LIGHTWEIGHT FOLDABLE FURNITURE PIECE AND METHOD OF CONSTRUCTING SAME

Inventor: Robert C. Geschwender, Lincoln, Nebr.
Assignee: Lancaster Research and Development Corporation, Lincoln, Nebr.

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Primary Examiner—Paul R. Gilliam
Attorney, Agent, or Firm—Koenig, Senniger, Powers and Leavitt

ABSTRACT
A foldable table, stand, bar or like piece of domestic furniture is disclosed which is constructed of a composite sheet material or a panel of easily fabricated material. The furniture piece is provided in ready-to-assemble kit form, and includes a top member and a foldable leg member. Joints are included in the leg member which allow the leg member to be folded into longitudinal and transverse legs without damage to the panel or sheet material comprising the leg member. The top is provided with bracing members which also retain the leg panels in their erected positions. A method of constructing the furniture piece kit is described.

3 Claims, 17 Drawing Figures
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BACKGROUND AND OBJECTS OF THE INVENTION

For some time, commercial demand has been felt for pieces of furniture such as tables, bars and the like which are light in weight, easily and compactly stored, inexpensive in initial cost, and disposable after one or a few uses. Numerous attempts to meet this commercial demand have been made. Some of these attempts have utilized reinforced paper or cardboard constructions, but many of these cardboard furniture pieces have proved to be of flimsy construction, and have been unable to support weight of any consequence. Some of these devices required the user to exercise extreme caution in order to avoid bumping the table or bar and causing it to topple over or collapse.

It is therefore the general object of this invention to provide a table, bar, stand, or like piece of furniture constructed of a composite or like material, which has relatively great rigidity and constructional solidity, which is capable of bearing relatively great weights, and which has an attractive and substantial-appearing surface.

It is another object of the invention to provide the described piece in a collapsed kit form, wherein the kit parts may be quickly and easily erected and joined in a solid and strong construction.

It is another object of the invention to provide the described furniture item in kit form wherein the kit components are light in weight, compact for easy storage, and inexpensive in initial cost.

Other objects and advantages of the invention will become apparent upon reading the following detailed description and upon reference to the drawings. Throughout the drawings, like reference numerals refer to like parts.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view showing a completely assembled typical furniture item here embodied as a stand or bar, constructed in accordance with the invention;

FIG. 2 is a side elevational view of a composite panel blank used to form the foldable leg member of the bar shown in FIG. 1 in its initial formative stages;

FIG. 3 is a sectional view taken substantially in the plane of line 3—3 of FIG. 2 and showing in further detail the internal construction of the foldable blank of FIG. 2;

FIG. 4 is a sectional view similar to FIG. 3 and showing the foldable leg member in a more finished stage;

FIG. 5 is a sectional view similar to FIG. 4 and showing the foldable leg member of the bar in its open position ready to accept the top member to form the bar shown in FIG. 1;

FIG. 6 is a perspective view showing further details of the construction of the foldable leg member as it appears in FIG. 5;

FIG. 7 is a top plan view of the top member of the bar;

FIG. 8 is a sectional view taken substantially in the plane of line 8—8 in FIG. 7 and showing in further detail the construction of the top member and the underlying support brace members;

FIG. 9 is a fragmentary side elevational view of the top member of the bar;

FIG. 10 is an exploded view showing the various parts comprising the bar;

FIG. 11 is a top plan view showing the various parts comprising the bar and, in phantom, the underlying braces and foldable leg member;

FIG. 12 is a sectional view taken substantially in the plane of line 12—12 in FIG. 11 and showing in further detail the construction of the top member, the top member braces and the foldable leg member;

FIG. 13 is a perspective view of another furniture piece constructed in accordance with the present invention, here appearing as a table or desk;

FIG. 14 is a top plan view of the table-like furniture piece of FIG. 13 showing the table top member and the underlying brace members.

FIG. 15 is an exploded view similar to FIG. 10 showing the various parts of a table comprising an alternated embodiment of the invention;

FIG. 16 is an exploded view similar to FIGS. 10 and 15 showing the various parts of another table comprising yet another embodiment of the invention; and

FIG. 17 is an exploded view similar to FIGS. 10, 15 and 16 showing the various parts of yet another table comprising still another embodiment of the invention.

DESCRIPTION

While the invention will be described in connection with a preferred embodiment and procedure, it will be understood that it is not intended to limit the invention to that embodiment and procedure. On the contrary, it is intended to cover all alternatives, modifications and equivalents as may be included within the spirit and scope of the invention.

Turning first to FIG. 1, there is shown a typical furniture piece constructed in accordance with the present invention which, as illustrated, takes the form of a small table or bar 20, or the like. In the present embodiment, the table or bar 20 includes a top member 21 and single continuous foldable leg member 22.

In accordance with the invention, lightweight and inexpensive initial cost is encouraged by constructing the top 21 and the leg member 22 of a composite material such as Kraft paper. As best seen in FIGS. 3-6, the construction employed in the invention includes a first substantially planar outer sheet 24 preferably of Kraft paper or the like. To enhance the substantial and solid appearance of the item, this outer sheet 24 may have an overlay of simulated wood, or other material. Alternatively, this outer surface 24 and the top member 21 may be finished in formica or other rigid material which is able to withstand the spills of liquids and the shocks of normal bumps, nicks, and scrapes.

Spaced at a substantial pre-determined distance from the first outer sheet 24 is a second substantially planar outer sheet 25 preferably formed of Kraft paper or the like. Since this second outer sheet 25 will be oriented on the interior of the finished bar when the leg fabrication is completed and the kit is put together to form the finished furniture item, the second surface 25 can, but need not be finished with any particular decorative-ness, if extreme low cost is desired.

Joining the first and second outer sheets 24 and 25 is an inner core 26, which may comprise Kraft paper honeycomb material, a plastic foam, or other known structure of enclosed cellular construction. It is only
necessary that the core 26 be able to withstand compressive and stretching action when the leg member 22 is folded to provide a spring corner as described below. To form a rigid and unified member, the inner core 26 is glued or otherwise secured to the first and second planar sheets 24 and 25.

In accordance with another aspect of the invention, the foldable leg member 22 is formed of a single continuous flat blank 32, as shown in FIGS. 2–6. Two panels 34 and 35 which will become the outer legs of the bar are dimensioned off at the transverse ends of the blank 32, and the first outer sheet 24 and core 26 are then severed at the intended transverse termination of these leg panels 34 and 35 along two substantially parallel cut lines 36 and 37. Care is taken to avoid severing the obverse or opposite second planar sheet 25 to permit the leg member blank 32 to be reversely bent back on itself at these cut lines 36 and 37.

In carrying out the invention, it is contemplated that the single, continuous leg panel 22 will be folded at joints into mutually perpendicular transverse and longitudinal legs without substantially damaging the component sheets 24, 25 and core 26. To this end, indentation scores 39 and 40 are formed in both the first and second planar sheets 24 and 25 at two locations as illustrated in FIGS. 3 and 4 inwardly of the transverse ends of the blank and the panels 34 and 35. The depth and extent of these scores 39 and 40 are sufficient to provide material in the respective outer sheets 24 and 25 to permit the blank and leg members to be bent at these joints through an angle of substantially 90° without damage to the outer sheets 24 and 25 or other parts of the bar. When the leg member 22 is subsequently bent to form the transverse legs 34 and 35 and an intermediate longitudinal leg 41, the outer scores 40 permit the associated surface 25 to expand, and the inner scores 39 permit the associated surface 24 and the adjacent material of the core 26 to be resiliently crushed or contracted, without damage to the adjacent parts of the member, as illustrated in FIGS. 5 and 6.

After severing and scoring, the leg panels 34 and 35 are reversely bent at the cut lines 36 and 37 about the second outer sheet 25 from the position illustrated in FIG. 3 to that illustrated in FIG. 4. Next, the mutually abutting portions of the second planar sheet 25 are permanently joined, as by glue or other fastening means, but only along those mutually abutting areas between the cut lines and the adjacent score lines, as may be envisioned from FIGS. 4–6. If desired, the interior of the severed blank 32 may be sealed off by an extruded cover 38 tape or other known device.

The finished leg member 22, in its kit form, appears in general aspect as illustrated in FIG. 4. When it is desired to erect or set up the bar, the leg members 34 and 35 are folded outwardly to an angle of substantially 90° to the 5, 6 panel or longitudinal leg 41, as illustrated in FIGS. 5, 6 and 10, and are joined thereto by inner transverse leg panels 34a and 35a. These inner leg panels 34a and 35a are affixed to the respective outer legs 34 and 35 along the transverse outer sheet 25, as described above, and to the longitudinal leg 41 by the foldable joints. It is a feature of the invention that the resiliency of the core 26 and the outer sheets 24 and 25 causes the 90° angle leg joints to exert a spring biasing force upon the folded legs tending to return them in the direction of the arrow in FIG. 5 to the unfolded position.

After erection of the leg member 22, the top member 21 is installed. To provide additional strength to the top member 22, one or more brace members 43 and 44 may be affixed to its underside. In the illustrated embodiment, the two brace members 43 and 44 are spaced apart, thereby forming a slot 45 of sufficient width to permit the longitudinal leg 41 to fit therebetween, as illustrated in FIG. 12.

It is a feature of the invention that additional structural strength is provided the bar 20 providing the interior brace member 43 with sufficient length and extent to cause the outer transverse leg panels 34 and 35 to abut the ends 48 and 49 of the brace 43 when the outer legs 34 and 35 are oriented in their top-supporting transverse positions.

A variety of bars, tables, and like furniture pieces may be constructed, in accordance with this invention. An alternate embodiment, a table 50, is illustrated in FIGS. 13–14. In this embodiment, a top 51 and two leg members 52 and 53 are provided. Each leg member 52 and 53 is provided with a longitudinal leg 54 and 55, respectively, of relatively short extent, by severing one of the outer sheets comprising the leg member and doubling back the leg member blank as described above. To seal off the interior of the now-exposed blank, tape or extrusion covers 39 may be attached to the severed and doubled back blank. Appropriate score lines are formed to permit the four transverse leg panels 58, 59, 60, and 61 to be bent through angles of 90° for erection of the table. The top member 51 is provided with various braces 64, 65, 66, and 67 to provide additional strength to the top member 51. Two braces 66 and 67 are positioned near the longitudinal ends of the top 51 to retain the two leg members in the desired supporting positions.

Yet other embodiments of the invention are shown in FIGS. 15–16. Inner panels 70 and 71 of leg members 72 can be formed of varied lengths and can be joined, as illustrated by any convenient means. By relatively spreading the end panels 74, 75, 76 and 77 a stable and strong table leg support structure can be formed. The end panels 74–77 are retained in their spread estate by triangular braces 80 and 81 joined to the underside of a top member 82.

As illustrated in FIG. 17, a Z-shaped configuration can be provided for a leg member 85 by forming two outer panels 86 and 87 which join an inner panel 88 at acute-angled joints. This configuration is retained, and strength added to the top member 89 by the illustrated braces 90.

The invention is claimed as follows:

1. A foldable table or other piece of foldable furniture, including at least one unitary foldable leg member constructed of a single panel of composite material and including first and second substantially planar outer sheets and an inner core of enclosed cellular construction secured to the first and second planar sheets, the leg member having at least one foldable resilient joint constituted by two opposed lines of score indentations formed respectively in the first and second outer sheets at predesignated locations in registry with one another, said inner core and outer sheets having a resiliency when so indented, said score indentations providing sufficient outer sheet material in the outer score to expand to a substantially continuous surface and in the inner score to be resiliently crushed without substantial damage to adjacent parts of the inner core as the panel.
is bent through a substantial angle to form the leg member, the foldable leg member thereby being provided with at least two leg panels oriented at an angle to one another yet joined continuously thereto by the foldable joint, the leg panels mutually exerting a spring-biasing force on one another tending to return them to the unfolded position, a top member, and at least one brace member affixed to the top member on the underside thereof and abuttingly engaged by the two leg panels thereby restraining them against the biasing force tending to return them to the unfolded position.

2. A foldable table as set forth in claim 1 wherein the panel core is formed of honeycomb material with the axes of the cells oriented perpendicularly to the planes of the outer sheets.

3. A foldable table as set forth in claim 1 wherein the panel core and top member all are formed of kraft paper honeycomb material.

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