Feb. 22, 1955 R. R. BORGFELDT 2,702,586

BODY-SUPPORTING DEVICE

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Fig. 1.

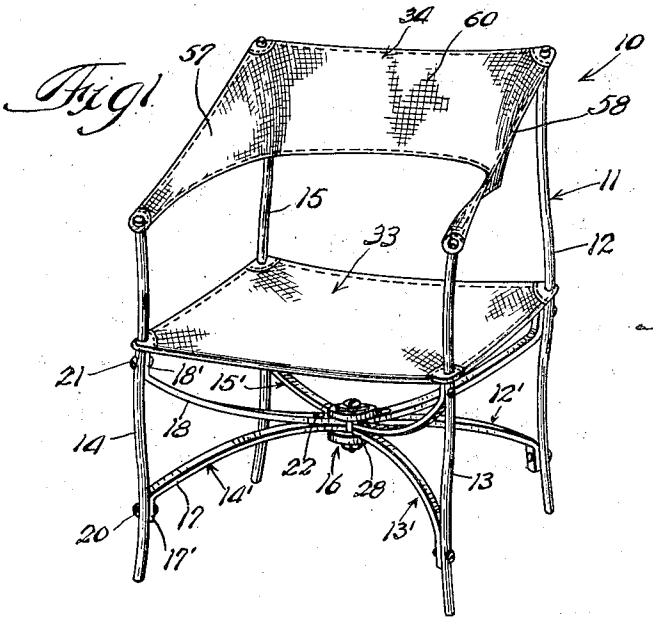


Fig. 5.

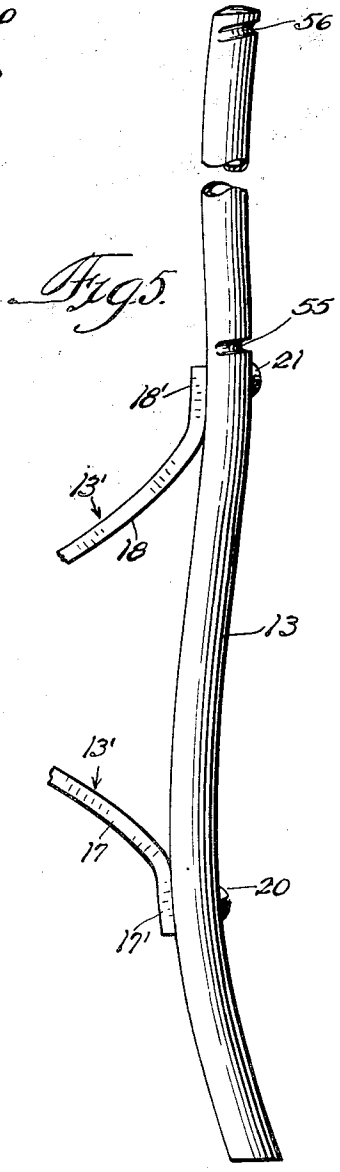
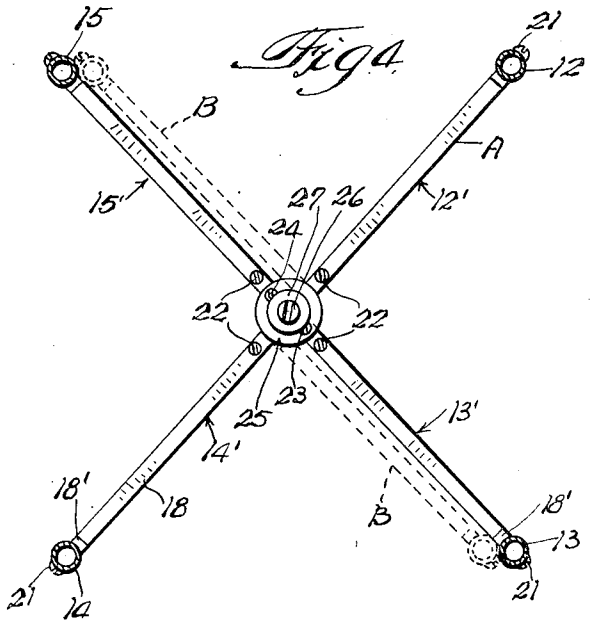


Fig. 4.



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Fig. 2.

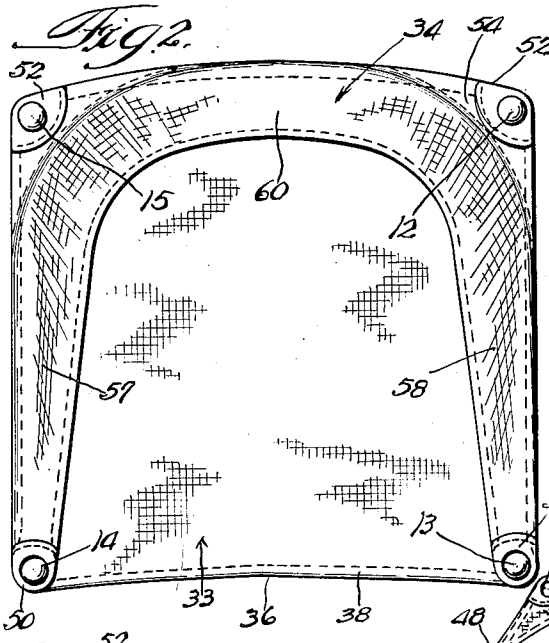


Fig. 6.

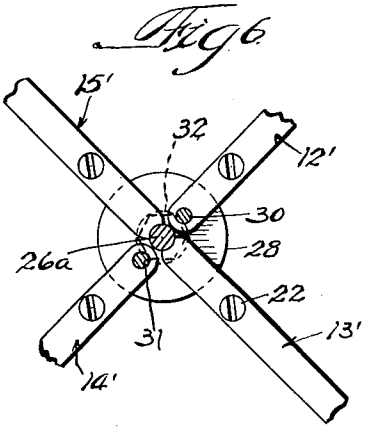


Fig. 7.

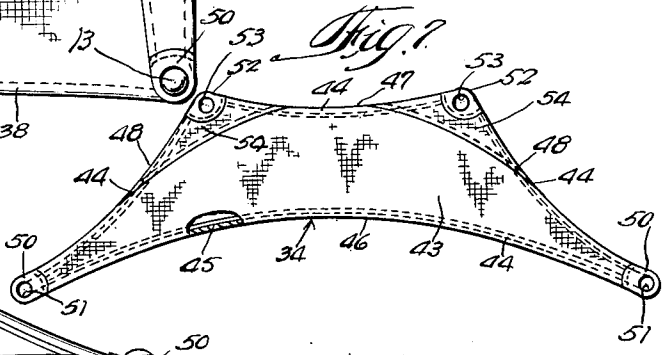


Fig. 3.

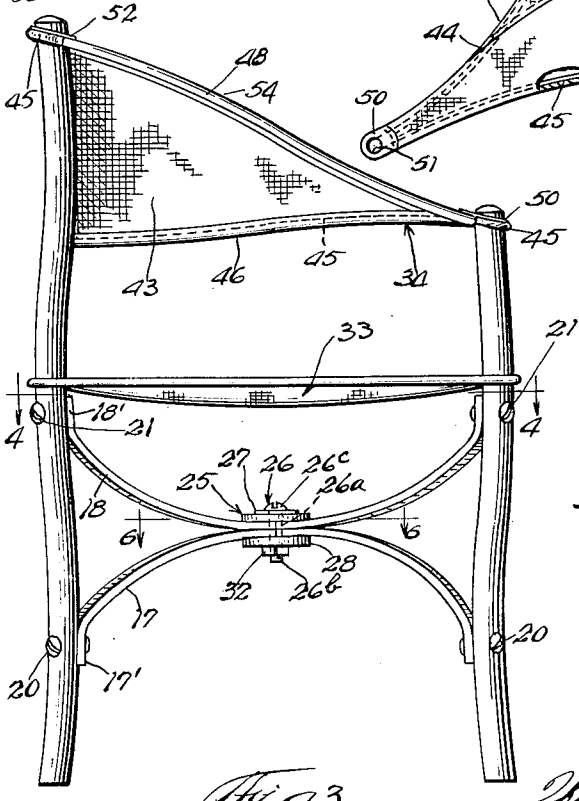
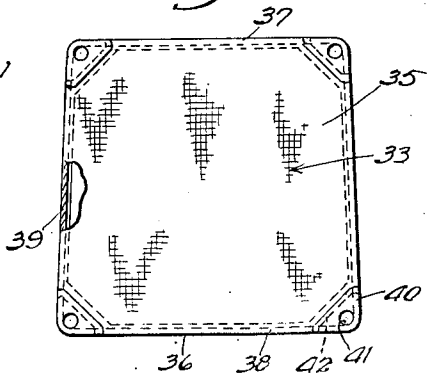


Fig. 8.



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BODY-SUPPORTING DEVICE

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11 Claims. (Cl. 155—139)

This invention relates to body-supporting devices and more particularly to a foldable chair.

In foldable chairs having fabric seat and back sections, such as lawn chairs and the like, difficulty is frequently encountered in removing the fabric sections from the frame for purposes of washing or repairing thereof. Furthermore, chairs of this type are often of such design as to render the unfolding or erection thereof an awkward and clumsy operation.

Thus it is one of the objects of this invention to provide a foldable chair employing fabric seat and back sections which may be readily removed from the chair frame for the purposes of washing or repairing the sections or enabling the chair to be readily folded for storage.

It is a further object of this invention to provide a foldable chair which may be readily folded or unfolded, and which, when in folded position, is compact in size.

It is a still further object of this invention to provide a foldable chair which affords comfortable support, is simple, sturdy, and lightweight in construction, and is inexpensive to make.

Further and additional objects will appear from the description, accompanying drawings, and appended claims.

In accordance with one embodiment of this invention a foldable body-supporting device is provided comprising a plurality of upright members which are operatively connected together at a point common to all of said members. The upright members are movable relative to one another about the common point of connection to a folded or unfolded position. Detachably mounted on the upright members and disposed above the common point of connection is a flexible body-supporting section. The body-supporting section is adapted to be mounted on or removed from the upright members only when the members are in an unfolded position. An upright flexible body-engaging or back-forming section is angularly disposed above the body-supporting or seat section and is detachably mounted on the upright members when the latter are in an unfolded position.

For a more complete understanding of this invention reference should be made to the drawings, wherein

Fig. 1 is a perspective view of the device shown in an unfolded or operative position;

Fig. 2 is a top plan view of the device shown in Fig. 1;

Fig. 3 is a side elevational view of the device shown in Fig. 1;

Fig. 4 is a sectional view of the device taken along line 4—4 of Fig. 3 and showing the relative positions, in dotted lines, of one pair of opposite upright members when the device is in a folded position for storage;

Fig. 5 is an enlarged fragmentary elevational view of one of the upright members;

Fig. 6 is an enlarged sectional view of the device taken along line 6—6 of Fig. 3;

Fig. 7 is a layout view of the detachable body-engaging or back section of the device; and

Fig. 8 is a reduced layout view of the detachable body-supporting or seat section of the device.

Referring now to the drawings and more particularly to Fig. 1 a foldable body-supporting device 10, which in this instance is a chair, is shown comprising a

collapsible or foldable frame 11 formed of four upright members or standards 12, 13, 14, and 15 of metal, wood or other suitable material which are connected to one another at a common connector unit 16. Extending transversely from the lower portions of the upright members are brackets 12', 13', 14', or 15', respectively. All of the brackets are of like construction and, in this instance, are formed of a pair of bowed resilient braces 17 and 18 which have their outer ends 17' and 18', respectively, offset and secured to the corresponding upright member by screws or rivets 20 and 21. The braces forming each bracket extend transversely from each of the upright members in a convergent manner and contact one another at a point spaced from the upright member and are held in contacting relation by a screw or rivet 22. The inner or contacting end of each bracket is connected to the connector unit 16.

Frame 11, when in an unfolded position A, as seen in solid lines in Fig. 4, has the upright members 13 and 15 disposed in a common plane and upright members 12 and 14 disposed in a second common plane which is at a right angle with respect to the plane formed by members 13 and 15. The inner ends of brackets 13' and 15' are rigidly secured by screws or rivets 23 and 24, respectively, to an upper disc-shaped piece 25, which forms a part of the connector unit 16. Mounted at the center of the piece 25 and extending axially therethrough and between the inner ends of brackets 13' and 15' is a bolt 26. The bolt 26 has a relatively long shank portion 26*a*. The end 26*b* of the shank portion 26*a* is reduced in size and threaded to receive a nut 32. The end 26*b* of the shank portion 26*a* terminates beneath a lower piece 28 which abuts the underside of the inner ends of the brackets and also forms a part of the connector unit 16. Piece 28 is of the same construction as upper connector piece 25. A washer 27 is provided for the head 26*c* of bolt 26 and serves to retain screws 23 and 24 in position on piece 25. Pivotally mounted on lower piece 28 at points 30 and 31 are the inner ends of brackets 12' and 14', respectively. When frame 11 is collapsed or folded, the pivotally connected brackets 12' and 14' enable members 12 and 14, respectively, to assume a folded position B, as shown by dotted lines in Fig. 4. As heretofore mentioned brackets 13' and 15' assume a relatively fixed position with respect to one another and are rigidly secured to upper connector unit piece 25. If desired, brackets 13' and 15' may be of unitary construction with an opening formed therein for bolt 26.

Upright members 12, 13, 14, and 15 in this instance are formed of tubular aluminum material and are curved, as seen in Figs. 1, 3, and 5, to enhance the attractiveness and increase the sturdiness of the chair. Upright members 13 and 14 constitute the front supports and are shorter than members 12 and 15 which constitute the rear or back supports. As seen in Fig. 5, each of the upright members has a pair of longitudinally spaced notches 55 and 56 formed therein. The purpose of the notches will become apparent hereinafter. Notch 55 is disposed adjacent to the brace holding screw or rivet 21. Notch 56 is formed adjacent the upper end of the upright member.

Detachably mounted on frame 11 are a body-supporting or seat section 33 and a back section 34. Sections 33 and 34 are constructed preferably of a heavy duty canvas material and may be mounted on or removed from the upright members only when the latter are in an unfolded position, as seen in Figs. 2 and 4.

Seat section 33 is of a one-piece construction and is formed of a piece of material 35 which is of substantially square shape. However, it is desirable to have the front edge 36 of section 33, slightly greater in length than rear edge 37 so as to facilitate a person getting into and out of the chair. It is to be understood of course that the invention is not to be limited to this particular construction. The edges of piece 35 are turned back to form a hemlike margin 38 in which is disposed a continuous rope or cable 39 which completely surrounds sheet 35. The corners 42 of sheet 35 are recessed a slight amount, as seen in Fig. 8, and have secured thereto a substantially triangular-shaped reinforcing

piece or gusset 40. The long side of each gusset 40 is secured by the stitching or any other suitable means to the corresponding recessed corner 42 of sheet 35. The remaining two sides of gusset 40 have secured to the underside thereof a portion of rope 39. The portion of gusset 40 disposed intermediate rope 39 and recessed corner 42 of the sheet 35 is provided with an aperture 41. The aperture 41 is of such size as to enable the upper portion of the corresponding upright member to pass therethrough. When the seat section 33 is properly positioned on the frame 11, the apertured reinforcing gusset 40 is adapted to be seated in notch 55, thus enabling the seat section 33, when supporting a person, to remain in a relatively fixed position on the frame 11.

While reinforcing pieces or gussets and notched upright members are shown in this instance in the drawings it is to be understood of course that other means may be provided for securing section 33 to the frame, for example, a grommet may be mounted in each unrecessed corner of the sheet 35 in place of gusset 40 and a hook fastened directly to the upright member may be substituted for the notch 55. The hook would engage the corresponding grommet when the modified seat section, not shown, is mounted on the frame.

The back section 34, as seen more clearly in Fig. 7, is formed of a single sheet of material 43 which is substantially crescent-shaped. The outer edge portion of sheet 43 is turned back to form a hemlike margin 44 similar to that heretofore described for seat section 33. Disposed within the hemlike margin is a continuous rope or cable 45. The lower edge 46 of sheet 43 is bowed upwardly a slight amount, as seen in Fig. 7, and is adapted, when the back section 34 is mounted on frame 11, to assume a substantially U-shaped back bracing position, as seen in Fig. 2. The side edges 48 of sheet 43 are angularly disposed with despect to lower and upper edges 46 and 47, respectively. At the corners of sheet 43, formed at the juncture of edges 46 and 48, are provided reinforcing pieces or gussets 50 which are secured directly to sheet 43 by stitching or any other suitable means. Each gusset 50 extends beyond the corner of sheet 43 and is provided with an aperture 51. The aperture 51 is of such size as to enable the corresponding front upright member 13 or 14 to readily pass therethrough. The aperture 51 is partially enclosed by a portion of rope 45 which is secured to the underside of gusset 50.

Mounted on each of the corners of the sheet 43 formed at the juncture of upper and side edges 47 and 48, respectively, are overlapping reinforcing pieces 52 and 54. Piece 54 is the larger of the two and is secured by stitching or any other means directly to the sheet 43. Piece 52, in turn is secured directly to piece 54, as seen in Fig. 7. Piece 52 is provided with an aperture 53 which is partially enclosed by rope 45. The aperture 53 is of such size as to accommodate one of the back upright members 12 or 15.

To assemble the chair for use, the frame 11 is unfolded so that the upright members assume position A, as seen in Fig. 4. When the frame is unfolded, the seat section 33 may be positioned thereon. To effect positioning of the seat section the upper portion of each upright member is slipped through the opening formed in the corresponding corner of the sheet 35. The seat section 33 is then pushed downwardly on the frame until the corner openings engage the notches 55 formed in the upright members. Following positioning of the seat section on the frame, the back section 34 is mounted on the frame. Openings 53 formed in reinforcing pieces 52 engage the corresponding rear upright members 12 and 15 and are seated in notches 56 formed in upper ends thereof. The openings 51 formed in gussets 50 engage the upper ends of the corresponding front upright members 13 and 14 and seat in the notches 56 formed therein. When back section 34 is mounted on the unfolded frame 11, the portions of the section disposed between reinforcing pieces 50 and 52 provide taut arm rests 57 and 58. The portion of the section 34 disposed between reinforcing pieces 52 provides a taut back support 60. The lower edge 46 of section 34 hangs free and is disposed in a relatively horizontal plane, when the section 34 is in the position shown in Figs. 1, 2 and 3.

Seat and back sections 33 and 34 may be constructed of material of the same or different designs. Furthermore, the sections may be mounted on the frame so that either of the surfaces of the sheets 35 and 43 may be exposed from the front side of the chair, thereby providing a variety of decorating possibilities.

The ropes 39 and 45, which surround sections 33 and 34, respectively, are substantially taut when the sections are mounted on the frame 11, as seen in Fig. 3. The tautness of the ropes holds upright members 12 and 14 in a relatively fixed position with respect to members 13 and 15.

When collapsing or folding the chair 10, the back section 34 is first removed from the upright members followed by the seat section 33 being slipped upwardly and disengaged from the upright members, whereupon upright members 12 and 14 may be readily moved to folded position B, as shown in dotted lines in Fig. 4. If desired the back section 34 and seat section 33 do not have to be completely removed from the rear upright members 12 and 15, however, it is essential that the corners of the sections be disengaged from the front upright members 13 and 14 in order to permit folding of the chair frame.

While a particular embodiment of this invention has been shown it is to be understood of course that this invention is not to be limited thereto. For example, the invention may be readily applied to a device such as a cot and the like.

It will be seen that a foldable body-supporting device has been provided which enables the back and seat sections thereof to be readily removed from the frame for washing, repairing, and collapsing of the device. Furthermore, the back and seat sections may cooperate with one another to provide many decorating possibilities. The device may be readily collapsed or erected, and when in a collapsed or folded position is compact in size enabling it to be readily stored. Furthermore the device is simple, sturdy, and lightweight in construction, provides comfortable support to a sitting person, and is inexpensive to manufacture.

It will be apparent that since many modifications may be made, it is contemplated by the appended claims, to cover any such modifications as fall within the true spirit and scope of this invention.

I claim:

1. A foldable body-supporting device comprising a plurality of upright members operatively connected together for movement to a folded or unfolded position, a seat-forming section mountable on and detachable from said upright members, only when the latter are in unfolded relation, and a back-supporting section mountable on and detachable from said upright members only when the latter are in said unfolded position; said back-supporting section forming a three-sided enclosure, when mounted on said upright members, the body-contacting surface of said back-supporting section being in the form of a U-shaped sling attached at only the terminal end portions of said surface to a pair of upright members disposed to the front side of said device, the bight portion of said surface being spaced from the rear upright members.

2. A foldable body-supporting device comprising a plurality of upright members operatively connected together for movement about an upright axis to a folded or unfolded position, a seat-forming section detachably mounted on said upright members, and a flexible back-supporting section disposed above said seat-forming section and mountable on and detachable from all of said upright members only when the latter are in said unfolded position; said back-supporting section having a portion of the marginal edge thereof apertured for receiving all of said upright members, the remaining portion of the marginal edge of said back-supporting section being spaced from all of said upright members, when said back-supporting section is mounted thereon, and effecting partial envelopment of the body being supported by said device.

3. A foldable body-supporting device comprising a plurality of upright members operatively connected together, some of which are pivoted to a folded or unfolded position about a common upright axis disposed intermediate said upright members, and a detachable flexible body-supporting section disposed intermediate said members and having marginal edge portions thereof detachably mounted on all of said upright members; said body-supporting section, when mounted on all of

said members, being disposed in substantially transverse relation with respect to said upright axis and having all segments of the marginal edge thereof, intermediate said members, in substantially taut condition and effecting locking of said members against folding movement.

4. A foldable body-supporting device comprising a plurality of upright members operatively connected together, some of which are pivoted to a folded or unfolded position about a common upright axis disposed intermediate said upright members, a detachable flexible seat-forming section disposed intermediate said members and having marginal edge portions thereof detachably mounted on all of said upright members, all of said marginal edge portions assuming a taut condition, when contacting all of said members, and effecting locking of said members against folding movement, and a back-supporting section detachably mounted on said unfolded members and disposed above said seat-forming section.

5. A foldable body-supporting device comprising a plurality of upright members operatively connected together at a point common to all of said members and disposed substantially equidistant with respect thereto, some of which are pivotal about an upright axis to a folded or unfolded position, a substantially horizontal seat-forming section having an apertured member-engaging marginal portion, said seat-forming section having the marginal edge thereof mountable on and detachable from all of said upright members only when the latter are in an unfolded position, the edge portions of said section between said members being taut, and a back-forming section having an apertured member-engaging marginal portion, said back-forming section being mountable on and detachable from all of said upright members only when the latter are in an unfolded position and cooperating therewith to form an arcuate back surface portion spaced from said upright members, and side surface portions extending substantially divergently from said back surface portion; said upright members being locked against folding movement when all of said members are engaged by the marginal portion of said seat-forming section.

6. A foldable body-supporting device comprising a plurality of upright pole-like members operatively connected together at a point common to and disposed substantially equidistant from all of said members, some of which are pivotal about a common upright axis to a folded or unfolded position, a substantially horizontal flexible seat-forming section bounded by all of said members and having marginal edge portions thereof detachably mounted on all of said members when the latter are in an unfolded position, an angularly disposed flexible back-forming section disposed above said seat-forming section and having marginal edge portions thereof detachably mounted on all of said members, and means longitudinally spaced on said members and cooperating with the marginal edge portions of said seat-forming and back-forming sections for retaining said sections in their proper relative positions on said members when the latter are in said unfolded position; all of the marginal edge portions of said seat-forming section disposed intermediate said members, assuming substantially taut positions when said seat-forming section is mounted on said members, and effecting locking of the latter against folding movement.

7. A foldable body-supporting device comprising upright members rigidly spaced from a common axis disposed substantially parallel to said upright members and about which at least some of said members are pivotable, and a flexible seat section having the marginal edge thereof detachably connected to said upright members, the edge portions of said section between said members being taut.

8. A foldable body-supporting device comprising upright members rigidly spaced from a common substantially vertical axis about which at least some of said members are pivotable, and a flexible seat section having the marginal edge thereof detachably connected to said upright members, at least some of said upright members having portions thereof extending above said seat section, the edge portions of said section between said members being taut.

9. A foldable body-supporting device comprising upright members rigidly spaced from a common substantially vertical axis about which at least some of said members are pivotable, a flexible seat section having the marginal edge thereof detachably connected to said upright members, at least some of said upright members having portions thereof extending above said seat section, the edge portions of said section between said members being taut, and a flexible back section angularly disposed above said seat section and having the marginal edge thereof detachably connected to the extended portions of said members.

10. A foldable body-supporting device comprising upright members rigidly spaced from a common axis disposed substantially parallel to said upright members and about which at least some of said members are pivotable, a flexible seat section having the marginal edge thereof detachably connected to said upright members, a portion of each of the latter extending above said seat section, the edge portions of said section between said members being taut, and a flexible back section angularly disposed above said seat section and having the marginal edge thereof detachably connected to the extended portions of all of said members to form a substantially U-shaped back-contacting surface open to the front of said device, the portion of the marginal edge of said back section, adjacent said seat section, being spaced from and out of contact with the rearwardly disposed upright members.

11. A foldable body-supporting device comprising front and back pairs of upright members, a rigid brace extending from each member and terminating at a common connecting element disposed intermediate said members, the brace of one member of a pair being rigidly secured to said element and the brace of the other member of the pair being pivotally connected to said element for movement about an axis disposed substantially parallel to said upright members, and a flexible seat section having the marginal edge thereof detachably connected to all of said upright members, the edge portions of said section between said members being taut and effecting locking of said members against folding movement.

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