United States Patent

Sheldon

[15] **3,683,825**

[45] **Aug. 15, 1972**

[54] **FOLDING TABLE**

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[22] Filed: **Nov. 23, 1970**

[21] Appl. No.: **91,783**

[52] **U.S. Cl.** **108/33,** 108/66, 108/111

[51] **Int. Cl.** **A47b 3/00,** A47b 1/00

[58] **Field of Search** .....108/111–114, 135 T, 108/115 T

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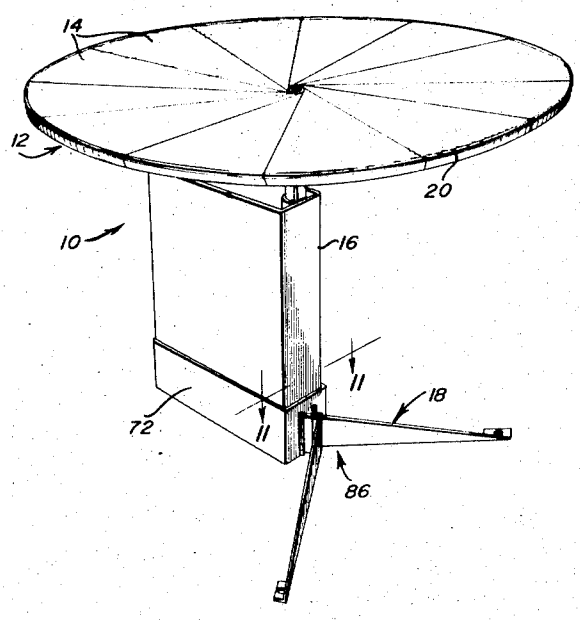
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[57] **ABSTRACT**

A plurality of pie-shaped interleaved members have their apices connected together to allow the members to fan out in a manner completing a round tabletop. A container which serves to store the tabletop, when the latter is in a collapsed condition, has hinge means interconnecting the container with the interleaved members. This connection allows the container to act as a support for the roundtop. When the members are collapsed, the interleaved hinge means allows the interleaved members to be moved into the container. Leg members are attached to the container so that the combination of container and attached leg means serves as a support structure for stabilizing the tabletop.

9 Claims, 11 Drawing Figures



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SHEET 1 OF 3

Fig. I

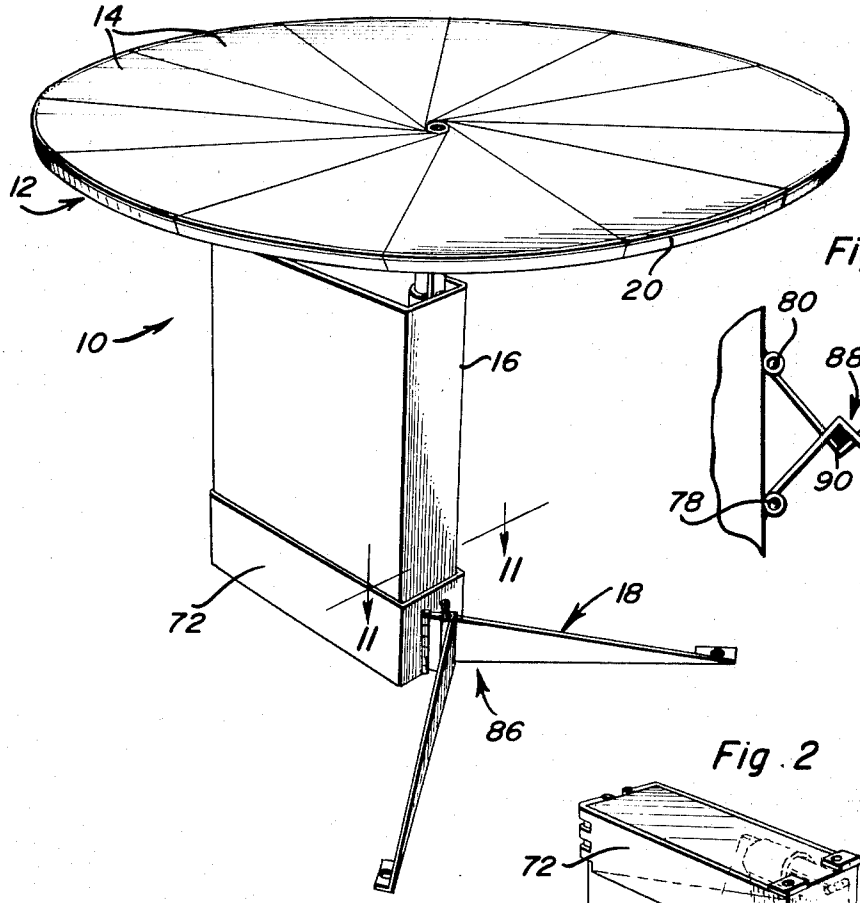
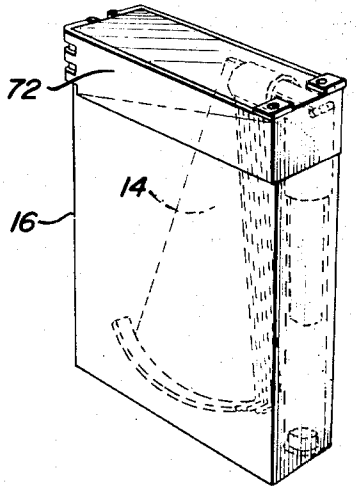


Fig. II

Fig. 2



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Fig. 3

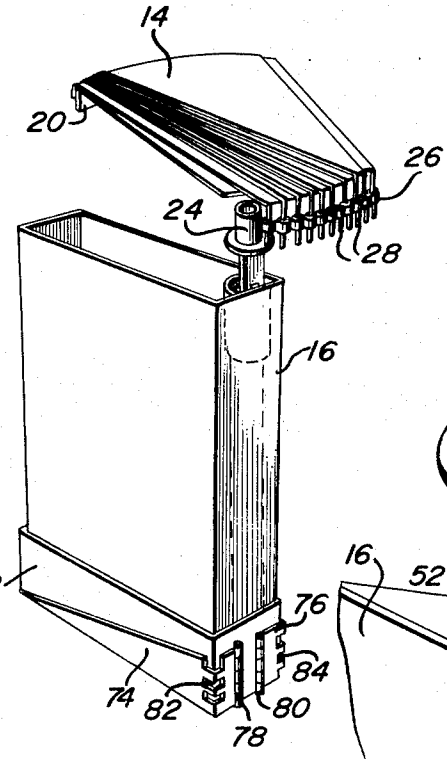


Fig. 10

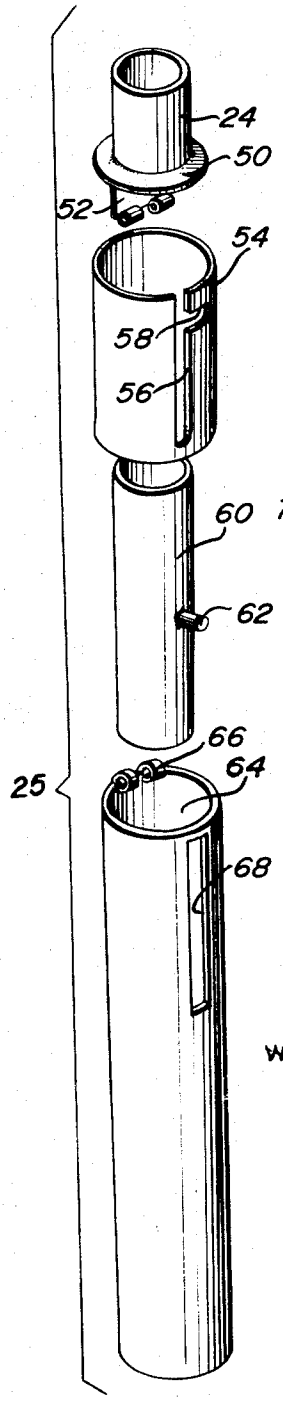


Fig. 9

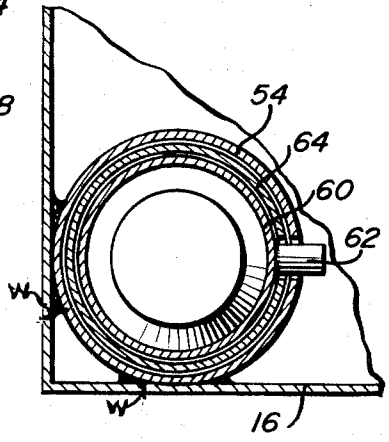
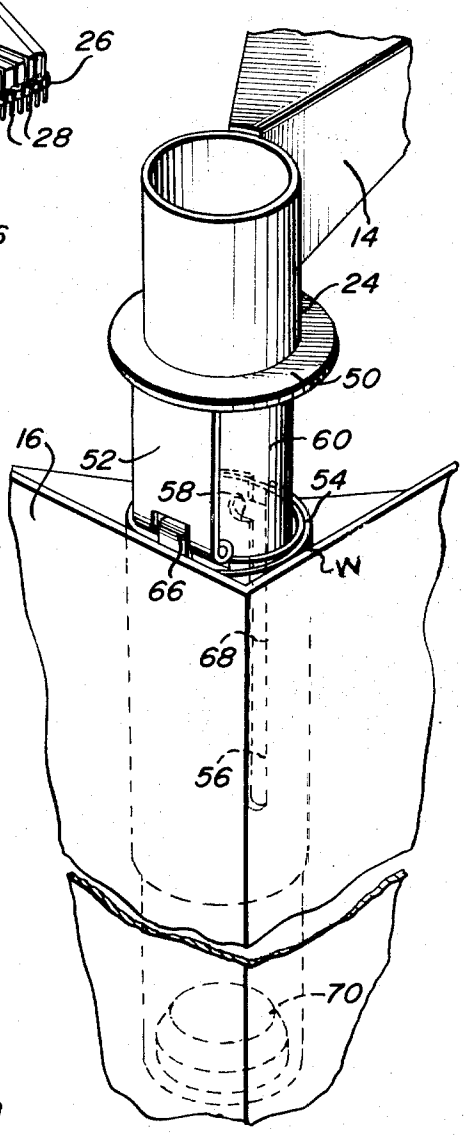


Fig. 8



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Fig. 4

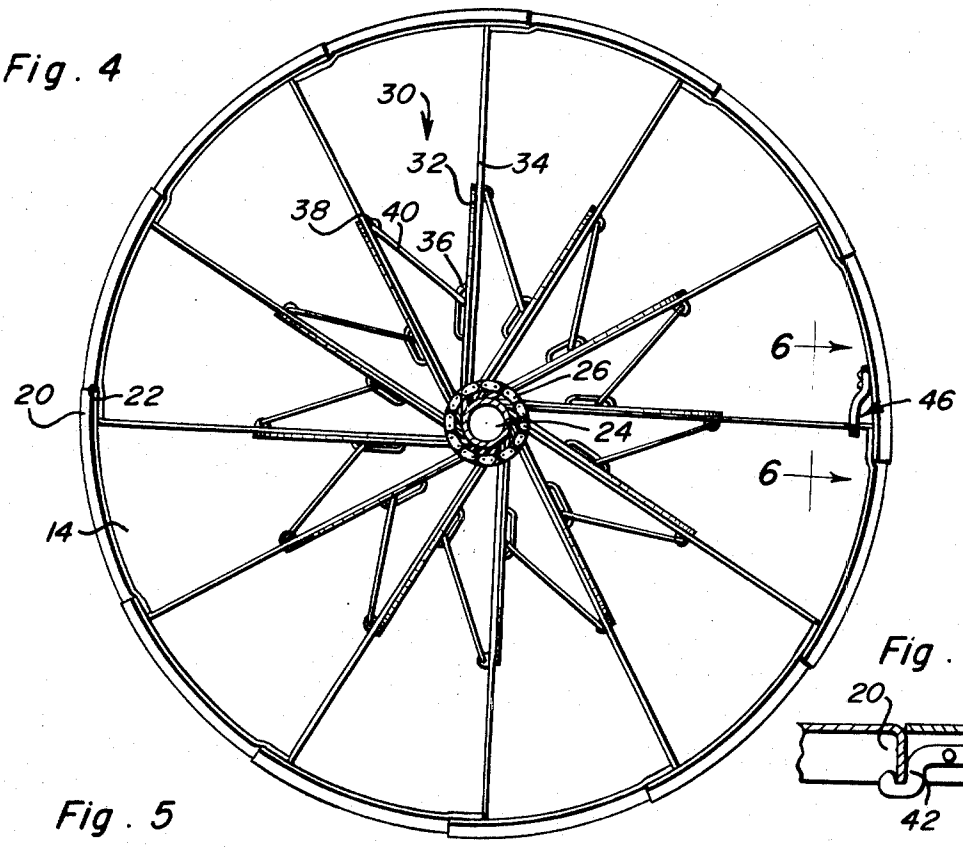


Fig. 5

Fig. 6

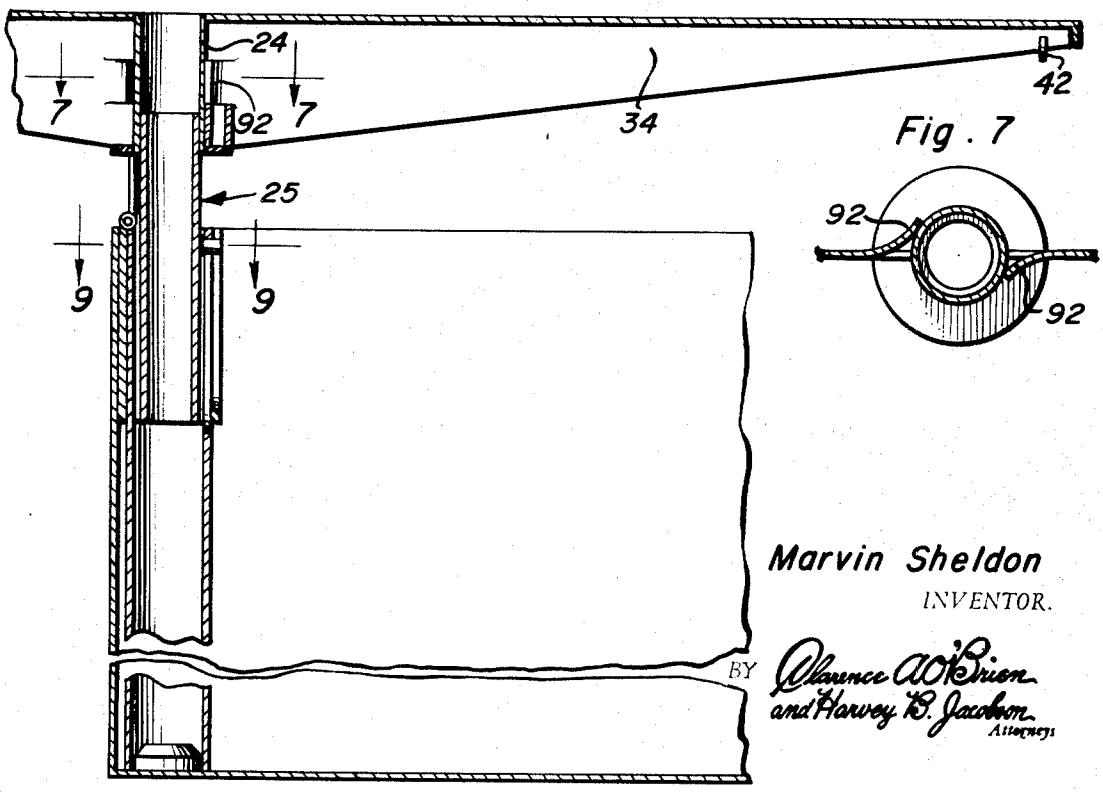


Fig. 7

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FOLDING TABLE

FIELD OF THE INVENTION

The present invention relates to a collapsible table having a self-contained storage receptacle.

DESCRIPTION OF THE PRIOR ART

The prior art includes a wide variety of collapsible tables which allow the user to enjoy the convenience of collapsing a table into a fairly compact package when the table is not in use. Many of the prior art constructions include removable leaves that serve to lengthen a tabletop. When the table is to be collapsed, these leaves are removed and the remaining support structure of the table is folded. However, as will be appreciated, the user is inconvenienced every time he must set up or collapse the table. In certain prior art designs, similar geometrical members are pivotally interconnected so as to form a round tabletop. Generally, linkage members are employed to allow the proper relative motion of the tabletop members to form a substantially round tabletop. The complexity of the structure that attends such prior art designs renders the structure cumbersome to use and heavy to transport. Accordingly, the principal purpose of convenience, to which this type of invention is directed, is lost.

SUMMARY OF THE INVENTION

The present invention is an improvement over the prior art inasmuch as it comprises pie-shaped members that are interconnected in a manner allowing rapid interleaving collapse or rapid expansion of the members relative to one another until a round tabletop is formed. A minimum of hardware is employed to interconnect the pie-shaped members. By analogy, when the pie-shaped members of the present invention are collapsed, they resemble a collapsed hand fan. When one desires to open the tabletop, the members are fanned out until the confronting edges of adjacent pie-shaped members abut one another.

Besides achieving simplification in a tabletop structure, the present invention includes a container or receptacle which hingedly mounts the tabletop members. Thus, when the tabletop is not in use, and is to be stored, the collapsed tabletop is rotated downwardly for placement into the container. This results in an extremely neat and compact package. The reverse procedure is followed when the collapsed structure is to be erected. Simple leg members are connected to the container so as to maintain an erected tabletop in a stable position.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIG. 1 is a perspective view illustrating a fully erected table in accordance with the present invention;

FIG. 2 is a perspective view illustrating a collapsed tabletop as received within a storage container which forms an integral part of the present invention;

FIG. 3 is a perspective illustration depicting removal of a collapsed tabletop from the container;

FIG. 4 is a bottom plan view illustrating the interconnected pie-shaped members constituting the tabletop;

FIG. 5 is a partial sectional view illustrating the connection of tabletop members to a central support;

FIG. 6 is a partial sectional view illustrating a connection between end members of the tabletop that are rotated into confronting abutting relation with each other thereby completing a circular tabletop;

FIG. 7 is a partial sectional view taken along a plane passing through section line 7—7 of FIG. 5;

FIG. 8 is a perspective view of the central support that supports the tabletop;

FIG. 9 is a partial sectional view taken along a plane passing through section line 9—9 of FIG. 5;

FIG. 10 is an exploded view illustrating the components of the central support structure shown in FIG. 8; and

FIG. 11 is a sectional view taken along a plane passing through section line 11—11 in FIG. 1.

Referring to the drawings and more particularly FIG. 1, reference numeral 10 generally illustrates the composite of components forming the present invention. More particularly, the present table structure includes a round tabletop 12 comprising sector-shaped segments 14 that are positioned in edge-to-edge abutting relationship like the pieces of a sliced pie. The tabletop members can be collapsed relative to one another in the same manner as a hand-held fan. The collapsed state of the tabletop is illustrated in FIG. 3.

A particular advantage of the present invention resides in the utilization of a receptacle or container 16 that is particularly adapted to hingedly mount the segments 14 of the tabletop when the latter are in the collapsed condition illustrated in FIG. 3. Accordingly, for storage of the table, the sector-shaped segments 14 are collapsed and the resultant collapsed assembly is pivotally rotated until the assembly can be lowered into compartment 16. The reverse procedure is followed when the table is to be erected. As illustrated in FIG. 1, when the table is to be erected, a leg assembly 18 is mounted to the container 16 thereby stabilizing the entire structure. It will be observed that the dual members of the leg assembly 18 in conjunction with the base of container 16 forms a tripod-type support for the tabletop which generally has its center in vertical alignment with the point of intersection between the members of leg assembly 18 and the base of container 16.

Referring to FIG. 3, the structure of the tabletop is illustrated in more detail. As will be observed from the figure, the arcuate portion of each sector-shaped segment 14 has a downwardly turned flange 20 that is also indicated in FIG. 1. A vertical support assembly 25 is illustrated in FIG. 10. The purpose of this support is to centrally mount the fanned-out segments 14 of the tabletop as illustrated in FIG. 1. As will be noted from FIG. 10, a tubular element 24 is positioned at the upper end of the assembly 25. FIG. 3 illustrates the cantilevered mounting of a flexible member 26 attached at one end thereof to the tubular element 24. In the preferred embodiment of the present invention, the member 26 is characterized as a link chain or other suitable construction that will enable the member 26 to be wrapped around the periphery of tubular element 24. In operation of the device, the member 26 serves as a carrier having spaced openings therein for receiving

pins 28 that extend vertically downwardly from the apices of the horizontally disposed segments 14. The connection between each pin 28 and a mating opening in the member 26 effects a pivotal connection. However, this connection must be sufficiently loose connection to allow the pivot to slide, or float vertically with respect to the member 26 during collapse or expansion of the segments 14. This arrangement is necessary inasmuch as each segment 14 has a particular thickness, and when the segments are collapsed together, the individual thicknesses build up requiring each overlying segment to be positioned vertically above an adjacent lower segment. The pins 28 must also be free to slide downwardly with respect to member 26 because the individual segments 14 must lie in coplanar abutting relationship when the tabletop is erected as illustrated in FIG. 1.

The underside of a fully erected tabletop is illustrated in FIG. 4. As will be noted FIG. 4, a slide assembly generally illustrated by reference numeral 30 is designed to maintain the segments 14 in edgewise abutting relationship when the tabletop is opened. The assembly 30 includes a bracket 32 that is suitably attached to a radially extending wedge-shaped flange 34 plane depending from segment 14 of the tabletop. A U-shaped element 36 is suitably secured to the bracket 32. A clevis 38 is positioned on the opposite side of member 34. Clevis 38 pivotally mounts a first end of rod 40, the second end being slidably received within element 36. The length of each element 36 is designed to effect identical relative disposition of a corresponding rod 40 when the sector-shaped segments are expanded. Otherwise stated, rod members 40 act as mechanical limit stops to insure that segments 14 become finally positioned in edge-to-edge abutting relationship as seen in FIG. 1. When the sector-shaped segments 14 are fully expanded, it becomes necessary to connect the end positioned segments together. In order to achieve this, a simple latch mechanism 42 such as shown in FIG. 6 can be used. As illustrated in FIG. 6, a pivotally connected dog-shaped latch 42 engages the downturned flange 20. The position of the latching mechanism 46 relative to the entire tabletop structure is indicated by reference numeral 46 in FIG. 4.

Referring to FIG. 10, the central support 25 for the tabletop is seen in detail. The previously mentioned tubular element 24 has an annular washer-like element 50 mounted in outwardly projecting relationship to the tubular element 24. A hinge member 52 extends vertically downwardly from the annular element 50. A second tubular member 54 is seated underneath the annular element 50 and in coaxial spaced relationship to the tubular element 24. A longitudinally oriented slot 56 is formed in second tubular member 54. A second slot 58 perpendicularly communicates with the first-mentioned slot 56. As clearly indicated at W in FIGS. 8 and 9, second tubular member 54 is suitably attached to the container 16 by means such as welding, or the like. FIG. 8 further illustrates the relationship between the annular member 50 and the top end of the second tubular member 54, namely, the hinge element 52 separates the confronting surfaces of annular element 50 and tubular member 54. A third tubular member 60 having a projection 62 extending perpendicularly therefrom is normally positioned concentrically within the second tubular member 54. The purpose of the third tubular member 60 will be explained hereinafter. A fourth tubular member 64 is disposed in telescoping relationship with the second tubular member 54, with the third tubular member 60 being concentrically enclosed within the fourth tubular member 64. A second hinge element 66 having a hinge pin 65 extends upwardly from the upper end of the fourth tubular member 64. A rectangular slot 68 is longitudinally formed in the fourth tubular member 64. This slot is formed within the body of the tubular member 64 and is positioned in registry with the previously mentioned slot 56 in tubular member 54. As will be appreciated by viewing FIGS. 3, 8 and 10, when projection 62 on the tubular member 60 (which extends outwardly from slot 68) is moved upwardly and at right angles to be seated in slot 58, the hinge made up from elements 52, 65 and 66 is prevented from moving. Thus, the sector-shaped segments 14 will maintain a horizontal position in either their open state (FIG. 1) or their closed state (FIG. 3). However, when the projection 62 is moved out of slot 58 and into slot 56, the tubular member 60 may be moved downwardly so that it becomes free of the second tubular member 54. When this occurs, the tubular element 24 is free to pivot with respect to the tubular member 64. Thus, when the tabletop is closed as shown in FIG. 3, it is possible to slide the interleaved segments 14 into container 16 by rotating the overlying segments to a vertical position by hinging action. A reversed operation is followed when the tabletop is to be assembled. A frusto-conical member 70 is suitably attached to the inner surface of the container base and serves to engage the lower open end of tubular member 64 thereby seating the lower end of this tubular member in place within the container.

A specially designed cover for container 16 is indicated in FIGS. 1, 2, 3 and 11 by reference numeral 72. Essentially, the cover conforms to the side walls of the container and as shown in FIG. 11 has two leg members 74 and 76 connected thereto by means of respective hinges 78 and 80. As will be noted, each leg is characterized as a right-angle member having a central triangular body which normally abuts a corresponding lateral wall of container 16. A shortened perpendicularly offset portion of each leg has a hinge (78, 80) mounted thereto which allows the leg to be hingedly mounted to the cover 72. Spaced slots 82 and 84 as shown in FIG. 3 are respectively formed along the corner of each leg (74, 76). These slots enable the legs which intimately engage the cover during non-use to be rotated outwardly until they assume the crossed relationship illustrated in FIG. 1 and indicated by reference numeral 86. As shown in FIG. 11, the right-angle corners of the legs mesh with each other in a dovetail-type relationship. Where these corners mesh there is sufficient clearance to allow insertion of a pin 90 vertically therethrough to prevent inadvertent collapsing of the legs.

As illustrated in FIGS. 5 and 7, it is desirable to stabilize the segments 14 with respect to the central support 25. In order to achieve this, tangential tongues 92 are formed from the radial flanges 34, tongues 92 tangentially ride against the tubular element 24.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous

modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.

What is claimed as new is as follows:

1. A collapsible table comprising:
interleaved members that are interconnected to form a flat tabletop when expanded,
a storage container for receiving the interleaved members when they are collapsed,
means pivotally connecting said interleaved members to said container for effecting displacement of collapsed interleaved members into said container,
a first tubular means supporting said interleaved members, said first tubular means comprising hinge means,
a second tubular means fixedly mounted in said container, said second tubular means having a first slotted section disposed along its longitudinal axis and a second slotted section communicating with said first slotted section and disposed perpendicularly thereto,
a third tubular section comprising a projection on its periphery, and
a fourth tubular means fixedly mounted within said container, said fourth tubular means having a slotted section and a hinge means, said hinge coacting with the hinge means of said first tubular section, said third tubular section telescopically mounted within said fourth tubular means with said projection of said third tubular means engaging said slotted sections of said second and fourth tubular means, whereby said interleaved members may be compactly collapsed into said container for storage.

2. A collapsible table structure, comprising, in combination:
a. interleaved segments having apices and slidably disposed relative to each other,
b. central table support,
c. a flexible member interconnecting the apices of said segments and permitting said segments to fan out in a common plane to form a tabletop and to collapse upon each other to form a compact assembly, said flexible member being cantilever mounted at one end to said central table support and being arranged to wrap around said support and locate said apices at points peripherally spaced around said support, and
d. means provided on said segments for floatingly connecting same to said flexible member.

3. A structure as defined in claim 2, further including means for angularly displacing said segments about a point perpendicular to said common plane for storing said compact assembly.

4. The structure of claim 2 comprising:
radial flange means on said segments, said radial flange means supporting collapsible retaining and support means between said sector-shaped segments for maintaining said interleaved means in abutting relationship with respect to each other.

5. The structure of claim 4 comprising:
means formed from said radial flange means for stabilizing said sector-shaped segments against said central table support.

6. The structure of claim 2 comprising:
means for maintaining the first and last of said segments in abutting position.

7. The structure of claim 3 comprising:
a container and hinge means connected between said flexible member and said container for effecting displacement of said interleaved segments into a container.

8. The structure of claim 7 wherein said container serves as a base support for the tabletop and further comprises means mounted to said container for maintaining the tabletop in an erect stable condition.

9. The structure of claim 8 comprising:
leg means mounted to said container, and means connected to said leg means for preventing the collapsing of said leg means.

* * * * *