Sept. 6, 1932. J. WELLER 1,876,479

CHAIR

Filed March 2, 1932 2 Sheets-Sheet 1

Fig. 1.

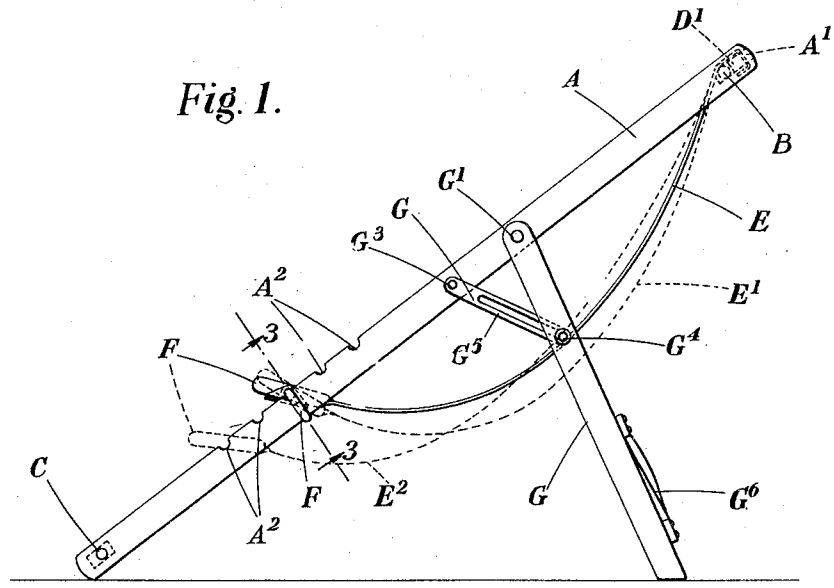


Fig. 2.

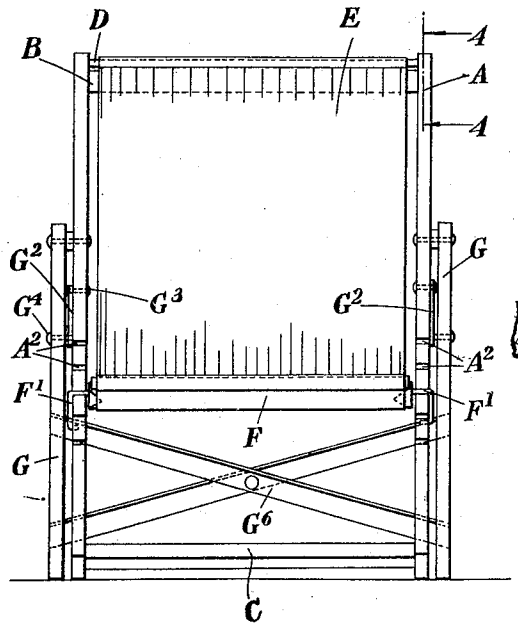
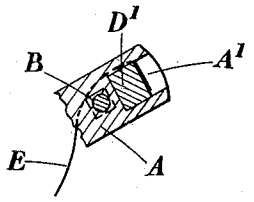


Fig. 4.



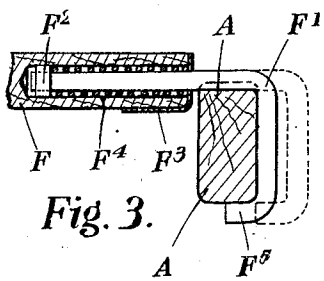


Fig. 3.

INVENTOR

JOHN WELLER

BY Blair & Kilcoyne

ATTORNEYS

Sept. 6, 1932. J. WELLER 1,876,479

CHAIR

Filed March 2, 1932 2 Sheets-Sheet 2

Fig. 5.

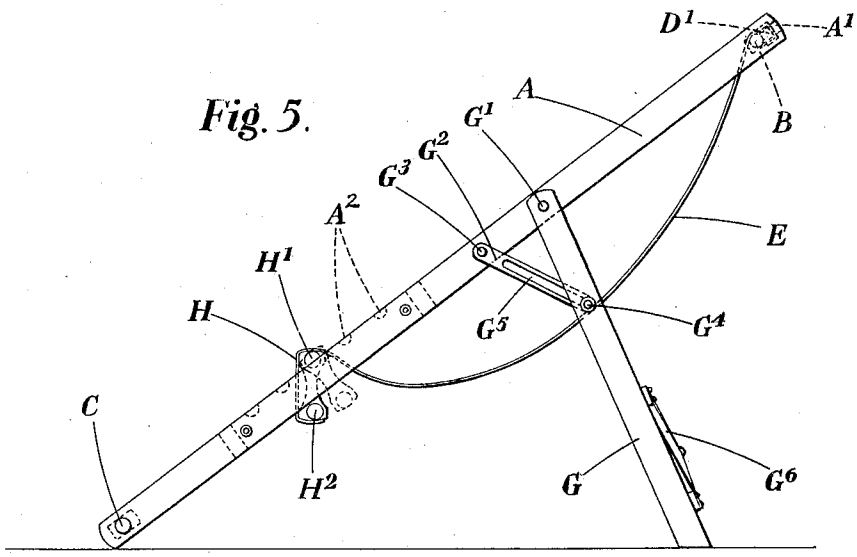


Fig. 6.

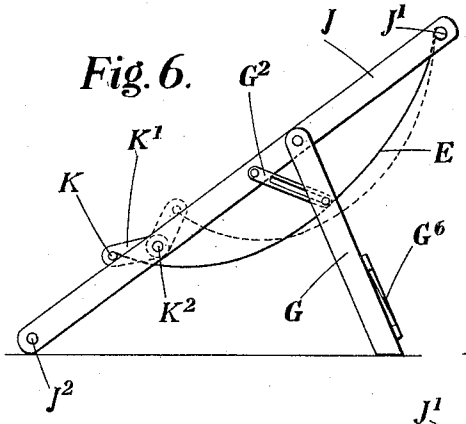


Fig. 7.

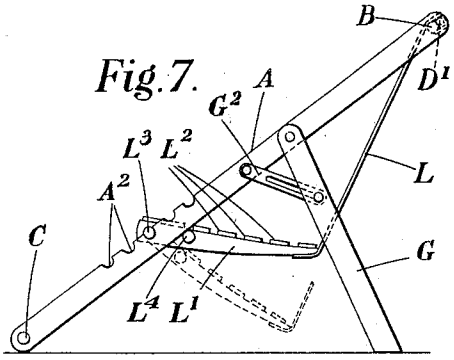


Fig. 8.

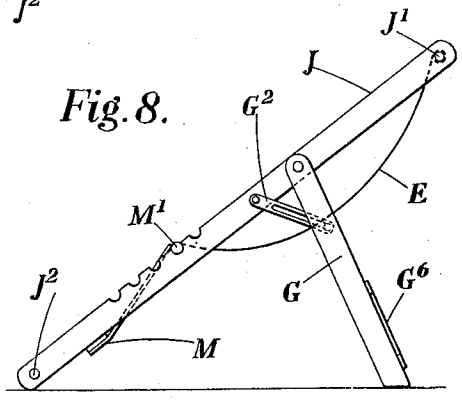
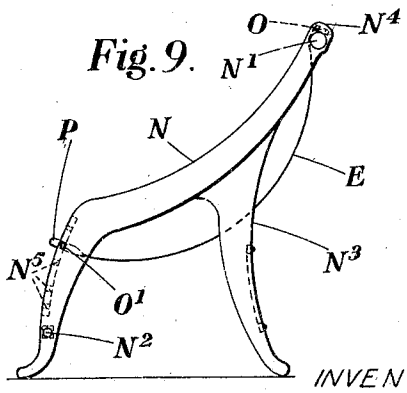


Fig. 9.



INVENTOR

JOHN WELLER

BY Blair & Kilcoyne

ATTORNEYS

Patented Sept. 6, 1932 1,876,479

UNITED STATES PATENT OFFICE

JOHN WELLER, OF WEST HORSLEY, ENGLAND

CHAIR

Application filed March 2, 1932, Serial No. 596,357, and in Great Britain January 16, 1931.

This invention relates to chairs of the kind comprising an open frame serving as a support for a length of flexible material which constitutes the seat of the chair, and has for its object to provide a chair of the above type which can be adjusted readily in accordance with requirements.

According to the present invention a chair of the above kind comprises a main frame including side members, one end of each of which rests on the ground, and upper and lower transverse members extending between the side members, a supporting frame connected at one end to an intermediate point in the side members of the main frame while its other end rests on the ground, an intermediate transverse member extending between the side members of the main frame, means connecting the intermediate transverse member to the side members of the main frame and providing an adjustment of the intermediate member in the direction of the length of the side members, and a length of flexible material extending between and supported by the upper and intermediate transverse members. Preferably the upper ends of the side members of the main frame are slotted to receive an upper transverse member to which the upper end of the flexible material is attached, the ends of this upper transverse member engaging in a readily removable but non-rotatable manner the slots in the upper ends of the side members so that by removing the upper transverse member from the slots and rotating it so as either to wind a portion of the flexible material thereon or unwind it therefrom, the effective length of the flexible material can be varied and when the upper transverse member is placed in the slots rotation thereof to permit unwinding of the flexible material therefrom will be prevented.

Conveniently the adjustment of the intermediate transverse member is effected by providing a series of notches in the side members of the main frame and trunnions on the ends of the intermediate transverse member which engage these notches, means preferably being provided for preventing unintentional disengagement between the trunnions and the notches, such means operating if desired by reason of the weight of an individual occupying the chair.

The invention may be carried into practice in various ways but a number of constructions according to this invention are illustrated by way of example in the accompanying drawings, in which

Figure 1 is a side elevation of one construction of chair according to this invention,

Figure 2 is a front view of the chair shown in Figure 1,

Figure 3 is a detailed view showing in section one end of the intermediate transverse member employed in the chair shown in Figures 1 and 2 with the trunnion-like part for engaging the notches in the side members of the main frame,

Figure 4 is a section on the line 4—4 of Figure 2, and

Figures 5, 6, 7, 8 and 9 are side elevations of five alternative forms of chair according to this invention.

In the construction shown in Figures 1, 2, 3 and 4 the chair comprises a rectangular main frame comprising side members A, an upper transverse member B and a lower transverse member C. Formed in the upper end of each of the side members A is a short longitudinal slot A^1 of rectangular cross-section, these slots serving to accommodate the squared ends D^1 of an auxiliary upper transverse member D to which is connected one end of a length of flexible material E. The ends D^1 of the member D engage the slots A^1 freely so that the member D can be readily removed from these slots but when its ends lie within the slots rotation of this member is prevented. The lower end of the length of flexible material E is connected to an intermediate transverse member F of appreciable width as shown, this member being supported on the side members A of the main frame by trunnions F^1 constructed and arranged as shown in Figure 3. Thus, each trunnion is of hook-like form and the shank of the trunnion extends within a cylindrical bore in the intermediate transverse member F and is provided at its end with a head F^2. Interposed between this head F^2 and a plate

F^3 which is secured to the intermediate member and is provided with an aperture through which the shank of the hook-like trunnion passes, is a spring F^4 tending always to move the hook-like trunnion F^1 towards the intermediate transverse member F. The end of the shank of each trunnion which extends outside the plate F^3 is adapted to engage one or other of a series of notches A^2 in the side members A of the main frame while the end F^5 of each of the hooks passes partly round its adjacent side member A and engages the under surface of this side member so as normally to prevent disengagement of the shank of the hook-like trunnion F^1 from the notch A^2 in which it lies. When, however, it is desired to move each of the trunnions from one pair of notches A^2 to another the hook-like trunnions can be partially withdrawn against the action of the springs F^4 so as to free the ends F^5 thereof from the under surfaces of the side members, when the trunnions can be disengaged from the side members and can be placed thereon with the shank of the trunnion in whichever notch is desired.

The main frame A, B, C, is supported in an inclined position by a supporting frame G one end of which rests on the ground while its other end is connected by pivots G^1 to the side members A, a stay or link G^2, one end of which is pivoted at G^3 to the side member A while its other end is connected to the frame G by a pin G^4 engaging a slot G^5 in the link, serving to limit the angle of the supporting frame G relatively to the main frame A, B, C, and yet to permit the supporting frame G to be moved about its pivots G^1 into close proximity to the main frame when the chair is not in use. The two side members of the supporting frame are connected by a cross framing G^6. In Figure 1 one position of the intermediate transverse member F and of the flexible material E constituting the seat of the chair is shown in full lines while the dotted line E^1 indicates an alternative position which this flexible material may occupy without moving the intermediate transverse member into a different notch but merely increasing the effective length of the flexible material by removing the upper transverse member D from its slots A^1, rotating it somewhat so as to unwind therefrom a part of the flexible material and then replacing it in its slots. A still further alternative position of the flexible material is indicated by the dotted line E^2, the hook-like trunnions F^1 on the intermediate member F in this case occupying different notches from those which they occupy in the other positions indicated.

In the construction illustrated in Figure 5 the main frame A, B, C, the supporting frame G, the connection thereof and the arrangement of the subsidiary upper transverse member are the same as for the chair illustrated in Figures 1 to 4. In the construction shown in Figure 5, however, the lower end of the flexible material is connected to an intermediate transverse member H carrying at its ends one pair of trunnions H^1 which are adapted to engage the notches A^2 in the side members of the main frame, and also a second pair of trunnions H^2 which are adapted to lie beneath and engage the underside of the side members of the frame, the arrangement being such that the weight of an occupant of the chair will act through the flexible material E to cause the intermediate member H to rock about the trunnions H^1 so as to bring the trunnions H^2 into engagement with the undersides of the side members of the frame as shown in full lines in Figure 5, thus preventing unintentional disengagement of the trunnion members H^1 from the notches A^2 which they occupy. If, on the other hand, it is desired to move the intermediate transverse member H so as to cause the trunnions H^1 to occupy a different pair of notches, this intermediate transverse member can be swung into the position indicated in dotted lines in Figure 5 when it can be moved in a direction at right angles to the length of the side members so as to cause disengagement of the trunnions H^1 from their notches, whereupon the intermediate transverse member can be slid along the side members of the frame until the trunnions H^1 occupy a different pair of notches.

In the construction illustrated in Figure 6 the chair comprises a rectangular main frame comprising side members J and upper and lower transverse members J^1, J^2, this main frame being supported by a supporting frame G, G^6 similar to the supporting frame employed in the constructions shown in Figures 1, 2, 3, 4 and 5. In the construction shown in Figure 6 the upper end of the flexible material E is connected directly to the rigid upper transverse member J^1 while its lower end is connected to an intermediate transverse member K which is supported on links K^1 pivoted at K^2 to an intermediate point in the side members of the frame, the ends of the intermediate transverse member extending through these links so that they will engage the upper surface of the side members of the frame both when the links occupy the position shown in full lines and also when these links occupy the position shown in dotted lines in Figure 6. It will thus be seen that the flexible material E can also occupy either the position shown in full or in dotted lines.

In the construction shown in Figure 7 the chair comprises a main frame A, B, C, and a supporting frame G constructed and arranged in substantially the same manner as the main and supporting frames in the construction shown in Figures 1, 2, 3, 4 and 5. In the construction shown in Figure 7 the upper end of the flexible material L is connected to the subsidiary transverse member

D^1 while its lower end is connected to the rear end of an approximately rigid seat comprising rigid side members L^1 between which extend slats L^2, the forward end of the rigid seat carrying trunnions L^3 which engage the notches A^2 in the side members A of the frame A, B, C. The rigid side members L^1 of the seat also carry a second pair of trunnions L^4 which lie below the side members A of the frame A, B, C, and are adapted to engage these side members when the seat occupies the position indicated in full lines in Figure 7 so as to prevent unintentional disengagement between the trunnions L^3 and their notches A^2. When the trunnions L^3 are to be moved to different notches, however, the rigid seat can be moved into the position indicated in dotted lines by removing the member D^1 from its slots, when it will be seen that the trunnions L^3 can be disengaged from their slots and the forward end of the rigid seat L^1, L^2 can be slid along the side members A of the frame A, B, C, until these trunnions engage different notches, when the seat L^1, L^2 can again be raised into the position indicated in full lines.

In the construction shown in Figure 8 the chair comprises a main frame J, J^1, J^2, and a supporting frame G, G^6 constructed and arranged in a manner similar to the main frame and supporting frame in the construction shown in Figure 6. In the construction shown in Figure 8, however, the lower end of the flexible material E is secured to a transverse member M rigidly secured to the side members of the frame, while at an intermediate point in its length the flexible material passes over an intermediate adjustable transverse member M^1 the ends of which engage notches A^2 in the side members of the frame. With this arrangement it will be seen that by moving the intermediate transverse member M^1 from one pair of notches to another, adjustment of the chair is possible, while when the chair is occupied the force exerted on the intermediate transverse member M^1 due to the weight of the occupant acting through the flexible material E will tend to retain this intermediate transverse member M^1 in its notches.

In the construction illustrated in Figure 9 the chair comprises a main frame comprising side members N, one end of each of which rests on the ground, and upper and lower transverse members N^1, N^2 and a supporting frame N^3 rigidly connected to the main frame. Formed in the upper ends of the side members N of the main frame are slots N^4 to receive a second upper transverse member O having squared ends which engage the slots N^4 in a readily removable but non-rotatable manner, the arrangement being similar to that of the member D^1 and slots A^1 in the construction shown in Figures 1, 2, 3 and 4. Connected to the upper transverse member O is one end of a length of flexible material E the other end of which is connected to an intermediate transverse member P of the same general form as the intermediate transverse member F of the construction shown in Figure 1 except that it has trunnions O^1 rigidly connected to its ends and adapted to engage slots N^5 in the main frame.

What I claim as my invention and desire to secure by Letters Patent is:—

1. A chair including in combination a main frame comprising side members, one end of each of which rests on the ground, and upper and lower transverse members extending between the side members, a supporting frame, means for connecting one end of the supporting frame to an intermediate point in the side members of the main frame while its other end rests on the ground, an intermediate transverse member extending between the side members of the main frame, means connecting the intermediate transverse member to the side members of the main frame and providing adjustment of the intermediate transverse member in the direction of the length of the side members, and a length of flexible material extending between and supported by the upper and intermediate transverse members.

2. A chair including in combination a main frame comprising side members, one end of each of which rests on the ground, and upper and lower transverse members extending between the side members, a supporting frame, means for connecting one end of the supporting frame to an intermediate point in the main frame while its other end rests on the ground, a series of spaced notches being formed in the side members of the main frame longitudinally thereof, an intermediate transverse member extending between the side members and having parts at its ends which rest in a pair of notches formed respectively in the two side members of the main frame the intermediate transverse member being movable from one pair of notches to another whereby its position is adjustable relatively to the main frame, and a length of flexible material the upper end of which is connected to the upper transverse member while its lower end is connected to the intermediate transverse member.

3. A chair including in combination a main frame comprising side members, one end of each of which rests on the ground while its other end is provided with a slot, upper and lower transverse members extending between the side members, the ends of the upper transverse member engaging in a readily removable manner the slots in the upper ends of the side members and being non-rotatable therein, a supporting frame, means for connecting one end of the supporting frame to an intermediate point in the main frame while its other end rests on the ground, a

series of spaced notches being formed in the side members of the main frame longitudinally thereof, an intermediate transverse member extending between the side members and having parts at its ends which rest in a pair of notches formed respectively in the two side members of the main frame, the intermediate transverse member being movable from one pair of notches to another whereby its position is adjustable relatively to the main frame, and a length of flexible material the upper end of which is connected to the upper transverse member while its lower end is connected to the intermediate transverse member.

4. A chair including in combination a main frame comprising side members, one end of each of which rests on the ground, and upper and lower transverse members extending between the side members, a supporting frame, means for connecting one end of the supporting frame to an intermediate point in the main frame while its other end rests on the ground, a series of spaced notches being formed in the upper face of each of the side members of the main frame, an intermediate transverse member extending between the side members and having parts at its ends which rest in a pair of notches formed respectively in the side members of the main frame, the end parts being movable from one pair of notches to another whereby the position of the intermediate transverse member is adjustable relatively to the main frame, a length of flexible material the upper end of which is connected to the upper transverse member while its lower end is connected to the intermediate transverse member, and members carried by and extending from the ends of the intermediate transverse member so as to lie adjacent to the undersides of the side members of the main frame and to be caused, by the movement of the intermediate member due to the weight of an occupant of the chair on the flexible material, to come into engagement with the undersides of the side members of the main frame so as to prevent unintentional movement of the ends of the intermediate transverse member out of the notches.

5. A chair including in combination a main frame comprising side members, one end of each of which rests on the ground, and upper and lower transverse members extending between the side members, a supporting frame, means for connecting one end of the supporting frame to an intermediate point in the main frame while its other end rests on the ground, spaced notches being formed in the upper surface of each of the side members of the main frame, an intermediate transverse member extending between the side members, upper and lower trunnions on each end of the intermediate transverse member, the upper trunnion being adapted to engage the notches in the adjacent side member, whereby the intermediate transverse member may be adjusted along the length of the side member, while the lower trunnion is adapted to engage the under surface of the side member to prevent unintentional movement of the upper trunnions out of the notches, and a length of flexible material the upper end of which is connected to the upper transverse member while its lower end is connected to the intermediate transverse member.

6. A chair including in combination a main frame comprising side members, one end of each of which rests on the ground while its other end is provided with a slot, upper and lower transverse members extending between the side members, the ends of the upper transverse member engaging in a readily removable manner the slots in the upper ends of the side members and being non-rotatable therein, a supporting frame, means for connecting one end of the supporting frame to an intermediate point in the main frame while its other end rests on the ground, notches being formed in the upper surface of the side members of the main frame, an intermediate transverse member which extends between the side members of the main frame, an upper trunnion extending from each end of the intermediate transverse member and engaging a notch in the adjacent side member, whereby the intermediate transverse member may be adjusted along the length of the side members, a length of flexible material the upper end of which is connected to the upper transverse member while its lower end is connected to the intermediate transverse member, and a lower trunnion extending from each end of the intermediate transverse member so as to lie beneath the adjacent side member and, by reason of movement of the intermediate transverse member caused by the weight of an occupant of the chair on the flexible material, being brought into engagement with the under surface of the side member so as to prevent unintentional movement of the upper trunnion members out of their notches.

7. A chair including in combination a main frame comprising side members, one end of each of which rests on the ground while its other end is provided with a slot, upper and lower transverse members extending between the side members, the ends of the upper transverse member engaging in a readily removable manner the slots in the upper ends of the side members and being non-rotatable therein, a supporting frame, means for connecting one end of the supporting frame pivotally to an intermediate point in the main frame while its other end rests on the ground, links connecting the main frame and supporting frame and limiting the angular movement of the supporting frame relatively to the main

frame, notches being formed in the upper surface of the side members of the main frame, an intermediate transverse member which extends between the side members of the main frame, an upper trunnion extending from each end of the intermediate transverse member and engaging a notch in the adjacent side member, a length of flexible material the upper end of which is connected to the upper transverse member while its lower end is connected to the intermediate transverse member, and a lower trunnion extending from each end of the intermediate transverse member so as to lie beneath the adjacent side member and, by reason of movement of the intermediate transverse member caused by the weight of an occupant of the chair on the flexible material, being brought into engagement with the under surface of the side member so as to prevent unintentional movement of the upper trunnion members out of the notches.

8. A chair including in combination a main frame comprising side members, one end of each of which rests on the ground, and upper and lower transverse members extending betwen the side members, a supporting frame, means for connecting one end of the supporting frame to an intermediate point in the main frame while its other end rests on the ground, a series of notches being formed in the upper surface of each of the side members of the main frame, an intermediate transverse member extending between the side members and forming a rigid seat, trunnions extending laterally from the forward end of the intermediate transverse member and engaging in a pair of notches in the side members of the main frame, whereby the intermediate transverse member is adjustable in the direction of the length of the side members and a length of flexible material the upper end of which is connected to the upper transverse member while its lower end is connected to the rear end of the intermediate transverse member.

9. A chair including in combination a main frame comprising side members, one end of each of which rests on the ground while its other end is provided with a slot, upper and lower transverse members extending between the side members, the ends of the upper transverse member engaging in a readily removable manner the slots in the upper ends of the side members and being non-rotatable therein, a supporting frame, means for connecting one end of the supporting frame to an intermediate point in the main frame while its other end rests on the ground, a series of notches being formed in the upper surface of each of the side members of the main frame, an intermediate transverse member extending between the side members and forming a rigid seat, trunnions extending laterally from the forward end of the intermediate transverse member and engaging in a pair of notches in the side members of the main frame, whereby the intermediate transverse member is adjustable in the direction of the length of the side members and a length of flexible material the upper end of which is connected to the upper transverse member while its lower end is connected to the rear end of the intermediate transverse member.

10. A chair including in combination a main frame comprising side members, one end of each of which rests on the ground, and upper and lower transverse members extending between the side members, a supporting frame, means for connecting one end of the supporting frame to an intermediate point in the main frame while its other end rests on the ground, a series of notches being formed in the upper face of each of the side members of the main frame, an intermediate transverse member extending between the side members, trunnions extending laterally from the ends of the intermediate transverse member, springs interposed between the trunnions and the intermediate transverse member to move the trunnions axially towards one another, each trunnion being of hook-like form, the shank of the hook engaging a notch in the adjacent side member of the main frame while the end of the hook extends beneath the side member of this main frame and prevents unintentional movement of the shank out of engagement with the notch while permitting such disengagement when the trunnion is moved bodily outwards against the action of its spring, and a length of flexible material the upper end of which is connected to the upper transverse member while its lower end is connected to the intermediate transverse member.

11. A chair including in combination a main frame comprising side members, one end of each of which rests on the ground while its other end is provided with a slot, upper and lower transverse members extending between the side members, the ends of the upper transverse member engaging in a readily removable manner the slots in the upper ends of the side members and being non-rotatable therein, a supporting frame, means for connecting one end of the supporting frame to an intermediate point in the main frame while its other end rests on the ground, a series of notches being formed in the upper faces of the side members of the main frame, an intermediate transverse member extending between the side members, trunnions extending laterally from the ends of the intermediate transverse member, springs interposed between the trunnions and the intermediate transverse member to move the trunnions axially towards one another, each trunnion being of hook-like form, the shank of the hook engaging a notch in the adjacent side member of the main frame while the

end of the hook extends beneath the side member of this main frame and prevents unintentional movement of the shank out of engagement with the notch while permitting such disengagement when the trunnion is moved bodily outwards against the action of its spring, and a length of flexible material the upper end of which is connected to the upper transverse member while its lower end is connected to the intermediate transverse member.

In testimony whereof I have signed my name to this specification.

JOHN WELLER.