March 23, 1965 G. T. BROWN 3,174,796

FOLDABLE TABLE-SEAT COMBINATION

Filed Sept. 11, 1963 3 Sheets-Sheet 1

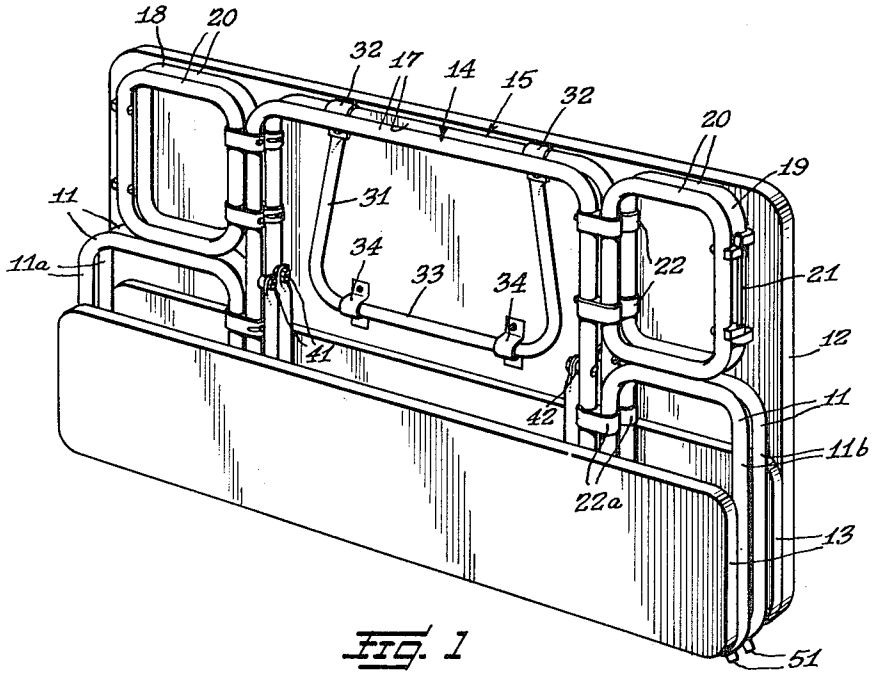


Fig. 1

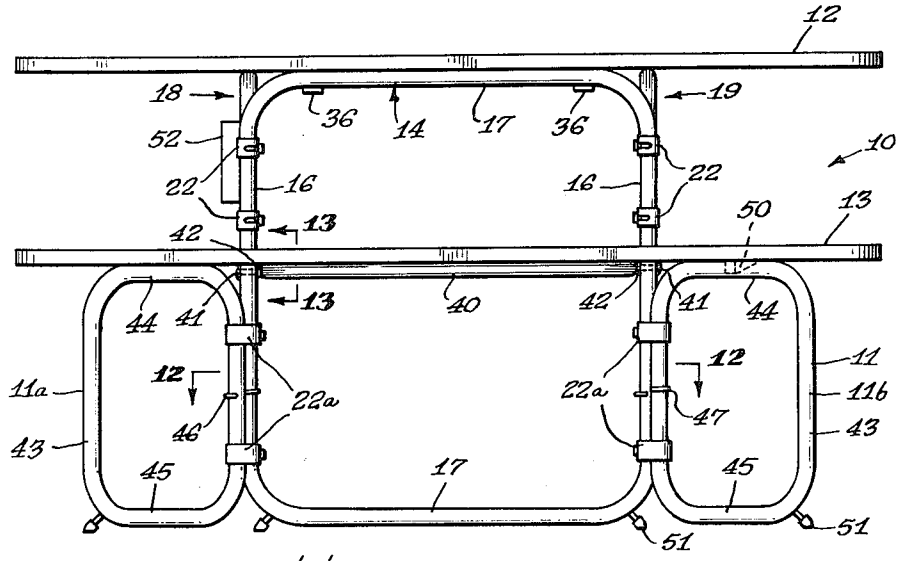


Fig. 2

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FOLDABLE TABLE-SEAT COMBINATION

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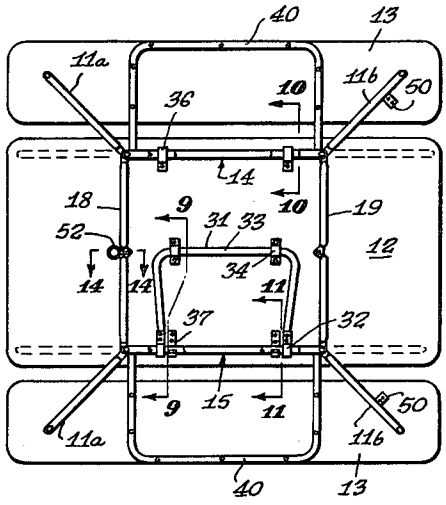
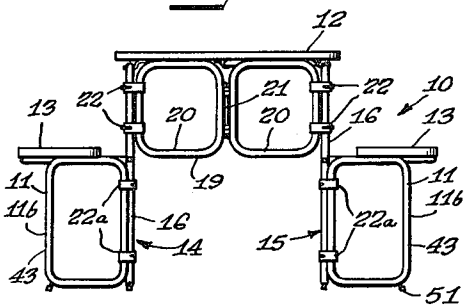


Fig. 3

Fig. 4



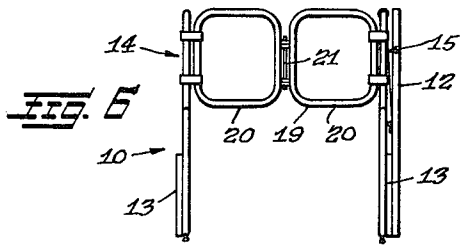


Fig. 6

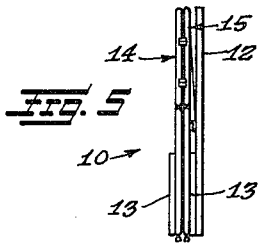


Fig. 5

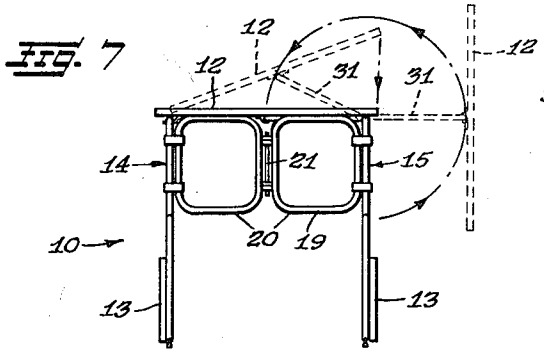


Fig. 7

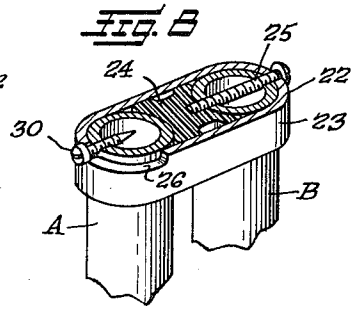


Fig. 8

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FOLDABLE TABLE-SEAT COMBINATION

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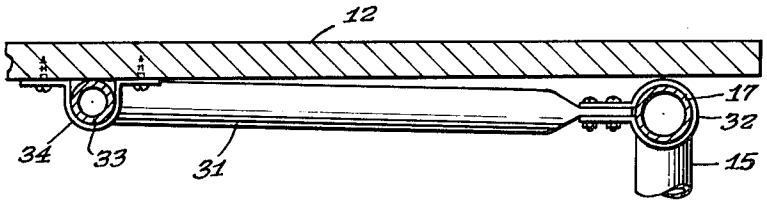


Fig. 9

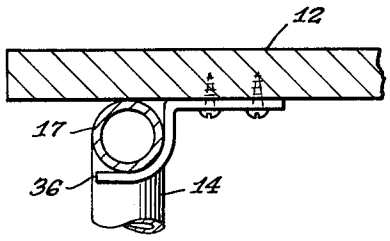


Fig. 10

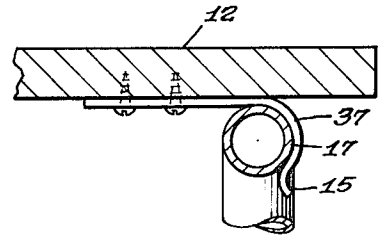


Fig. 11

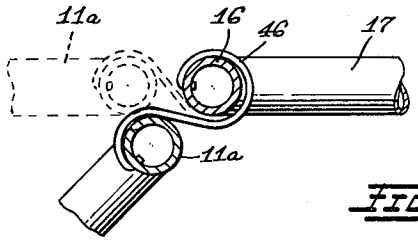
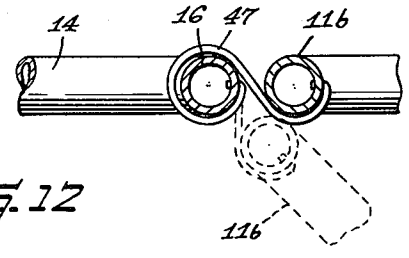


Fig. 12



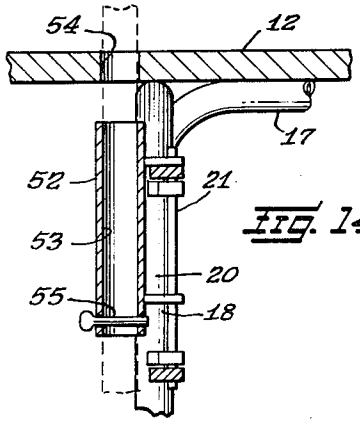


Fig. 14

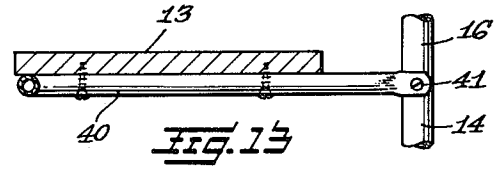


Fig. 13

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United States Patent Office 3,174,796 Patented Mar. 23, 1965

3,174,796

FOLDABLE TABLE-SEAT COMBINATION

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Filed Sept. 11, 1963, Ser. No. 308,199
5 Claims. (Cl. 297—159)

My invention relates generally to table structures and more particularly to an improved structure for a foldable and portable table-seat combination.

The major deficiencies of the prior art in foldable table-seat combinations to which my invention relates, reside chiefly in a lack of simplicity and economy of construction and a lack of simplicity and ease of operation. Many such articles now on the market require the assembly of many different parts and are therefore expensive to manufacture. To the best of my knowledge, all of them are constructed so that the table can never be erected independently of the seats, which limits their usefulness in many situations. Furthermore, most of these structures include erecting and bracing members which are actuable only by stooping down and reaching under the table, while the erection of some presents overall a mechanical problem baffling to many laymen.

Accordingly, it is an object of my invention to provide a table-seat combination which may be folded to neat and compact form for carrying or transporting.

Another object of my invention is the provision of such a unit which may be erected and folded in a very short time with a minimum of stooping and other physical effort required of the operator.

Another object of my invention is the provision of such a unit wherein the seats may be operated independently of the table-top and its supporting means and need not be set up unless specifically desired.

Still another object of my invention is the provision of such a unit wherein the seats and their supports add to the overall stability of the unit when in use.

Another object of my invention is the provision of a basic foldable structure which will also serve as an elevated platform and step for uses other than that normally associated with a table and seat.

Another object of my invention is the provision of such a structure adaptable for being set up in multiples end to end, side by side, or both, with the table-top or platform flush together.

Still another object of my invention is the provision of such a structure wherein the structural components are visually attractive in their combintion, either in erected or folded condition.

Briefly, these and other objects to become apparent are accomplished by a structure including a pair of side members connected by foldable end members which support a table connected to one of the side members by a novel swingover hinge arrangement. To this basic structure are added seats and seat supports pivoted to the side members for swinging outward from the basic support structure. When in condition of storage all major components are parallel against the table-top. Erection is accomplished by first unfolding the table support and rotating the table-top on the swingover hinge up and over to a horizontal position on top of the support where it is held by a latching means. Following this, if he so chooses the operator may rotate one or both of the seats upward and engage seat supporting members thereunder, an operation which may be made semiautomatic and quite convenient by an optional arrangement of torsion springs.

A more detailed understanding of the constrution and operation of my invention may be had by referring to the following detailed description, appended claims and attached drawing in which:

FIG. 1 is a perspective view of a preferred embodiment of my invention in folded, storage condition;

FIG. 2 is a side elevation view of the same in erected condition;

FIG. 3 is a bottom plan view of the same;

FIG. 4 is an end elevation of the same;

FIG. 5 is an end elevation view of the same in folded storage condition;

FIG. 6 is an end elevation view of the same after the first step of erection;

FIG. 7 is an end elevation view of the same showing the rotation of the table-top to the erected position;

FIG. 8 is a cutaway perspective view of a preferred hinge construction used in my invention;

FIG. 9 is an enlarged fragmentary section view taken on line 9—9 of FIG. 3;

FIG. 10 is an enlarged fragmentary section view taken on line 10—10 of FIG. 3;

FIG. 11 is an enlarged fragmentary section view taken on line 11—11 of FIG. 3;

FIG. 12 is an enlarged fragmentary section view taken on line 12—12 of FIG. 2;

FIG. 13 is an enlarged section view taken on line 13—13 of FIG. 2; and

FIG. 14 is an enlarged fragmentary section view taken on line 14—14 of FIG. 3.

Although in the description to follow I have set forth my invention in terms of a table-seat combination I do not intend thereby to limit its scope to this function alone. It will become obvious to anyone skilled in the art that the basic structure is adaptable to a number of uses, some of which will be mentioned below.

Referring now to the drawing, a preferred embodiment of my invention is shown as a foldable table-seat combination for picnics, patio uses of the like, comprising, generally, a basic support structure 10, seat supports 11, a table-top 12, and a pair of seats 13.

Referring now more particularly to FIGS. 2 and 4, basic support 10 is seen to comprise a pair of rigid, bent tubular side members 14 and 15, each having leg portions 16 and upper and lower interconnecting portions 17. Side members 14, 15 are connected at their ends by foldable end members 18 and 19, each including a pair of rigid bent tubular components 20 pivotally interconnected an adjacent sides by a hinge 21 and pivotally connected at their outer sides to leg portions 16 of opposing side members 14, 15 by controlled-angle hinges 22. Hinges 22 are designed to allow rotation of components 20 with respect to side members 14, 15 through an arc of approximately 90° extending between a storage position of alignment (as shown in FIG. 1) inward to a supporting position of right angles (as shown in FIG. 3).

Since the same basic hinge 22 is used to connect nearly all of the major supporting components of my invention, the same reference character will be used hereinafter to designate the hinge structure now to be described in detail. As best seen in FIG. 8, hinge 22 includes a band 23 formed to wrap around a stationary tubular segment A and a pivoted tubular segment B, and a spacer 24. Segment A, so designated for purposes of illustration, corresponds to a segment of one of the leg portions 16 of side members 14, 15, and segment B corresponds to a segment of one of the members to be pivoted thereon. Segment B is rigidly secured within band 23 by a screw 25 or other suitable means such as welding. Band 23 with segment B secured therein is pivotable on segment A. Band 23 is provided with a recess 26 through which a screw 30 or other suitable stop is inserted and secured to segment A, recess 26 being designed to limit pivoting on the hinge to an angle of 90°. This angle may be modified

by increasing or decreasing the arc described by recess 26 as desired. Direction of pivoting may be reversed by simply turning band 23 over so that recess 26 is on the opposite side from that shown in FIG. 8. A hinge differing from hinge 22 as just described only in the angle of pivoting will hereinafter be designated as 22*a*.

Table-top 12 is pivotally connected to side member 15 by a U-shaped, bent tubular swingover hinge member 31 having its free ends pivotally connected to upper interconnecting portion 17 by a wrap-around hinge 32 and having the intermediate portion 33 of the U-shape pivotally connected to the underside of table-top 12 by straps 34 secured thereto by screws. In the embodiment shown, the table-top 12 has been contsructed having a width which is approximately equal to the height of side members 14 and 15 to allow greater neatness and compactness of storage. This being the case, swingover hinge 31, whose height is almost half that of the side member, has been connected near the longitudinal centerline of table-top 12 thereby allowing the table-top to rest side by side with side member 15 when it is rotated downward to the storage position. Where this kind of neatness of symmetry in storage is not a requirement these relationships may be altered as desired. Referring now to FIGS. 10 and 11, a pair of hooks 36 attached to the underside of table-top 12 are positioned to grasp upper interconnecting portion 17 of side member 14 during the terminal phase of rotation of the table-top to the horizontal. A pair of resilient latches 37 mounted opposite thereform on the underside of the table-top snap into engagement with upper interconnecting portion 17 of side member 15 when that side of the table is pressed downward following engagement of the hooks 36. With the side members 14 and 15 thus firmly held, a rigid basic structure is achieved.

Seats 13 are each attached to leg portions 16 as seen in FIGS. 2 and 13 by a U-shaped bent tubular member 40 having terminal portions thereof extending from under the seat and pivotally secured to leg portion 16 by a bolt and nut 41 and spaced somewhat therefrom for free rotation by a spacer 42. Seats 13 are designed to be freely rotatable outward of side members 14, 15, and when unsupported underneath will gravitate downward to a vertical position suitable for storage.

Seat supports 11 are generally rectangular and comprise bent tubular components 11*a* and 11*b* each having vertical portions 43 and upper and lower horizontal portions 44 and 45 respectively, and are each pivotally connected to lower parts of leg portions 16 by a pair of hinges 22*a* so that lower horizontal portion 45 is on a level with the bottom of the basic support 10. Seat supports 11 are limited by hinge 22*a* to an angle of pivot of approximately 55° outward from a storage position of alignment with side members 14 and 15. This particular angle has been found to provide a sufficiently broad base of support to the seats preventing tipping of the structure when a person sits near the end of a seat, as well as providing further buttressing to the basic support 10.

As may be seen in FIGS. 2, 3 and 12, each pair of seat support components 11*a* and 11*b* are spring urged in opposite directions with respect to one of the side members 14 and 15. This is accomplished by torsion springs 46 and 47 each having one end connected to a seat support and the other end connected to a leg portion 16 of one of the side members. Springs 46 urge seat supports 11*a* outward from alignment with side members 14 and 15 at all times, and are counteracted by the weight of seats 13 when the seats are in vertical storage condition. Lifting the seats, which may be done from either end, allows spring 46 to swing the seat supports 11*a* outward until halted by the screw and slot arrangement of hinge 22*a*. Seats 13 are then lowered thereon. The other seat supports 11*b* at the opposite of the unit, held in storage condition by springs 47 are then each manually urged outward past a wedge-shaped detent 50 extending downward from the underside of the seats. The weight of the seat thereafter holds the detent 50 in spring counteracting engagement with upper horizontal portion 44 of seat support 11*b* until the seat is once again lifted. By this arrangement, both seats 13 and their supports 11 may be erected from the end of the table having the seat supports 11*b* urged inwardly, thus eliminating individual manual swinging of the four seat supports 11. Likewise folding may be accomplished from the end having supports 11*a* urged outwardly. This feature increases in usefulness as the overall dimensions of the unit are increased since it saves steps and eliminates much stooping in erection and folding of the unit. Of course the use of torsion springs is optional, and the seat supports may be manually moved at both ends in the absence of springs.

Diagonally and downwardly extending feet 51 have been attached near the lower bends in tubular side members 14 and 15 and the outer lower bend in seat supports 11. Feet 51 provide a more positive grip with the ground to prevent sliding, and their positioning at the corners counteracts any tendency the unit may have been under certain conditions to roll on the rounded corners.

An optional feature which may be included with my invention is an umbrella holder 52 which may be clearly seen in FIG. 14 as being pivotally connected to hinge 21 and comprising tubular socket 53 aligned with hole 54 in table-top 12 when the table-top and basic support 10 are erected. A pin 55 insertable through holes in socket 53 engages corresponding holes in an umbrella staff (indicated in broken lines) to adjust the umbrella at various selectable heights.

To summarize the operation of my invention, beginning with the unit in folded, storage conditions as seen in FIGS. 1 and 5, the operator first unfolds basic support 10 by moving side member 14 laterally outward to the position shown in FIG. 6. This is done most easily from the side adjacent side member 15. Table-top 12 is then grasped and rotated up and over on swingover hinge 31 (see FIG. 7), bringing the side of the table-top which is adjacent side member 14 into slidable engagement with the top of upper interconnecting portion 17 thereof, thereby positioning hooks 36 for engagement. Having engaged the hooks by further rotation of table-top 12 downward, lateral pressure is then exerted by the operator to assure alignment of components 20 and hence maximum spaced apart relationship between side members 14 and 15. Then the side of the table-top adjacent to side member 15 is pressed downward to engage latches 37. The arrangement of the swingover hinge 31 enables the operator to do all of this without stooping. Furthermore, during the final half of the rotational cycle much of the weight of the table-top is supported by the swingover hinge and basic support 10.

With table-top 12 and basic support 10 in erected condition, the operator may, if he so elects, proceed with erecting either or both seats. Stationing himself near end member 19 he then rotates seats 13 upward and thereby allows seat supports 11*a* at the opposite end of the table to be urged outwardly to a 55° angle by springs 46. After lowering the seats to a horizontal, supported position thereon he then grasps the other pair of seat supports 11*b* and urges them outwardly against the pressure of springs 47 until the supports are engaged and held by detent 50. Optional umbrella holder 52 may be employed at any time after erection of basic support 10 and table-top 12.

Folding of the unit is accomplished by first raising seats 13 sufficiently to disengage detents 50 and allowing inwardly urged seat supports 11*b* to be swung into storage condition. Outwardly urged seat supports 11*a* are then manually swung into the storage condition and seats 13 are allowed to gravitate downwardly to storage condition. Table-top 12 is then lifted slightly to disengage latches 37 and is rotated up and over to a vertical storage condition close to side member 15. Side member 14 is then moved laterally with seat 13 into adjacent parallel relationship with the other members, end member components 20 be-

ing folded outwardly into longitudinally extending alignment with side members 14 and 15 to achieve the neatly folded storage condition shown best in FIG. 1. The unit may be made self-supporting in this condition by slightly extending side member 14 laterally to broaden the base of support. The unit easily may be lifted and carried by grasping the two upper interconnecting portions 17 of side members 14 and 15 in one hand, preferably with table-top 12 nearest the body. The rounded corners and compact storage condition facilitate initial packaging of the unit in a cardboard carton for retailing, and subsequent unpackaging and repackaging of the unit by those desiring to preserve the unit through re-use of the original carton.

The bent tubular components of the preferred embodiment are fabricated from aluminum tubing or other suitably light and relatively inexpensive material. The use of rectangular components having rounded corners of equal radius in most of the normally visible parts of the supporting structure provides a repeat pattern of visually similar shapes which enhances the appearance and hence, the salability, of the unit. This is a preferred embodiment, however, and my invention is not to be limited in scope to these particular materials and configurations.

Some of the applications of my basic structure as described above, in addition to that of a table-seat combination would include, for example, a reduction in scale to children's play furniture; portable platforms with one or more steps; and a two level, foldable scaffold for painters, plasterers, bricklayers, etc. By erecting only the table-top and basic support and leaving the seats in vertical condition, multiple units may be erected and placed end to end and/or side by side to form a table or platform having an unbroken surface of any length and width desired.

I have described a preferred embodiment of my invention which has been shown by actual use to accomplish all of the objects herein stated for it as well as others unmentioned. Although I have described my invention in some detail it is understood that this is only by way of example and that numerous obvious changes may be resorted to without departing from the spirit and scope of my invention as hereinafter claimed.

I claim as my invention:

1. A portable table-seat combination comprising:

supporting means including a pair of side members having vertical leg portions and upper and lower horizontal interconnecting portions;

a pair of foldable end members at each end of said side members pivotally interconnected and pivotally connected to leg portions of opposing side members;

a pair of seat supporting members each pivotally connected to one of said leg portions of one of said side members, each of said members being rectangular, said pivotal connections between said members each comprising one or more hinge members each including a band formed to wrap around first and second tubular segments, a spacer held firmly thereby between said tubular segments, said band being rigidly secured to said first tubular segment and rotatable about said second tubular segment;

means for limiting horizontal rotation of said end members with respect to said side members to an angle of approximately 90° extending between a storage position of longitudinally extending alignment to a supporting position of right angles therebetween, and for limiting rotation of said seat supporting members with respect to said side members to an angle of approximately 55° extending between a storage position of longitudinally extending alignment to a supporting position diagonally outward therefrom;

a table-top pivotally connected to the upper interconnecting portion of one of said side members and adapted to be supported thereby;

and a seat pivotally connected to the vertical leg portions of one of said side members and adapted to be supported by said seat supporting members,

said table-top, seat and members being adapted for folding into parallel, adjacent relationship with one another when not in use.

2. The combination of claim 1 wherein said means for limiting rotation between a selected pair of tubular segments comprises:

a pin projecting from said second tubular segment through a radial slot in said band, the ends of said slot being adapted to engage said pin for limiting rotation of said first tubular segment as desired.

3. The combination of claim 2 wherein the pivotal connection of said table-top to said supporting means comprises:

a bent tubular member of U-shaped configuration having its free ends pivotally connected to the upper interconnecting portion of one of said side members and having the intermediate component thereof pivotally connected in a parallel axis to the underside of said table-top near the longitudinal centerline.

4. The combination of claim 3 wherein said pivotal connection between said seat and said side member comprises:

a bent tubular member of U-shaped configuration having said seat rigidly secured thereon and having leg components thereof extending beyond one side of said seat and having the free ends thereof each pivotally secured on a horizontal axis to one of the leg portions of one of said side members.

5. The combination of claim 4, further including means for normally urging said seat supporting members outward from a storage position of alignment with respective side members, comprising a torsion spring connected between said first and second tubular segments.

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