention to provide a foldable table incorporating seating means on all four sides of the table.

Portable tables capable of being folded into a compact carrying case are frequently used out of doors on terrain that is relatively uneven. Conventional four-legged tables do not provide for unevenness of terrain and therefore remain somewhat unstable when set up on such terrain. Accordingly, another object of the present invention is the provision of a foldable table of the picnic type capable of being folded into a compact case, yet when extended on uneven terrain may be adjusted to stabilize the structure.

Not only do conventional foldable tables not incorporate means for seating occupants at the table, but in most such conventional tables, whatever stabilizing means are used frequently interfere with the comfort of the occupant seated at the table, in that such stabilizing means frequently take the form of angularly disposed braces extending between legs and table top, thus occupying space that might ordinarily be used by a person to place his legs or knees. Accordingly, another object of the present invention is to provide a foldable table incorporating means for seating occupants at the table, said means also functioning to stabilize the table when in extended condition.

BRIEF SUMMARY OF THE INVENTION

In terms of broad inclusion, the foldable table incorporating seating means comprises a pair of flat elongated panels, preferably fabricated from metal, each panel being provided with a peripheral flange. Placement of the panels edge to edge creates a wide flat surface, and hinge means disposed between the two panels permits the two panels to be folded together to form an enclosed compartment in which the legs may be stored. Leg structures are pivoted to opposite corners of the

associated panels, means being provided on each leg structure to lock the leg structure in extended position. Means are also provided on each leg structure adapted to detachably support a bench thereon and which, in addition to functioning as a seat for occupants at the table, cooperates with the leg structure to stabilize the table. Means are provided on the peripheral flanges for locking the two panels into compartment forming position when folded together. In like manner, handle means are provided on the peripheral flange for lifting the folded table.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view illustrating the foldable table in folded condition.

FIG. 2 is a perspective view illustrating the foldable table in extended position.

FIG. 3 is a plan view illustrating the foldable table partially unfolded to illustrate the manner of storing the leg structures therewithin.

FIG. 4 is a fragmentary plan view illustrating one-half of the table in unfolded condition and showing the manner of storing the seating means therewithin.

FIG. 5 is a vertical cross-sectional view taken in the plane indicated by the lines 5—5 in FIG. 4.

FIG. 6 is a plan view of the foldable table of slightly modified configuration, the foldable table shown partly unfolded to show the manner of storing the leg and bench structures therein.

FIG. 7 is a vertical cross-sectional view taken in the plane indicated by the line 7—7 in FIG. 6.

FIG. 8 is a fragmentary elevational view illustrating the manner of pivotally connecting each leg structure to the table top.

FIG. 9 is an enlarged fragmentary vertical sectional view taken in the plane indicated by the line 9—9 in FIG. 8.

FIG. 10 is an enlarged elevational view illustrating the relationship of the leg structures to the table top when partially folded under the table.

FIG. 11 is an enlarged fragmentary elevational view partly in vertical section illustrating the manner of attachment of the bench structure to the leg structure.

FIG. 12 is a vertical sectional view taken in the plane indicated by the line 12—12 in FIG. 11.

FIG. 13 is an enlarged perspective view of the hinge structure utilized to pivot the two table panels together. For clarity, portions of the table panels are illustrated in broken lines.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In terms of greater detail, and referring to the embodiment illustrated in FIGS. 1 through 5, when folded the foldable table appears as an elongated, compact suitcase-like structure designated generally by the numeral 2. The foldable table is retained in folded condition by appropriate latches 3, and may be lifted for carrying purposes by appropriate handles 4. Thus, the folded table may be easily stored in a closet, or in a garage, and for purposes of carrying, may be placed in the baggage compartment of an automobile, or on a baggage rack carried on the roof of an automobile. When folded, it is attractive in appearance, and gives no indication of its functional characteristics.

When unfolded, the structure comprises a pair of substantially identical flat panels 6 and 7, preferably

fabricated from heavy gauge aluminum which embodies both the quality of lightness and strength, the table top panels each being provided with peripheral end skirts 8 and 9 at opposite ends thereof, and peripheral side skirts 12 and 13 on opposite sides thereof. As used herein, the phrase table top is intended to include the panels 6 and 7 and the peripheral end and side skirts. As illustrated in FIGS. 3, 4 and 13, the associated side skirts 13 of the table top panels 6 and 7 are disposed in side-by-side relationship and are joined in a pivotal connection by an appropriate hinge structure 14. As shown, the hinge structure is permanently attached through appropriate rivets to the inside surface of the associated end flanges 8 and 9 at each end of the table top. It will thus be seen that the table panels 6 and 7 with their peripheral skirts, by virtue of the interposition of the pivotal hinge structure 14, may be pivoted together into the relationship illustrated in FIG. 1, wherein the edges of the peripheral side and end skirts on associated table panels 6 and 7 abut edgewise so as to form a hollow interior within which the leg and bench structures may be stored as will hereinafter be explained in greater detail.

Referring to FIGS. 2 and 3, the table top is provided with four separate leg assemblies or structures designated generally by numerals 16, 17, 18 and 19. In the interest of brevity, only one such leg assembly will be described, it being understood that each is identical with the others. Accordingly, each leg assembly comprises an elongated tubular leg member 21, preferably fabricated from tubular aluminum and provided at its lower end with a resilient cap 22 and its opposite end bored to provide transverse openings 23 (FIG. 9) through which a pivot pin 24 may extend to pivotally mount the elongated tubular leg member 21 to an appropriate bracket 26 suitably secured to the table top by appropriate means such as by spot welding.

Each leg assembly is provided with a pair of auxiliary leg structures which function also as bench support means, and are designated generally by the numerals 27 and 28. Each bench support 27 includes a horizontal section 29 merging smooth through an appropriate radius 31 with a vertically disposed leg section 32. To attach the bench support 27 to the vertically disposed tubular leg 21, the horizontal section 29 is provided at one end with a sleeve 33 appropriately welded to the end of the horizontal section 29 and having an inner diameter such that the sleeve 33 forms a snug rotatable fit on the exterior periphery of the tubular leg 21.

In like manner, the bench support 28 includes a horizontal section 34 merging smoothly through radius 36 with a downwardly depending leg section 37. The inner end of the horizontal section 34 is in like manner provided with a sleeve 38, the diameter of which is such as to closely surround the outer periphery of the tubular leg 21 so as to permit rotatable adjustment of the bench support structure 28 about the vertical leg. The bench support structures 27 and 28 are both retained in position in the tubular leg 21 by pop rivets 39 and 41 positioned above and below the assembly, as shown so as to permit rotatable adjustment of the bench support structures and preclude axial displacement thereof in relation to the longitudinal axis of the tubular leg 21. This construction of the auxiliary legs or bench support structure 27 and 28 is clearly illustrated in FIGS. 10 and 11.

Each of the leg assemblies including the auxiliary leg or bench support structure is pivotally mounted in a corner of the table top panels 6 and 7 by the bracket structure 26 illustrated in FIGS. 8 and 9. Referring to FIG. 8, it will there be seen that the bracket includes a base portion 42 appropriately spot welded or riveted to the associated skirt 8 of the table top, and is also provided with a projecting flange 43 apertured as shown in FIG. 9 to permit the passage of pivot pin 24 to secure the upper end of leg 21 to the bracket. Extending substantially parallel to flange 43 and forming an integral part of the bracket, is an elongated angular member 44 having a job 46 therein, and having its remote end 47 appropriately anchored to the side skirt 12 as shown. The bracket 26 is preferably fabricated from an appropriate metal so as to have the requisite strength, steel being preferred for this purpose.

To maintain each of the leg assemblies in an upright position in extended form, each leg 21 is provided with a pivotally mounted two-link brace designated generally by the numeral 48, one link being pivoted at 49 to the remote end 47 of the bracket 26 in the associated skirt of the table top, while the other end of the two part link is appropriately pivoted as at 51 to the leg 21. The locking link is proportioned so that when the legs are in extended condition as illustrated in FIG. 2, the link extends diagonally across the corner of the table between each leg and the associated peripheral flange or skirt of the table top.

Referring to FIG. 3, it will be seen that the bracket 26 is appropriate for pivotally mounting and anchoring the leg assemblies 16 and 18, but that for the purpose of pivotally mounting the leg assemblies 17 and 19, the bracket here designated as 26', is modified somewhat in that the job 46' is accentuated to permit the bracket 26' to be mounted at a point spaced from the associated side skirts 12 as shown. In the embodiment illustrated in FIG. 3, such additional spacing is required to accommodate the legs in their folded condition as shown wherein the leg assemblies 18 and 19 lie in planar alignment nestled together within the one-half of the table top formed by table panel 7-9, whereas the other pair of leg assemblies 16 and 17 lie nestled together in planar alignment within the one-half of the table top formed by table panel 6-9.

In order to stabilize the table thus formed as illustrated in FIG. 2, and to provide for seating occupants at all four sides of the table, bench support structures 28 are rotated out into the position illustrated in FIG. 2, in which the horizontal section 34 extends generally longitudinally of the table, while leg support structures 27 are pivoted outwardly so that horizontal section 29 extends generally transverse of the longitudinal dimension of the table. Each of the horizontal sections 29 and 34 of the leg structures 27 and 28 is provided on its top surface with a plurality of apertures 52 (FIG. 11), each of the apertures being adapted to receive a projecting lug 53 formed as an extension on the end of a channel brace member 54 (FIG. 12) adapted to straddle the underlying tubular horizontal section 29 or 34.

One such channel brace 54 is appropriately welded across each end of a bench structure designated generally by the numeral 56 and including a top panel 57 having a peripheral flange 58 thereabout to lend rigidity to the bench structure, which is preferably fabricated from an appropriate sheet metal, the bench structure being further strengthened by a hat-section insert

of sheet metal designated by the numeral 59. The hat-section strengthening rib is conveniently spot welded within the confines of the peripheral flange 58 so that to a large extent the underside of the bench structure also provides a relatively smooth surface.

As illustrated in FIG. 12, each of the channel braces 54 extends transversely across the end of the bench structure so that when the bench structure 56 is mounted across the associated pairs of leg assemblies as illustrated in FIG. 2, engagement of the lugs 53 in the appropriate apertures 52 locks the bench structure to the associated bench support structures in a manner to prevent inadvertent release thereof, and in a manner to solidly retain the associated bench support or auxiliary leg structure against pivotal movement about the supporting tubular leg 21. It will thus be seen that because of the multiplicity of apertures 52 formed in the horizontal sections of the bench support structure 27 and 28, the benches may be adjusted to provide the appropriate spacing in respect to the associated edge of the table, thus more comfortably accommodating both adults and children.

Referring to FIGS. 3, 4 and 5, it will there be seen that when the table is folded into the condition illustrated in FIG. 1, the bench structures 56 and 56', the latter reference number referring to the relatively shorter benches associated with the ends of the table illustrated in FIG. 2, are superimposed over the underlying leg structures and sit neatly within the confines of the peripheral flanges 8, 9 and 12 so that when the table is folded along the hinge line 14, the leg assemblies and bench structures are retained compactly within the case formed by the table top in closed condition.

The embodiment of the invention illustrated in FIG. 6 is substantially similar to the embodiment of the invention illustrated in FIGS. 2 and 3, with the exception that in FIG. 6, the table in extended condition is substantially square as opposed to being substantially elongated in a rectangular fashion. Thus, in FIG. 6, the widths of the table top panels 7' and 6' have been increased in width so as to accommodate the leg assemblies 16-19 in a manner to permit the bench structures 56 being superimposed one above the other in pairs as illustrated in FIG. 7, and nestled in the space between the peripheral flanges 13 and the associated leg assemblies as shown. In other respects, the structures are identical. To accommodate the leg assemblies in the manner illustrated in FIGS. 6 and 7, the anchor brackets 26 are all uniform in their construction and correspond to the structure illustrated in FIG. 8. In mounting the anchor brackets to the associated table, because of the superposition of one pair of leg assemblies over an underlying pair thereof, the anchor brackets of the superposed pair is off-set somewhat so as to permit such superposition without effecting a strain on the peripheral flange of the table top. In this embodiment of the invention it will be noted that the benches 56 are of equal length, inasmuch as the table of this embodiment is substantially square.

During storage, the table top is folded as illustrated in FIG. 1. For use, the table is unfolded and assembled as illustrated in FIG. 2. To effect such unfolding, the case as illustrated in FIG. 1 is placed on the floor or ground in the attitude illustrated in FIG. 1, and the latches 3 are unlatched and the table top unfolded into the position illustrated in FIG. 3. From this position,

each of the leg assemblies 16-19 is individually pivoted until the tubular leg 21 of each assembly stands perpendicular to the table top and the cross brace 48 is in locked condition. In this position of the leg assemblies, the bench support structures 27 and 28 remain in their relative positions with respect to the tubular leg members 21, thus permitting the table top to be inverted into right-side-up position (FIG. 2) without regard to the auxiliary leg or bench support structures 27 and 28. The table top will be appropriately supported by the now downwardly depending tubular legs 21 regardless of the pivotal position of the auxiliary leg or bench support members 27 and 28.

When the table top has been inverted into its right-side-up position, the bench supports 27 and 28 may be pivoted from the position illustrated in FIG. 10, for instance, into the positions illustrated in FIG. 2, wherein the benches may be applied to the bench support structures so as to stabilize the entire table structure. It will of course be obvious that from the position of the parts illustrated in FIG. 3, before the leg assemblies are pivoted into an upright position, the bench structures 56 are removed and set aside until the table has been inverted into its right-side-up position.

In the event it is not desirable to utilize all four benches, the bench structures 56' extending across the ends of the table in FIG. 2 may be removed, and the associated bench support structures 28 pivoted inboard of the table so as to be out of the way, thus leaving an elongated table having bench structures on opposite long sides thereof. On the other hand, if desired, the long benches 56 may be removed while the short benches 56' may be retained, the bench support structures 27 being folded inwardly so as to be out of the way, thus forming an elongated table having benches only at opposite short ends of the table. Because of the versatility of the leg assemblies of the foldable table forming the subject matter of this invention, it is particularly adapted to be set up in a corner. For instance, one long bench structure and one short bench structure may be removed from the table assembly, and the associated bench support structures may be folded inwardly under the table so as to be out of the way. In such condition, the table may easily be pushed into a corner so that benches or seating accommodations are provided on two adjacent sides of the table but not on the two sides that are contiguous to the walls forming the corner. On the other hand, where seating accommodations are not necessary, the bench structures may all be removed, and the bench support structures 27 and 28 swiveled inwardly under the table where they are either out of the way or provide an auxiliary support and stability to the table for use for whatever purpose desired.

Having thus described the invention what is claimed to be novel and sought to be protected by letters patent is as follows:

1. A foldable table assembly comprising:
 - a. a table top formed from a pair of flat plates each having a peripheral flange constituting integral opposite end and side flanges;
 - b. means pivotally connecting associated edges of said plates to enable selective orientation of said plates from a position of planar alignment wherein they form a flat table top to a position of spaced parallelism wherein the edges of said flanges on the juxtaposed parallel plates are in alignment whereby

said plates and peripheral flanges cooperate to form a closed container when said table top is folded;

c. a leg assembly pivotally mounted in each corner of said unfolded table top and selectively extensible to a position perpendicular to said table top and retractable to a position parallel to said table top wherein said leg assemblies lie nested within said peripheral flanges surrounding said flat plates, said leg assembly including an elongated tubular leg member extending from said table top to a supporting surface such as the ground or floor and an auxiliary leg structure comprising a horizontal bench mounting section pivotally mounted to the elongated tubular leg member intermediate its ends for pivotal movement through 360° about said tubular leg member and a vertical leg section integral with said horizontal bench mounting section, said vertical leg section of the auxiliary leg structure lying parallel to said elongated tubular leg member in both the folded and unfolded positions of said leg assembly; and

d. detachable bench means bridging the space between and selectively engageable at each opposite end with the horizontal bench mounting sections of auxiliary leg structures at opposite corners of said table top whereby each detachable bench cooperates with said table top and a pair of said leg assemblies to stabilize the table and to provide seats at said table which correspond in length to the side of the table top with which they are associated.

2. The combination according to claim 1, in which each said leg assembly comprises an elongated tubular leg member adapted to be pivoted by one of its ends to said table top, and at least one auxiliary leg structure pivotally mounted on each said tubular leg, two pairs of said auxiliary leg structures embodying three such auxiliary leg structure sets in which one auxiliary leg structure set is common to both pair being selectively positionable to interlockingly receive one of said bench means either at the end of the table top or along the side thereof.

3. The combination according to claim 1, in which each said leg assembly comprises an elongated tubular leg member one end of which is pivotally mounted in a corner of said table top for pivotal movement between a position in which said tubular leg member lies parallel to said table top and a position in which said tubular member lies perpendicular to said table top, an auxiliary leg structure constituting a bench support means pivotally supported on said tubular leg member intermediate its ends for selective pivotal movement of 360° about said elongated tubular leg member and comprising a horizontal bench support section and a vertical leg section parallel to said tubular leg member and spaced therefrom, and lock means interposed between said bench means and said bench support section to detachably lock a bench to a pair of associated auxiliary leg structures.

4. The combination according to claim 1, in which each said leg assembly comprises an elongated tubular leg member one end of which is pivotally mounted in

a corner of said table top; a pair of auxiliary leg structures constituting bench support means pivotally mounted on each said elongated tubular leg member intermediate its ends, one of said pair of bench support means associated with each elongated tubular leg member being superimposed above the other associated bench support means, both said bench support means associated with each elongated tubular member being pivotally rotatable 360° about the tubular leg member on which they are mounted.

5. The combination according to claim 1, in which each said leg assembly comprises an elongated tubular leg member, and an auxiliary leg structure constituting a bench support means pivotally mounted on said tubular leg member intermediate its ends and including a horizontal bench mounting section extending perpendicular to the tubular leg member in both extended and retracted positions and a vertical bench leg portion extending parallel to the tubular leg member and revolvable 360° thereabout while said parallel relationship is maintained, said bench support means being pivotally mounted on said tubular leg member so as to selectively project inwardly of said table top when said auxiliary leg structures are not in use, and which project outward from said table top when said auxiliary leg structures are extended to receive a bench means.

6. As an article of manufacture, a leg assembly for foldable tables comprising:

a. an elongated tubular leg member adapted to pivotally connect at one end to an associated table top and extend therefrom uninterrupted to a supporting surface;

b. an auxiliary leg structure constituting a bench support means pivotally mounted on said elongated tubular leg member intermediate its ends and revolvable thereabout through 360° and including a horizontal bench mounting section and a vertical leg section integral with said bench mounting section and in all positions lying parallel to said elongated tubular leg, said bench support means being selectively pivotal about said tubular leg member for selective positioning at any point thereabout.

7. The combination according to claim 6, in which said bench mounting section is provided with a plurality of apertures spaced at different distances from said tubular leg member, and said bench means are provided with a plurality of lugs adapted to engage selected ones of said apertures to detachably lock said bench means to said bench support section.

8. The combination according to claim 6, in which a pair of bench support means are pivotally mounted on each of said tubular leg members, each said bench support means of the pair being pivotally positionable independently of the other bench support means.

9. The combination according to claim 1, in which said means pivotally connecting associated edges of said table top plates comprises a hinge structure permanently attached to the associated end flanges of juxtaposed plates whereby stress imposed on said hinge structure is carried by said end flanges.

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