United States Patent [19]

Barron

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[45] **Sept. 24, 1974**

[54] **COLLAPSIBLE DESK AND CHAIR**

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[73] Assignee: **Abe Hochhauser,** Queens, N.Y. ; a part interest

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[52] **U.S. Cl.** **312/195,** 108/115, 248/174, 297/440, 312/259

[51] **Int. Cl.** **A47b 41/00**

[58] **Field of Search** 312/195, 140.2, 259; 108/115; 297/442, 440; 248/174

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Primary Examiner—Paul R. Gilliam
Assistant Examiner—Darrell Marquette

[57] **ABSTRACT**

A collapsible desk and chair formed of paperboard, cardboard or the like. The desk is formed from a plurality of blanks which are secured together to provide a unitary construction. The connected blanks define a top member, a pair of side support members and an inner shelf member which can be folded together into a relatively flat configuration for storage, and which can be unfolded and erected to define a desk having a pivotable top member and inner and side shelves for storage. The chair is formed from a base member blank and a seat member blank which are secured together to provide a unitary construction, and a separate inner support member formed of a single blank. The seat member is pivotally connected to the base member, and the separate inner support member is foldable and receivable within the erected base member for the purpose of reinforcing it and is supported by connected foldable flaps on the lower portion of the base member.

6 Claims, 18 Drawing Figures

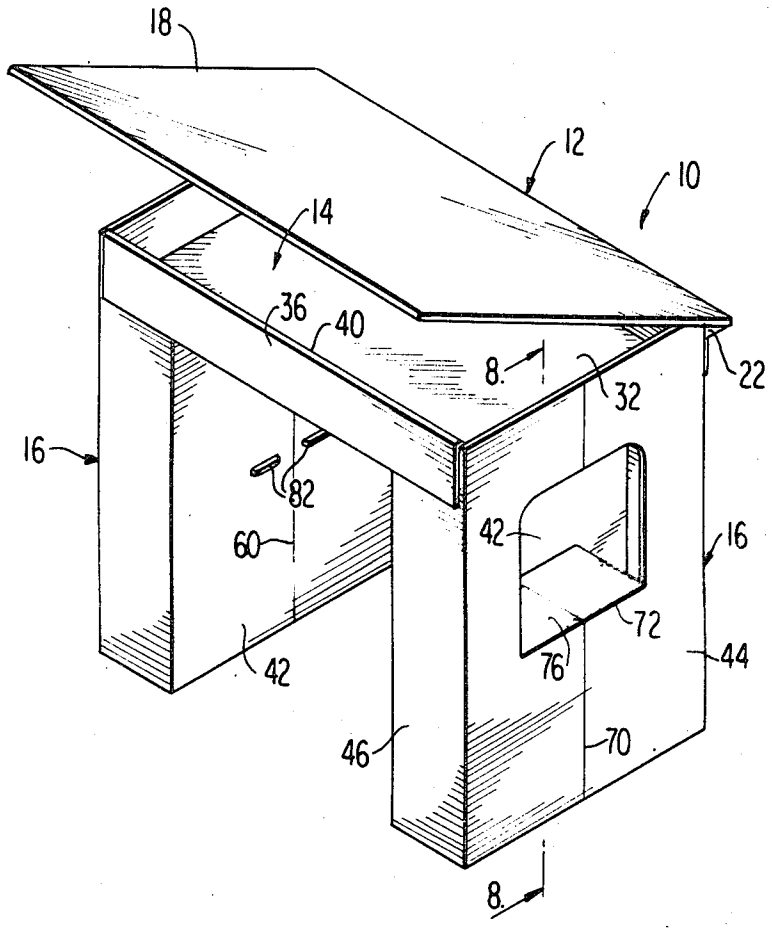


FIG 1

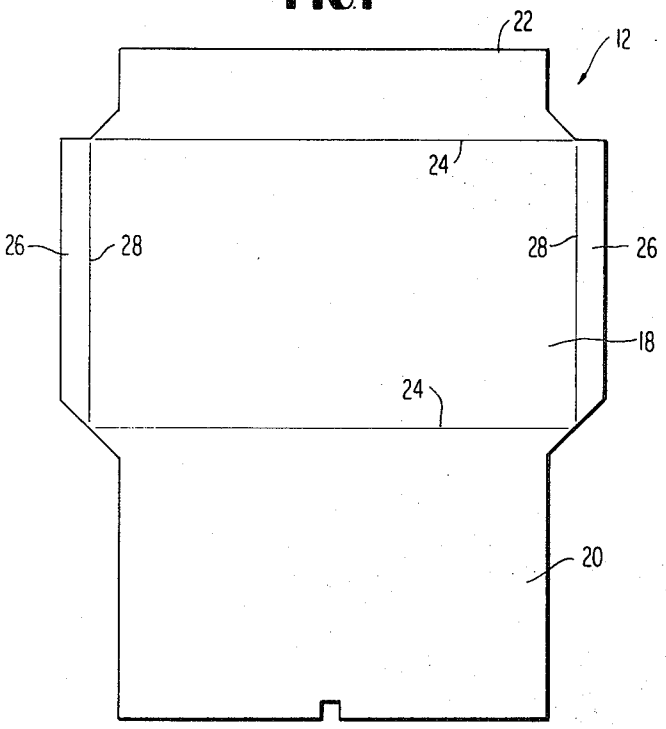


FIG 3

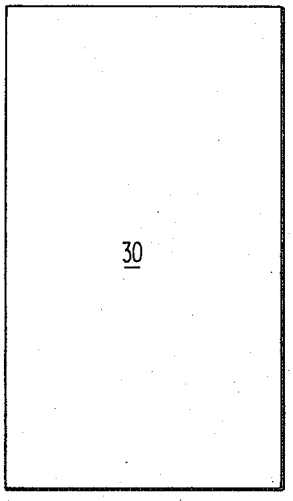


FIG 2

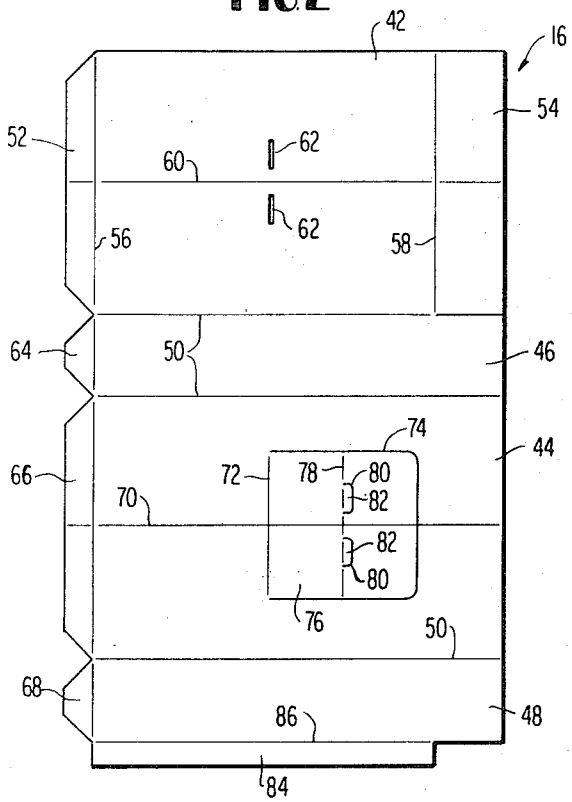


FIG 4

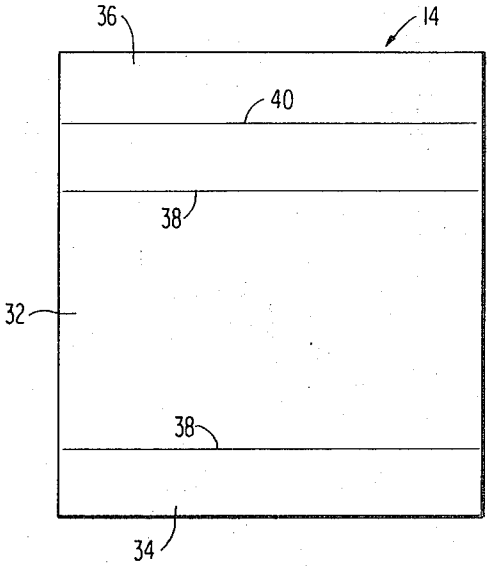


FIG. 5

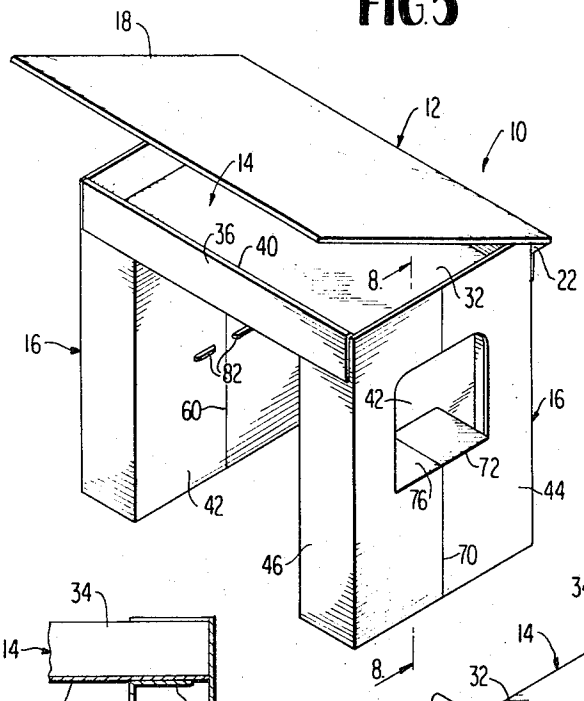
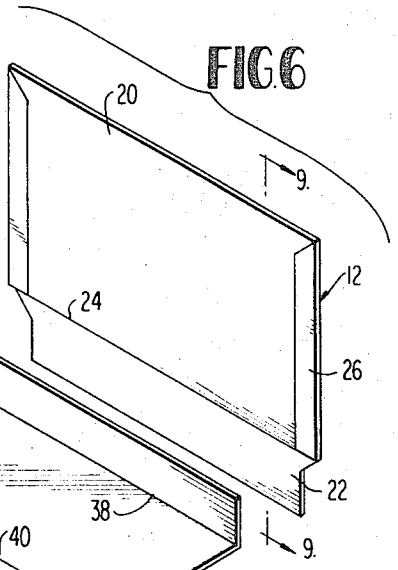
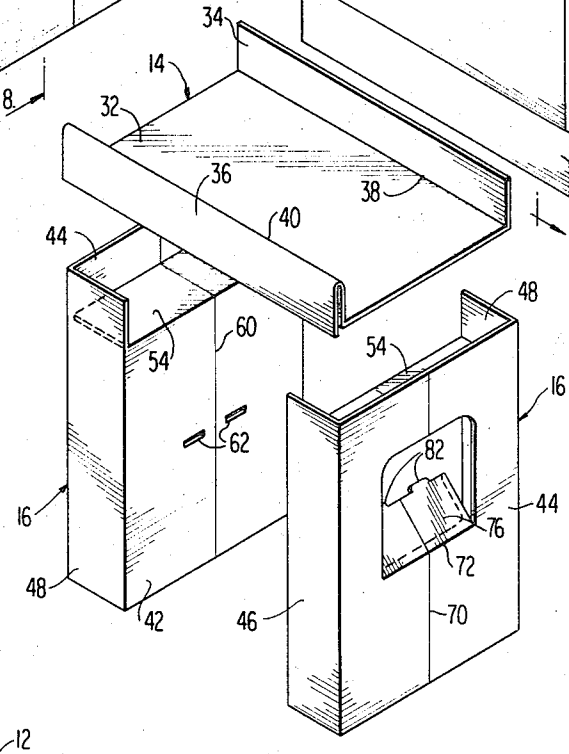


FIG. 6





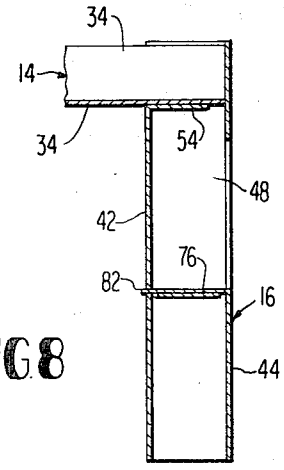


FIG. 8

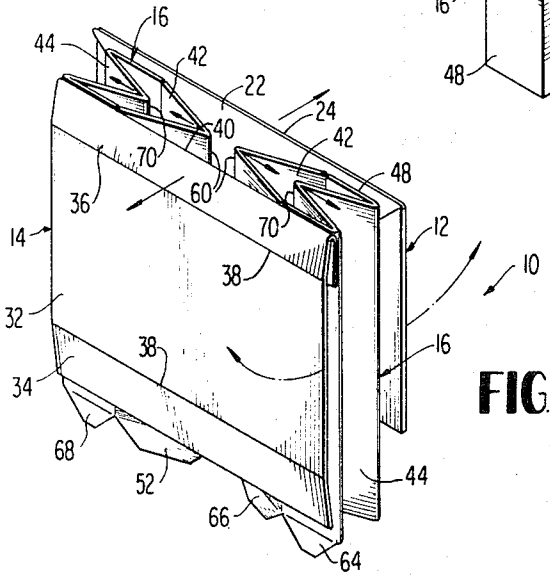


FIG. 7

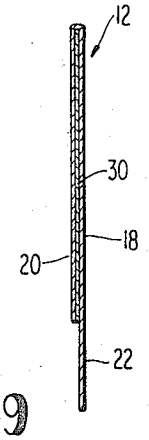


FIG. 9

FIG.10

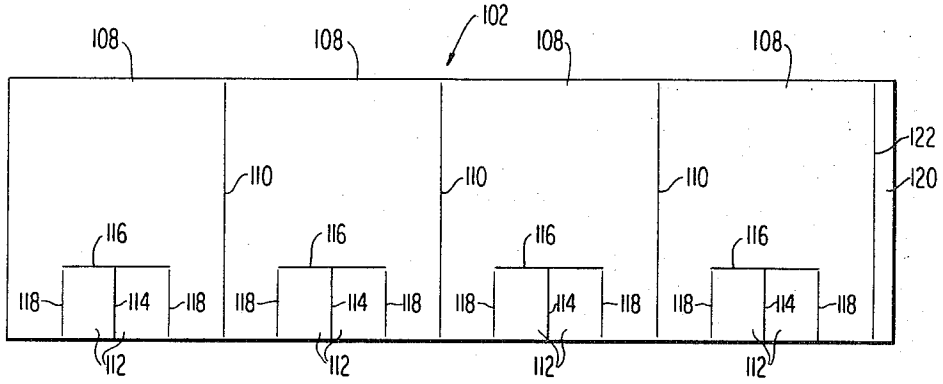


FIG.11

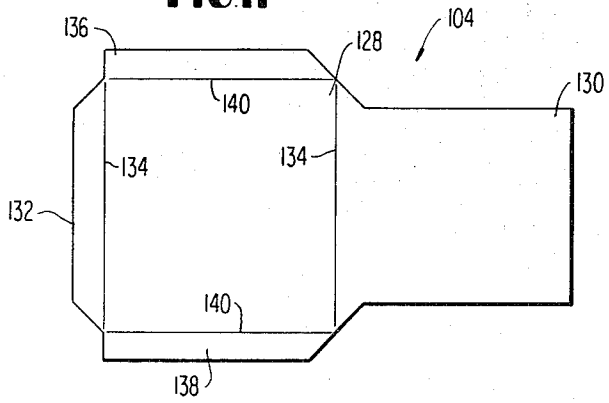


FIG.12

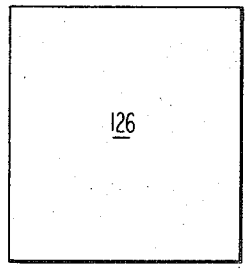
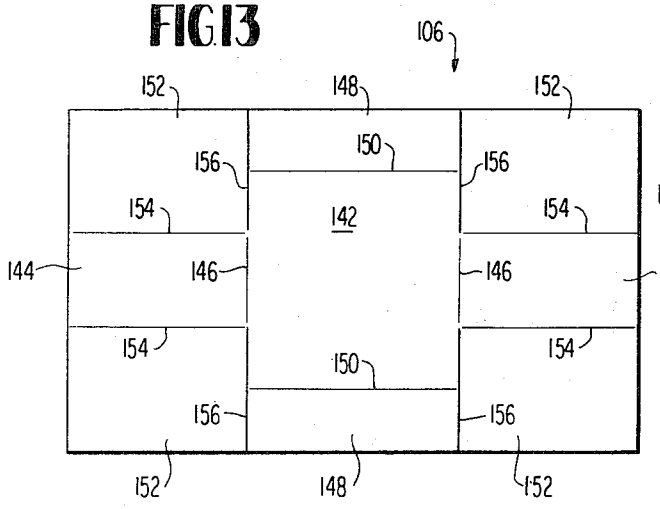


FIG.13



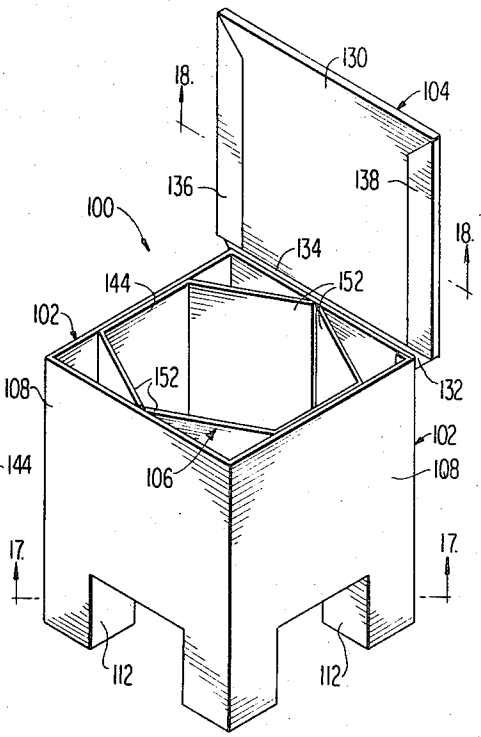


FIG.14

FIG.15

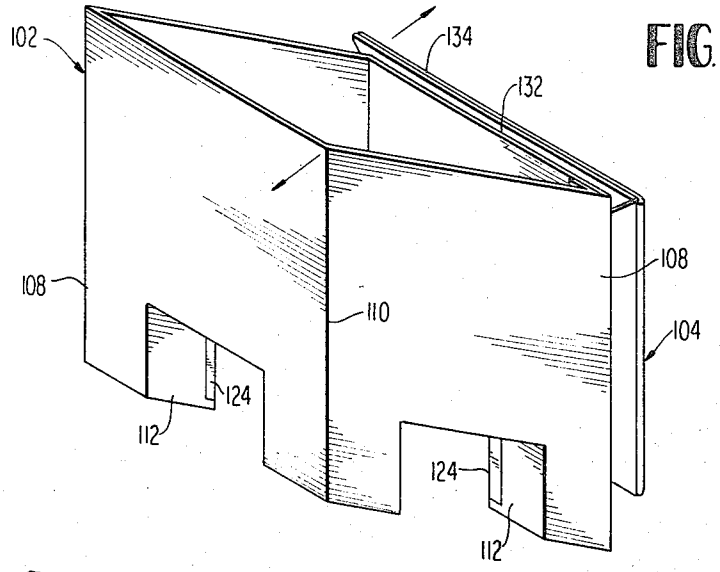


FIG.16

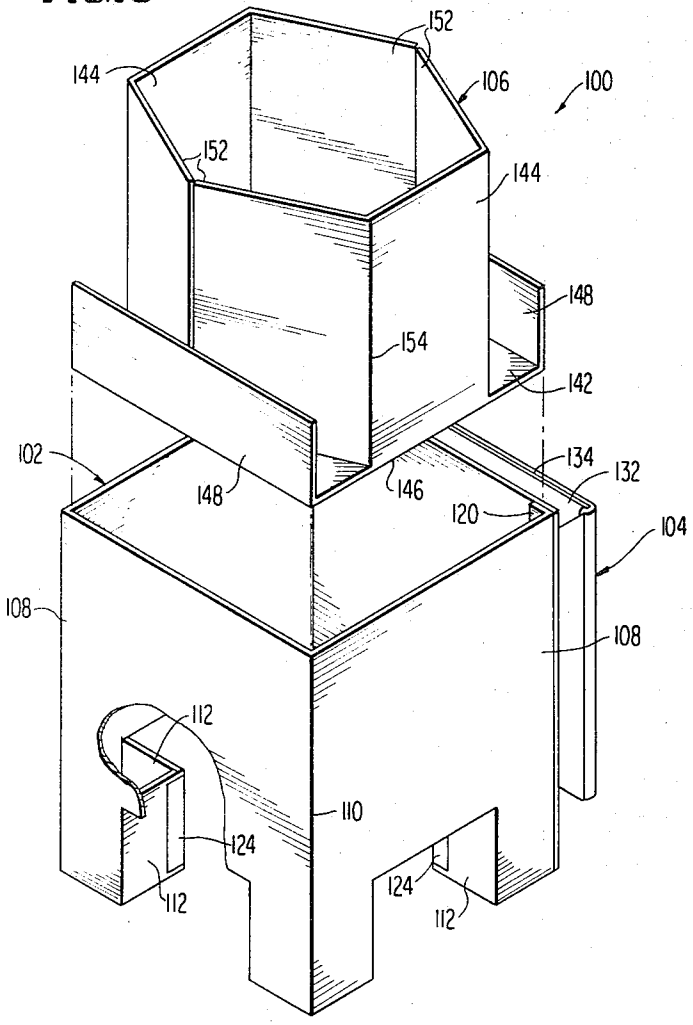
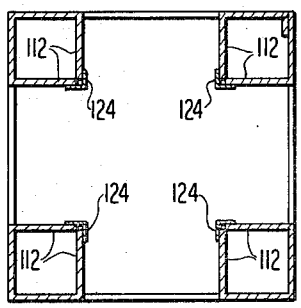


FIG.17



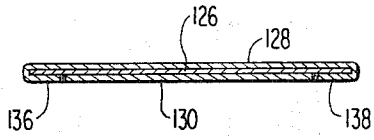


FIG.18

COLLAPSIBLE DESK AND CHAIR

BACKGROUND OF THE INVENTION

This invention relates generally to collapsible or foldable furniture, such as desks and chairs. More particularly, this invention relates to a foldable desk or table and a foldable chair constructed of low cost paperboard, fiberboard or similar lightweight, high strength, relatively rigid material in sheet form, hereinafter referred to as "paperboard."

The cost of articles of furniture for both children and adults, such as chairs, desks, tables, shelves and various other articles, has increased along with other commodities in recent years. While it is desirable that such articles be relatively inexpensive, the cost of the usual materials of construction has often prevented such a goal. No small part of the cost involved in such articles is that of shipping and storage. Accordingly, it is desirable that such articles be stored in a relatively flat position and be capable of being erected prior to use.

Many of the presently available articles of furniture that are foldable or collapsible are quite expensive and are time consuming to erect subsequent to purchase. Thus, such items often comprise many separate parts packed in a carton along with numerous nuts and bolts or similar connectors required for construction, with fairly complicated instructions for assembly. In many cases, once the article of furniture is constructed, it is fairly difficult and time consuming to disassemble or collapse it for storage.

It will be seen, therefore, that a need has arisen for foldable or collapsible furniture that is inexpensive to manufacture, simple in construction and easy to assemble and disassemble. This need has been met by the collapsible desk and chair of the present invention.

SUMMARY OF THE INVENTION

The collapsible desk or table of the present invention is of unitary construction and is defined by a plurality of attached blanks, namely, a top member, a pair of side support members and an inner shelf member. The top member is pivotally connected to the rear portions of both side support members, and the inner shelf member is pivotally connected to the front portion of both side support members. A stiffener member is secured to the center panel of the top member for the purpose of reinforcing it.

The side support members are provided with recessed, foldable flaps for supporting the inner shelf member when the desk is in an erected state. In this state, the top member is pivotally movable to a position overlying the inner shelf member and is supported on the upper edges of the side support members. Each of the side support members is provided with a cut-out portion on its outer side and a shelf member for defining shelves in the sides of the desk when it is fully erected.

When it is desired to store the desk, it is easily and readily collapsed by merely pivoting the top member rearwardly until it is substantially parallel to the back panels of each of the side support members, and pivoting the inner shelf member forwardly until it is substantially parallel with the front panels of the side support members. In this condition, the side support members may be easily folded inwardly by moving their side shelf and inner shelf support panels upwardly and folding the inner and outer side panels of the side support members along fold lines provided therein. When the side support members are folded inwardly, the inner shelf member and top member are moved toward each other and the entire assembly can be collapsed or folded into a substantially flat configuration, without requiring removal or detachment of any of the component parts of the desk.

The chair of the present invention comprises a base member, a seat member pivotally connected to the base member, and an independent inner support member which is receivable, when erected, within the erected base member such that it is covered by the seat member when it is pivoted into overlying relation with respect to the base member.

The base member is provided with fold lines at its corners so as to be readily movable between an erected and a collapsed position. The seat member is pivotally connected to the rear panel of the base member and is movable between an open position, wherein it is substantially parallel to the rear panel of the base member, and a closed position wherein it is substantially perpendicular to the rear panel of the base member and is supported by the upper edges of the base member panels so as to close the upper portion thereof.

The base member is provided with inwardly extending foldable flaps at the lower portion thereof for the purpose of supporting the erected inner support member when it is assembled and inserted within the erected base member. The inner support member serves to maintain the base member in an erected position and is so constructed as to allow a substantial portion of the interior space defined by the base member to be used for storage.

It will be readily seen that both the desk and chair of the present invention may be easily erected for use or collapsed for storage or shipment, without requiring special connectors or tools. In addition, the desk and chair of the present invention may be constructed of relatively inexpensive material such as cardboard, paperboard or the like, and possess considerable strength owing to the reinforced construction thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view of a top member blank for a desk constructed in accordance with the principles of the present invention;

FIG. 2 is a plan view of one of the identical side support member blanks for the desk of the present invention;

FIG. 3 is a plan view of a stiffener member for the top member blank of the desk of the present invention;

FIG. 4 is a plan view of an inner shelf member blank for the desk of the present invention;

FIG. 5 is a perspective view of the desk of the present invention in an assembled and erected condition, with the top member pivoted upwardly slightly from the upper edges of the side support members;

FIG. 6 is an exploded view in perspective of the blanks forming the desk of the present invention, showing the blanks in a substantially assembled condition;

FIG. 7 is a perspective view of the desk shown in FIGS. 5 and 6, with the component parts thereof in folded or collapsed condition;

FIG. 8 is an enlarged partial sectional view taken substantially along lines 8—8 in FIG. 5;

FIG. 9 is an enlarged sectional view taken substantially along lines 9—9 in FIG. 6;

FIG. 10 is a plan view of a base member blank for a chair constructed in accordance with the principles of the present invention;

FIG. 11 is a plan view of a seat member blank for the chair of the present invention;

FIG. 12 is a plan view of a stiffener member for the seat member blank of the chair of the present invention;

FIG. 13 is a plan view of an inner support member blank for the chair of the present invention;

FIG. 14 is a perspective view of the chair of the present invention, with the component parts thereof in assembled or erected condition, showing the seat member pivoted upwardly from the upper edge portion of the base member;

FIG. 15 is a perspective view of the attached base member and seat member of the chair of the present invention, with the base member in partially collapsed condition;

FIG. 16 is an exploded perspective view of the chair of the present invention, showing the inner support member in the erected condition in which it is receivable within the erected base member;

FIG. 17 is an enlarged sectional view taken substantially along lines 17—17 in FIG. 14; and

FIG. 18 is an enlarged sectional view taken substantially along lines 18—18 in FIG. 14.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The collapsible desk or table of the present invention is shown in FIGS. 1 through 9, and generally comprises a top member 12, an inner shelf member 14 and a pair of identical side support members 16. The members 12, 14 and 16 are constructed and joined in a manner to be described hereinafter so as to form the desk or table 10 which may be easily erected, as shown in FIG. 5, or collapsed to a substantially flat condition, as shown in FIG. 7.

The component parts of the desk or table 10 may be formed of any suitable material, such as paperboard, and may have any desired finish or exterior appearance, depending on the purpose for which the desk or table 10 is to be utilized.

Referring to FIG. 1, the top member 12 is formed of a blank having a center panel 18, end flaps 20 and 22 defined by fold lines 24, and side flaps 26 defined by fold lines 28. The top member 12 is formed from the blank shown in FIG. 1 by first securing a stiffener member 30, shown in FIG. 3, to the top member center panel 18. The stiffener member 30 preferably is the same size as the center panel 18 and is secured thereto in any suitable manner, such as by a suitable adhesive, to provide reinforcement for the center panel.

After the stiffener member 30 has been secured to the top member center panel 18, the end flap 20 is folded inwardly along the fold line 24 and is secured to the stiffener member 30 in any suitable manner, such as with the use of a suitable adhesive, to provide additional reinforcement for the center panel 18. Thereafter, the side flaps 26 are folded inwardly along the fold lines 28 and are secured to the stiffener member 30. In this manner, a reinforced top member 12 is formed, as shown in FIGS. 6 and 9.

The inner shelf member 14 is formed of a single blank, as shown in FIG. 4, and comprises a center panel 32 and end flaps 34 and 36 defined by substantially parallel fold lines 38. The end panel 36 is provided with an additional fold or hinge line 40 which extends across the center portion thereof in substantially parallel relation to the fold line 38. In the formation of the inner shelf member 14, the end flap 34 is folded upwardly along the fold line 38, and the end flap 36 is folded upwardly and downwardly along the fold lines 38 and 40, respectively, in the manner shown in FIG. 6.

The side support members 16 are identical in construction and each is formed of a blank, as shown in FIG. 2. Each side support member blank comprises side panels 42 and 44 and end panels 46 and 48 which are defined by substantially parallel fold lines 50. The side panel 42 is provided with end flaps 52 and 54 which are defined by fold lines 56 and 58, respectively. In addition, the side panel 42 comprises a longitudinally extending fold line 60 that is substantially perpendicular to the fold lines 56 and 58, and a pair of slits 62 disposed in the center portion of the side panel 42 on either side of the fold lines 60.

The other side panel 44 of the side support member 16, and the end panels 46 and 48 comprise end flaps 64, 66 and 68, respectively, which are defined by the fold line 56 extending through these panels. The end panels 52, 64, 66 and 68 are all provided with tapered end portions for the purpose of allowing them to be folded inwardly without interference when the side support member is erected, as will be more fully described hereinafter. In addition to the end tab 68, the end panel 48 comprises a side flap 84 defined by fold line 86.

The side panel 44 further comprises a longitudinal fold line 70 extending through the length thereof substantially at the mid portion thereof; a fold line 72 extending partially across the panel 44 in substantially perpendicular relation to the fold line 70; and a cut line 74 extending in a generally U-shape from one end of the fold line 72, across the fold line 70, and to the other end of the fold line 72, thereby defining a side shelf member 76. The side shelf member 76 comprises a fold line 78 extending across the center portion thereof, and a pair of substantially U-shaped cut lines 80 defining tabs 82.

In the formation of each side support member 16, the side panels 42 and 44 are folded inwardly into substantially parallel relation along the fold lines 50 between the side panels and the end panel 46. The end panel 48 is then folded inwardly along the fold line 50 between it and the side panel 44 until the end panel 48 is in substantially parallel relation to the end panel 46. The side flap 84 on the end panel 48 is then folded inwardly along the fold line 86 and is secured in any suitable manner to the adjacent portion of the side panel 42, thereby forming a substantially rectangular side support member. The end flaps 52, 64, 66 and 68 are then folded inwardly to form a base for the side support member 16. Since their ends are tapered inwardly, these end flaps do not interfere with each other when folded inwardly.

The end flap 54 on the side panel 42 is then folded downwardly along the fold line 58 toward the other side panel 44 until it is in substantially perpendicular relation thereto. The folded end flap 54 of each side

support member **16** serves as a support for the inner shelf member **14** in the manner shown in FIG. **6.**

In order to provide a side shelf on each side support member **16,** the side shelf member **76** is folded inwardly along the fold line **78** and secured in any suitable manner to itself to provide a reinforced shelf member. This folding of the shelf member **76** exposes the tabs **82** defined by the cut lines **80.** The reinforced shelf member **76** is then folded inwardly along the fold line **72** until it is in substantially perpendicular relation to the other side panel **42.** In this position, the tabs **82** of the shelf member **76** are in alignment with the slots **62** in the side panel **42.** The insertion of the tabs **82** into the slots **62** serves to retain the shelf member **76** in a substantially horizontal position, as shown in FIGS. **5** and **8.**

In the formation or assembly of the collapsible desk or table **10** of the present invention, the portion of the end flap **36** located outwardly of the fold line **40** is secured in any suitable manner to the upper portions of the forwardly located end panels **46** and **48** of the side support members **16,** as shown in FIGS. **5** and **6.** This attachment of the inner shelf member **14** to the side support members **16** allows the inner shelf member to be pivoted about the hinge or fold line **40** between the position shown in FIG. **5,** wherein the inner shelf member is located within the upper portions of the side support members **16,** extends substantially perpendicularly to the end panels **46** and **48** of the side support members, and rests on the end flaps **54** of the side panels **42** of the side support members, and the position shown in FIG. **7** wherein the inner shelf member **14** is disposed outwardly of the side support members **16** and is adjacent and extends in substantially parallel relation to the end panels **46** and **48** of the side support members.

The end flap **22** of the top member **12** is secured in any suitable manner to the upper outer portions of the rearwardly facing end panels **46** and **48** of the side support members **16,** as shown in FIGS. **5** and **6.** In this manner, the top member **12** may be pivoted along the fold line **24** between a closed position, wherein it extends in substantially perpendicular relation to the end and side panels of the side support members **16** (See FIG. **5**), and an open position wherein the top member **12** is adjacent and extends substantially parallel to the rearwardly facing end panels **46** and **48** of the side support members **16,** as shown in FIG. **7.**

From the foregoing description, it will be readily seen that, with the top member **12,** inner shelf member **14** and side support member **16** assembled and secured in the manner hereinbefore described, the desk **10** is formed of unitary construction and can be erected and collapsed very easily and quickly without requiring any connecting or disconnecting of the component parts thereof.

FIG. **5** shows the desk **10** of the present invention in the erected or usable condition, wherein the side support members **16** are fully assembled and erected, the inner shelf member **14** is disposed within the upper portion of the side support members **16** and is resting on the end flaps **54** thereof, and the top member **12** is either in the opened or closed position, depending on whether access to the inner shelf member **14** is desired. In normal usage, the top member **12** would extend over the inner shelf member **14** and would rest on the upper portions of the side support members **16,** so as to provide a support surface for writing or the like and to cover the inner shelf member **14.**

When it is desired to collapse the desk **10** of the present invention for storage or shipment, this can be readily accomplished by first pivoting the top member **12** along the hinge line **24** from the closed position to the open position shown in FIG. **7.** The inner shelf member **14** is then pivoted along the hinge line **40** from the position shown in FIG. **5** to the position shown in FIG. **7,** wherein the shelf member **14** is disposed outwardly of and in substantially parallel relation to the forwardly facing end panels **46** and **48** of the side support members **16.**

The side shelf member **76** of each side support member is then pivoted upwardly along the fold line **72** into substantially parallel relation with each side panel **44,** the end flaps **54** are pivoted upwardly into substantially parallel relation with each side panel **42,** and the end flaps **52, 64, 66** and **68** are all pivoted outwardly into substantially parallel relation with the side panel **42,** the end panel **46,** the side panel **44** and the end panel **48,** respectively, of each side support member **16.** Each of the side support members **16** may then be folded or collapsed along the fold lines **60** and **70** in the manner shown in FIG. **7.** This folding of the side support members **16** enables the desk **10** to be collapsed to a substantially flat configuration, such that it may be readily stored or shipped without requiring a great deal of space.

When it is desired to erect the desk **10** for use, this is easily accomplished by merely erecting the side support members **16** in the manner shown in FIGS. **5** and **6,** and thereafter pivoting the inner shelf member **14** and the top member **12** to the erected positions shown in FIG. **5.**

The chair **100** of the present invention generally comprises a base member **102,** a seat member **104** secured to the base member, and a separate inner support member **106.** These members may be formed of any suitable material, such as paperboard or the like, and may have any suitable surface finish or exterior appearance.

The base member **102** is formed of a blank having four panels **108** defined by substantially parallel fold lines **110.** Each panel **108** is provided with a pair of laterally movable flaps **112** at the lower end thereof, the flaps **112** being defined by cut lines **114, 116** and fold lines **118.** An end flap **120** is provided on one of the end panels **108** and is defined by fold line **122.**

The base member **102** is erected from the blank shown in FIG. **10** by arranging the panels **108** in substantially perpendicular relation by bending the blank along the fold lines **110,** securing the end flap **120** to the adjacent panel **108,** and pivoting inwardly the laterally movable flaps **112** of each panel **108** and securing them in any suitable manner, such as by tape **124,** to the flap **112** of the adjacent panel in perpendicular relation thereto, as shown in FIGS. **14** through **17.**

The seat member **104** is formed from the blank shown in FIG. **11** and the stiffener member **126** shown in FIG. **12.** The blank for the seat member **104** comprises a center panel **128** of substantially the same size as the stiffener member **126,** end flaps **130** and **132** defined by fold lines **134,** and side flaps **136** and **138** defined by fold lines **140.**

In the formation of the seat member **104,** the stiffener member **126** is secured to the center panel **128** in

any suitable manner and the end flap **130** is pivoted along the fold line **134** over the stiffener member **126** and secured thereto. The side flaps **136, 138** then are folded inwardly along the fold lines **140** and are secured to the stiffener member **126,** in the manner shown in FIGS. **14** and **18.** By this construction, the seat member **104** is reinforced by three plies of the paperboard or other material used to form the seat member.

The assembled or formed seat member **104** is secured to the base member **102** by securing the end flap **132** of the seat member to the upper portion of the rear panel **108** of the base member, as shown in FIGS. **14** and **15.** In this manner, the seat member **104** is pivotally movable along the fold line **134** between a closed position, wherein it extends substantially perpendicular to the panels **108** of the base member, and an open position wherein the seat member **104** is disposed adjacent and in parallel relation to the rear panel **108** of the base member, as shown in FIGS. **15** and **16.**

The blank for the inner support member **106** is shown in FIG. **13.** This blank comprises a center panel **142** and a pair of side panels **144** defined by fold lines **146.** The center panel **144** is provided with end flaps **148** defined by fold lines **150,** and each of the side panels **144** is provided with end flaps **152** defined by fold lines **154** and cut lines **156.**

The inner support member **106,** when erected, fits within the erected base member **102** in the manner shown in FIGS. **14** and **16.** In order to erect the inner support member **106,** the side panels **144** are pivoted upwardly along the fold lines **146** to positions substantially perpendicular to the center panel **142.** Thereafter, the end flaps **152** are pivoted inwardly along the fold lines **154** until their ends are inside the fold lines **150,** after which the end flaps **148** are pivoted upwardly to positions substantially perpendicular to the center panel **142,** as shown in FIG. **16.** In this erected condition, the inner support member **106** is receivable within the erected base member **102** and rests on the upper edges of the flaps **112** on the support member **102.**

For storage or shipment, the seat member **104** is pivoted to the open position shown in FIG. **15** and the panels **108** of the base member **102** are folded inwardly along the fold lines **110** to a relatively flat configuration, in the manner shown in FIG. **15.** The separate inner support member **106** is stored with its panels and flaps in the substantially flat configuration shown in FIG. **13.**

When it is desired to erect the chair **100** of the present invention, all that is required is to pivot the panels **108** of the base member outwardly along the fold lines **110** until they are in substantially perpendicular relation as shown in FIG. **16.** Thereafter, the inner support member **106** is erected from the flat configuration shown in FIG. **13** to the erected configuration shown in FIG. **16,** and the erected support member **106** is then positioned within the erected base member **102** and rests on the upper ends of the inwardly extending, connected flaps **112.** The support member **106** serves to maintain the shape of and to reinforce the base member **102.** Also, since the panels **144** and flaps **152** of the support member **106** define a center opening of substantial size, this opening may be used for storage. The seat member **104** may then be closed to cover the upper portion of the base member **102** and to enclose the inner support member **106.**

What is claimed is:

1. A collapsible desk comprising:

a pair of collapsible side support members, each having a front and a rear end panel which are movable toward each other when the side support member is collapsed, each of said side support members also comprising side panels separated from said front and rear end panels by fold lines such that each side support member can be erected with said side panels in substantially perpendicular relation to said end panels;

a first shelf member pivotally connected to the upper portion of the front end panel of each of said side support members for movement between a first position wherein said shelf member is substantially perpendicular to said front end panels and a second position wherein said shelf member is adjacent and substantially parallel to said front end panels;

one of said side panels of each said side support members comprising a flap at the upper end thereof which is foldable toward the other side panel to provide a support for said shelf member when it is in said first position; and

a top member pivotally connected to the upper portion of the rear end panel of each of said side support members for movement between a closed position wherein said top member extends across and is supported by the upper portions of said side support members and is substantially perpendicular to said rear end panels and an open position wherein said top member is adjacent and substantially parallel to said rear end panels;

whereby when said shelf member is in said second position and said top member is in said open position, the desk can be collapsed to a substantially flat configuration by collapsing said side support members to move said front and rear end panels toward each other.

2. The desk of claim **1** wherein said side support members, said shelf member and said top member are formed of paperboard.

3. The desk of claim **1** wherein said other side panel of each side support member comprises a cut-out portion and a second shelf member pivotally movable in said cut-out portion, said second shelf member being movable between a first position in substantially parallel relation to said one side panel and a second position in substantially perpendicular relation to said one side panel.

4. The desk of claim **3** wherein said second shelf member of each side support member comprises a tab on the outer edge thereof, and said one side panel comprises a slot adapted to receive said tab when said second shelf member is disposed in said second position.

5. The desk of claim **1** wherein said top member comprises a reinforced center panel and an end flap separated from said center panel by a fold line, said end flap of said top member being secured to the upper portions of the rear end panels of said side support members, whereby said top member is pivotally movable along said fold line.

6. A collapsible desk comprising:

a pair of collapsible side support members, each having a front and a rear end panel which are movable

toward each other when the side support member is collapsed;

a first shelf member pivotally connected to the upper portion of the front end panel of each of said side support members for movement between a first position wherein said shelf member is substantially perpendicular to said front end panels and a second position wherein said shelf member is adjacent and substantially parallel to said front end panels, said first shelf member comprising a center panel adapted to be received within the upper portions of said side support members, and a pair of end flaps separated from said center panel by first fold lines, one of said end flaps having a second fold line extending across the mid portion thereof and being bent into a substantially U-shape along said second fold line, the outer portion of said one end flap being secured to the upper portions of the front end panels of said side support members, whereby said first shelf member is pivotally movable along said second fold line; and

a top member pivotally connected to the upper portion of the rear end panel of each of said side support members for movement between a closed position wherein said top member extends across and is supported by the upper portions of said side support members and is substantially perpendicular to said rear end panels and an open position wherein said top member is adjacent and substantially parallel to said rear end panels;

whereby when said shelf member is in said second position and said top member is in said open position, the desk can be collapsed to a substantially flat configuration by collapsing said side support members to move said front and rear end panels toward each other.

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