Sept. 21, 1954 W. H. SMITH 2,689,603

FOLDABLE CHAIR

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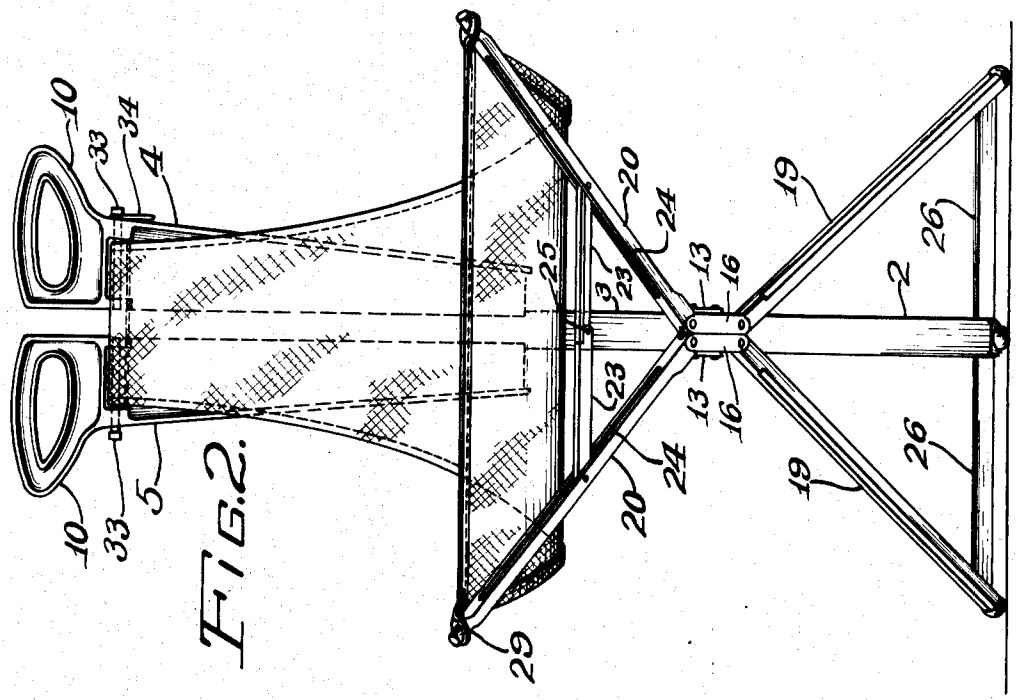


FIG. 2.

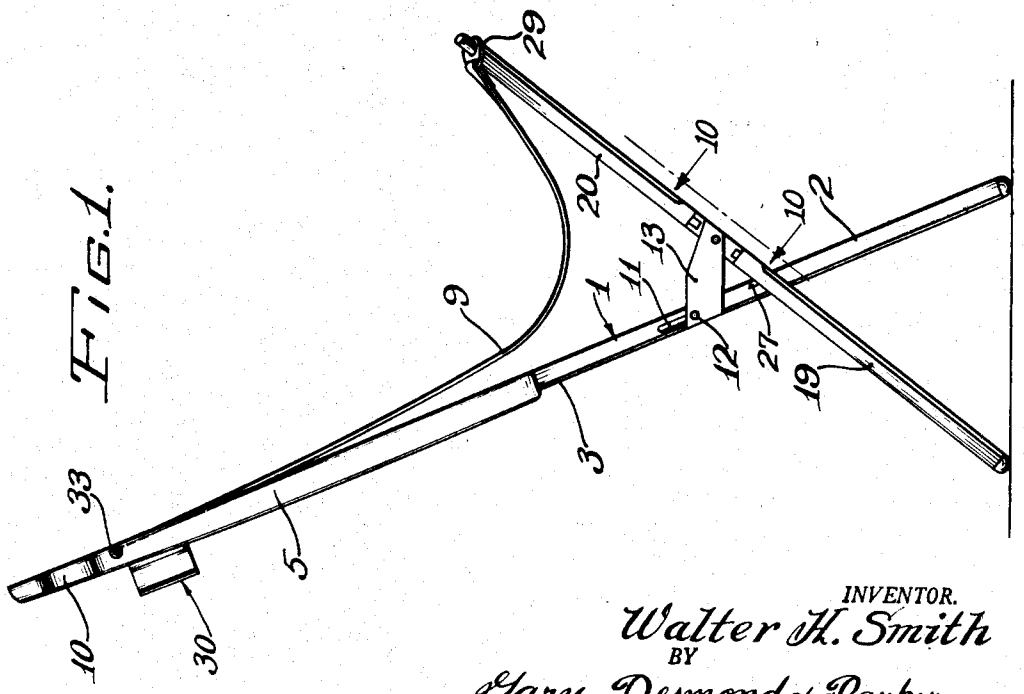


FIG. 1.

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Fig. 3.

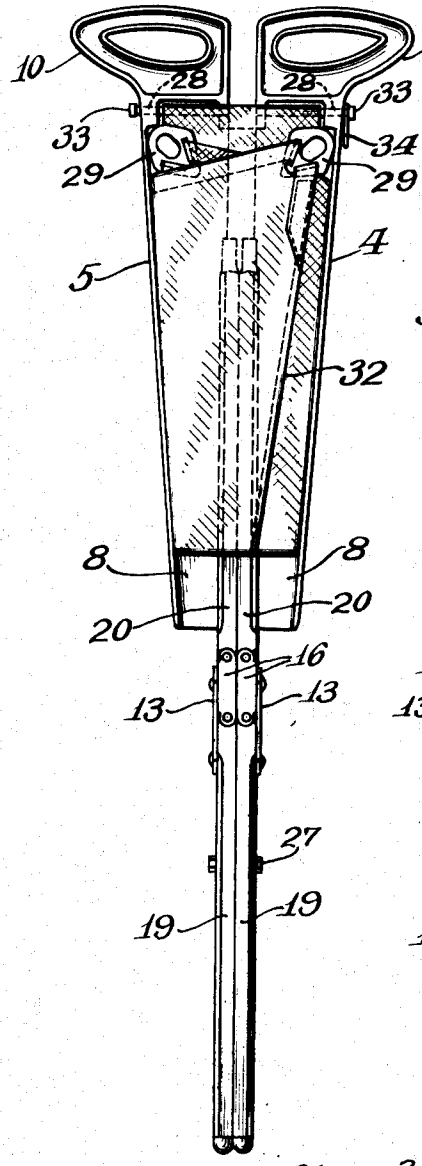


Fig. 4.

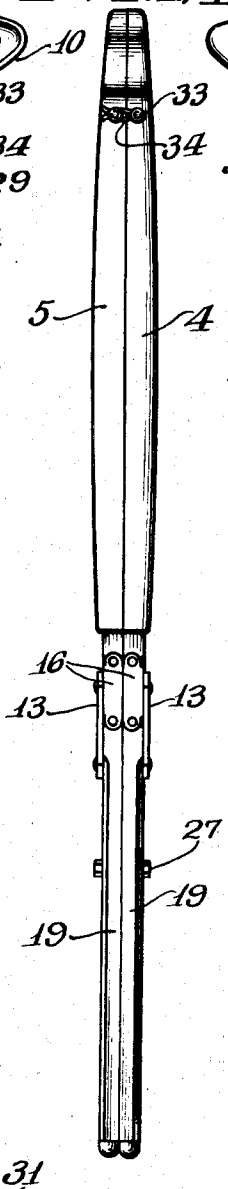


Fig. 5.

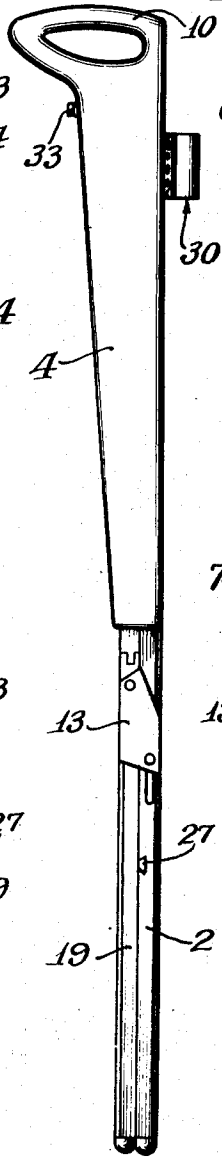


Fig. 6.

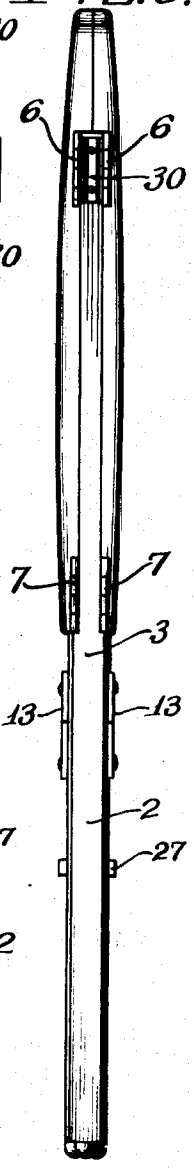
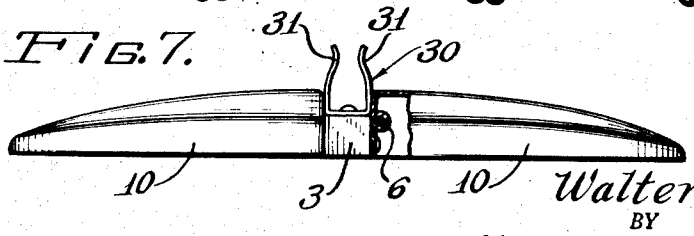


Fig. 7.



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FIG. 8.

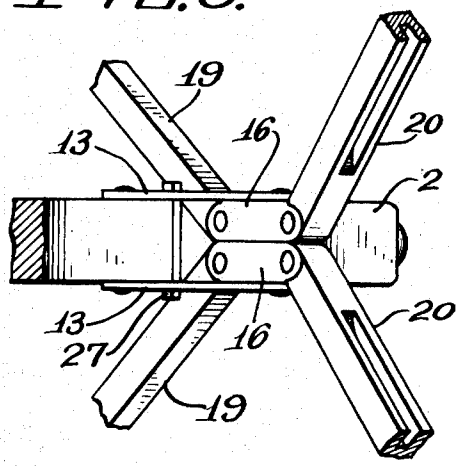


FIG. 9.

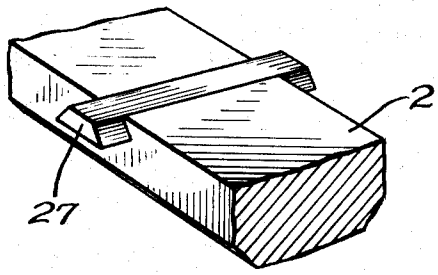


FIG. 10.

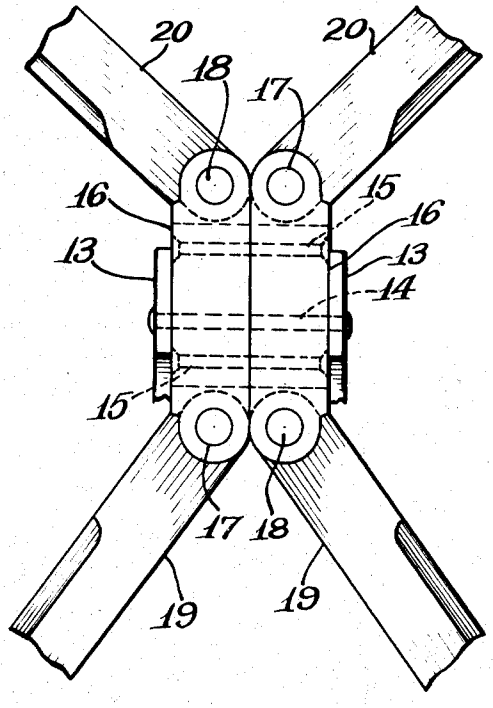
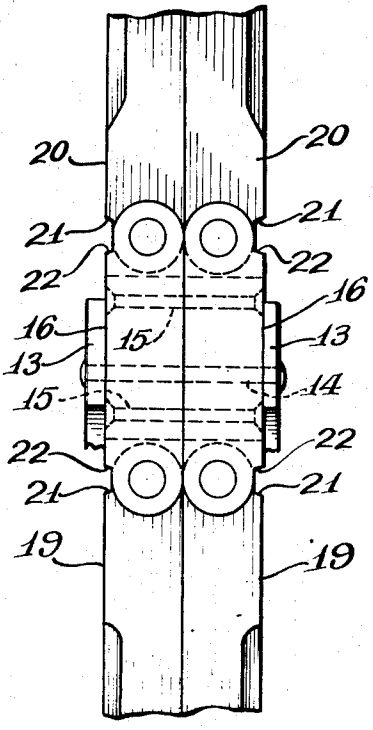


FIG. 11.



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FOLDABLE CHAIR

Walter H. Smith, Eureka, Ill.

Application April 30, 1952, Serial No. 285,123

9 Claims. (Cl. 155—136)

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This invention relates to improvements in a foldable, portable chair of the type which when folded may be used as a cane or walking stick, and which may be conveniently set up to provide a chair which may be used to witness sporting events, parades, etc.

One of the important features of my invention resides in a foldable chair construction which is extremely rugged and may be folded to a relatively small compass.

Other objects and advantages of the invention will be apparent from the accompanying drawings and following detailed description.

In the drawings, Fig. 1 is a side elevational view of my chair in set-up position.

Fig. 2 is a front elevational view of the chair shown in Fig. 1.

Fig. 3 is a front elevational view of the chair in partially folded position, the fabric receptacle or housing being shown in open position.

Fig. 4 is a front elevational view of the chair in completely folded position.

Fig. 5 is a side elevational view of the device as shown in Fig. 4.

Fig. 6 is a rear elevational view of the completely folded chair.

Fig. 7 is a top plan view of the upper portion of the chair, parts being broken away.

Fig. 8 is a fragmentary top plan view of the connection between the legs of the chair and the seat-supporting bars.

Fig. 9 is a detailed perspective view of a portion of one of the chair legs showing the stop carried by said leg.

Fig. 10 is a front view of the leg and bar juncture looking in the direction indicated by the arrows 10—10 in Fig. 1.

Fig. 11 is a view similar to Fig. 10 with the front legs and front seat support bars in folded position.

Referring in detail to the drawings, and with specific reference to Figs. 1 and 2, 1 indicates a combination leg and back member, the lower portion 2 of which comprises a supporting leg of the chair and the upper portion 3 of which comprises the support for the back of the chair. The upper portion of the back support 3 carries a pair of symmetrical housing pieces 4 and 5 which are connected to the back support by spaced hinges 6 and 7 (Fig. 6). The housing pieces 4 and 5 are each provided with a cavity 8, which, as will be hereinafter more fully described, provides a space when said housing pieces are closed upon each other, for carrying a fabric seat 9, and also in which other portions of the chair are carried.

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The upper end portions of the housing pieces 4 and 5 are provided with apertured heads 10 which, when the pieces are folded upon themselves provide a carrying head which resembles the head of a cane or walking stick.

The back support 3 is provided with a slot 11 through which a pin 12 extends, said pin being laterally movable along the length of the slot. At each end of pin 12 a hinge plate 13 is carried, the plane of each plate being adjacent and parallel to opposite side edges of the back support 3. The opposite end portions of the hinge plates 13 carry a pin 14 which extends through recesses provided in a pair of hinge blocks 16. The hinge blocks 16 are identical and each is provided with a hinge eye 17 at opposite ends, each being adapted for the reception of a hinge pin 18. The hinge blocks 16 are held immovably together by means of rivets 15.

A pair of legs 19 are hingedly connected to an adjacent pair of hinge pins 18 at the lower ends of the hinge blocks 16 and a pair of seat support bars 20 are similarly connected to adjacent hinge pins 18 at the upper portions of the hinge blocks. In this fashion legs 19 may be spaced divergently away from each other, as may the bars 20, as shown best in Fig. 10, or the opposed legs may be disposed parallel and adjacent each other, as may also the bars 20, as shown best in Fig. 11. In Fig. 10 the parts are shown in set up position whereas in Fig. 11 the parts are shown in folded position.

In order to limit the angular divergence of the legs 19 and bars 20 with respect to each other, respectively, shoulders 21 are formed upon the legs and bars adjacent the hinges and by virtue of the fact that the blocks 16 are thicker than legs 19 and 20 abutting shoulders 22 are formed upon the adjacent ends of the hinge blocks 16. Hence, when the legs and bars are spread, in setting up the chair, the shoulders 21 and 22 abut thereby stabilizing the legs and bars in the position shown best in Fig. 2.

In order to prevent unintended folding of the bars 20 when the chair is set up, a pair of struts 23 are hingedly connected in slots 24 provided in the bars and at their outer ends, said struts are hinged together, as at 25 in Fig. 2, the hinge 25 being such as to prevent the struts from moving through an angle greater than 180° with respect to each other. Similarly a pair of struts 26—26 are hingedly connected in slots (not shown) provided in legs 19, said struts being hingedly connected to each other at their ends in the same

fashion as hereinbefore described with respect to struts 23.

When the device is in set-up position the legs 19 and leg portion 2 are related to each other in tripod fashion, as are the bars 20 and back portion 3. To render this relationship of the parts fixed, a stop 27 is carried by the combination leg and back member 1, said stop being of tapered construction and being disposed in a dove-tail groove provided transversely in the leg and back member 1. When the device is in set-up position said stop makes contact with the upper end portions of legs 19. In this fashion a relatively rigid tripod support is formed.

To carry the fabric seat 9 a pair of rods 28 are carried at the upper portions of the housing pieces 4 and 5, the upper portion of the fabric seat 9 being looped upon said rods. The fabric seat 9 is substantially trapezoidal in shape and at each lower corner thereof a ring 29 is carried which is adapted to removably encircle the upper ends of the bars 20 thereby supporting the outer edge of the fabric seat.

When the housing pieces 4 and 5 are opened a stop bracket 30 abuts against adjacent end walls of each housing piece and limits the spread position of said pieces with respect to each other. The stop bracket 30 may comprise a pair of spaced resilient fingers 31 which may be employed, if desired, to hold the shank of an umbrella, adding to the comfort of the user.

To fold the device the hinge 25 and the corresponding hinge between the links 26 are "broken" and legs 19 are moved to parallel contacting position, as are also bars 20, the loops 29 previously being removed from the ends of bars 20. The legs 19 and bars 20 being carried by the hinge plates 13 are then swung about pin 12 as a pivot in a counterclockwise direction, as viewed in Fig. 1, until the legs 19 and bars 20 are brought to a parallel contacting relationship with the member 1 and then said legs and bars are slid upwardly along the member 1, the pin 12 moving laterally to the upper end of slot 11. The relationship of the legs 19, bars 20, member 1 and hinge plates 13 and slot 11 is then as shown in Figs. 3, 4, 5 and 6, particularly Fig. 5.

In Fig. 3 it will be noted that the bars 20 are now positioned in contact with the member 1 adjacent the housing pieces 4 and 5. Thereafter the fabric seat 9 is folded, as at 32 in Fig. 3, with the loops 29 disposed adjacent the upper portions of the housing pieces and the fabric seat overlying the bars 20. The housing pieces 4 and 5 may then be moved upon hinges 6 and 7 to close said housing pieces thereby confining the bars 20 and fabric seat 9 within the housing thus formed.

Each of the rods 28 may extend exteriorly of the housing pieces, as shown best at 33 in Fig. 3, and upon one of said extensions a spring clip 34 may be carried, said clip being U-shaped and being adapted for spring engagement with the other extension 33 whereby the housing pieces may be held in closed position. The device is then in the form of a cane or walking stick, as shown best in Figs. 4, 5 and 6.

The parts comprising my device are preferably constructed of aluminum, but, if desired, may be constructed of magnesium or wood or any other light weight material having sufficient strength for the intended purpose. In view of the fact that the member 1, legs 19 and bars 20 sustain the major portion of the load when the device is used as a chair, these parts may be constructed of metal, and the housing pieces, which sustain only a minor portion of the load, may be constructed of a relatively light weight plastic material or the like.

I claim as my invention:

1. A folding chair comprising a hinge block, a pair of legs pivotally mounted upon said hinge block, a pair of seat-supporting bars pivotally mounted upon said hinge block, shoulders upon said hinge block and cooperating shoulders upon said legs and seat-supporting bars which respectively abut the shoulders on said hinge block to limit pivotal movement of said legs and bars relative to said hinge block, a member pivotally connected with said hinge block, said member comprising a back portion and a leg portion, a flexible fabric seat connected adjacent an upper end of the back portion of said member, said fabric seat being removably connected to said seat supporting bars, and a stop bar carried by said member and frictionally engageable with said legs to form a tripod comprising said legs and the leg portion of said member.

2. A folding chair comprising a hinge block, a pair of legs pivotally mounted upon said hinge block, a pair of seat-supporting bars pivotally mounted upon said hinge block, said legs and seat-supporting bars being swingable in the same plane, shoulders upon said hinge block and cooperating shoulders upon said legs and seat-supporting bars which respectively abut the shoulders on said hinge block to limit pivotal movement of said legs and bars relative to said hinge block, a member pivotally connected to said hinge block, said member comprising a back portion and a leg portion, a flexible fabric seat connected adjacent an upper end of the back portion of said member, said fabric seat being removably connected to said seat supporting bars, and a stop bar carried by said member and frictionally engageable with said legs to form a tripod comprising said legs and the leg portion of said member.

3. A folding chair comprising a hinge block, a pair of legs pivotally mounted upon said hinge block, a pair of seat-supporting bars pivotally mounted upon said hinge block, said legs and seat-supporting bars being swingable in the same plane, shoulders upon said hinge block and cooperating shoulders upon said legs and seat-supporting bars which respectively abut the shoulders on said hinge block to limit pivotal movement of said legs and bars relative to said hinge block, a member pivotally connected to said hinge block, said member comprising a back portion and a leg portion, said member being swingable relatively to said hinge block in a plane at right-angles to said first-mentioned plane, a flexible fabric seat connected adjacent an upper end of the back portion of said member, said fabric seat being removably connected to said seat supporting bars, and a stop bar carried by said member and frictionally engageable with said legs to form a tripod comprising said legs and the leg portion of said member.

4. A folding chair comprising a hinge block, a pair of legs pivotally mounted upon said hinge block, a pair of seat-supporting bars pivotally mounted upon said hinge block, said legs and said seat-supporting bars being swingable in the same plane, means upon said hinge strap and upon said legs and bars for limiting the divergent swing of said legs and bars relative to said hinge strap, a member pivotally connected to said hinge strap, said member comprising a back portion and a leg portion, a flexible fabric seat connected adja-

cent an upper end of the back portion of said member, said fabric seat being removably connected to said seat supporting bars, and a strap carried by said member and frictionally engageable with said legs to form a tripod comprising said legs and the leg portion of said member.

5. A folding chair comprising a hinge block, a pair of legs pivotally connected to said hinge block, a pair of seat-supporting bars pivotally connected to said hinge block, shoulders upon said hinge block and cooperating shoulders upon said legs and seat supporting bars which respectively abut the shoulders on said hinge block to limit pivotal movement of said legs and bars relative to said hinge block, a member having a back portion and a leg-portion, a pair of hinge plates pivotally secured to said member, means pivotally connecting said hinge plates to said hinge block, a flexible fabric seat connected adjacent an end of the back portion of said member, means removably connecting said fabric seat to said seat-supporting bars, and means interengaging said pivoted legs and the leg portion of said member to form a substantially rigid tripod comprising said pivoted legs and the leg portion of said member.

6. A folding chair comprising a hinge block, a pair of legs pivotally connected to said hinge block, a pair of seat-supporting bars pivotally connected to said hinge block, shoulders upon said hinge block and cooperating shoulders upon said legs and seat supporting bars which respectively abut the shoulders on said hinge block to limit pivotal movement of said legs and bars relative to said hinge block, a member having a back portion and a leg portion, a pair of hinge plates, a hinge pin positioned in a slot in said member and pivotally securing said hinge plates to said member, means pivotally connecting said hinge plates to said hinge block, a flexible fabric seat connected adjacent an end of the back portion of said member, means removably connecting said fabric seat to said seat-supporting bars, and means interengaging said pivoted legs and the leg portion of said member to form a substantially rigid tripod comprising said pivoted legs and the leg portion of said member.

7. A folding chair comprising a hinge block, a pair of legs pivotally connected to said hinge block, a pair of seat-supporting bars pivotally connected to said hinge block, means upon said hinge block and upon said legs and bars for limiting the divergent swing of said legs and bars relative to said hinge block, a member having a back portion and a leg portion, a pair of hinge plates pivotally secured to said member, means pivotally connecting said hinge plates to said hinge block, housing pieces hingedly connected to the back portion of said member, a flexible fabric seat connected to said housing pieces, said housing pieces being swingable together to form a housing closed for said fabric seat, means removably connecting said fabric seat to said seat-supporting bars, and means interengaging said pivoted legs and the leg portion of said member to form a substantially rigid tripod comprising said pivoted legs and the leg portion of said member.

8. A folding chair comprising a hinge block, a pair of legs pivotally connected to said hinge block, a pair of seat-supporting bars pivotally connected to said hinge block, said legs and bars being swingable in a common plane, means upon said hinge block and upon said legs and bars for limiting the divergent swing of said legs and bars relative to said hinge block, a member having a back portion and a leg portion, a pair of hinge plates pivotally secured to said member, means pivotally connecting said hinge plates to said hinge block, said hinge plates permitting swingable movement of said member in a plane at right angles to said first-mentioned plane, when said legs and bars are swingable into parallel laterally contacting relationship with said member, a flexible fabric seat connected adjacent an end of the back portion of said member, means removably connecting said fabric seat to said seat-supporting bars, and means interengaging said pivoted legs and the leg portion of said member to form a substantially rigid tripod comprising said pivoted legs and the leg portion of said member.

9. A folding chair comprising a hinge block, a pair of legs pivotally connected to said hinge block, a pair of seat-supporting bars pivotally connected to said hinge block, said legs and bars being swingable in a common plane, means upon said hinge block and upon said legs and bars for limiting the divergent swing of said legs and bars relative to said hinge block, a member having a back portion and a leg portion, a pair of hinge plates pivotally secured to said member, means pivotally connecting said hinge plates to said hinge block, said hinge plates permitting swingable movement of said member in a plane at right angles to said first-mentioned plane, when said legs and bars are swingable into parallel laterally contacting relationship with said member, a flexible fabric seat adjacent an end of the back portion of said member, means removably connecting said fabric seat to said seat-supporting bars, and means interengaging said pivoted legs and the leg portion of said member to form a substantially rigid tripod comprising said pivoted legs and the leg portion of said member, and housing pieces hinged to said member at the back portion thereof to form a housing when swung together for said seat-supporting bars and said fabric seat.

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