Sept. 23, 1941. J. L. CABLE 2,256,893

CHAIN CONSTRUCTION

Filed Jan. 13, 1940 3 Sheets-Sheet 1

Fig. 1.

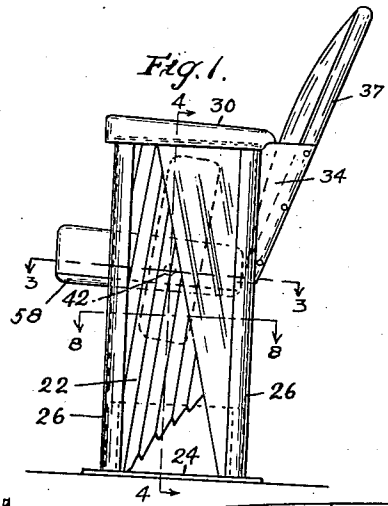


Fig. 2.

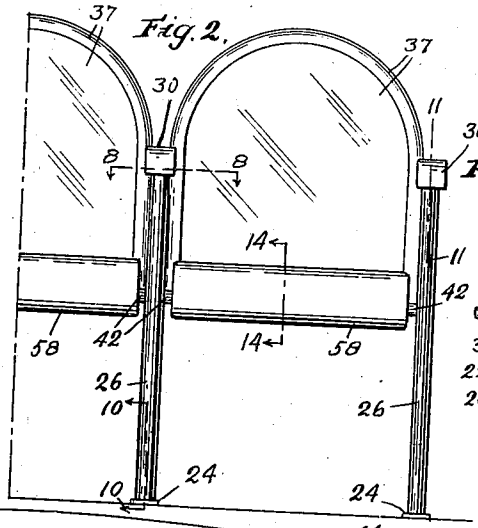
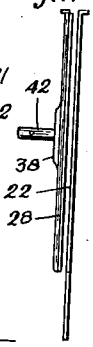


Fig. 4.



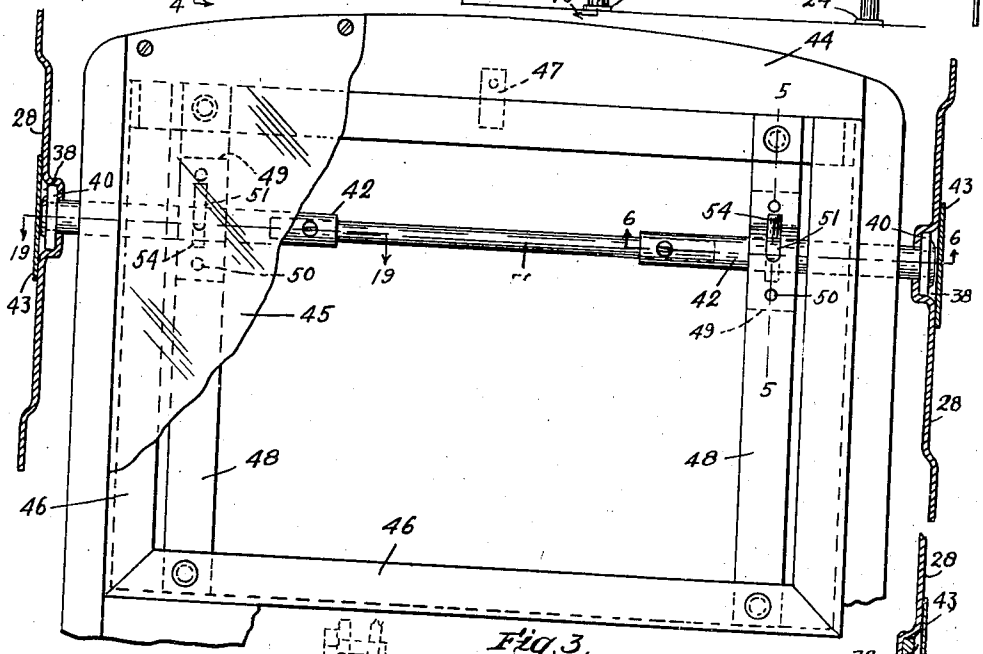


Fig. 3.

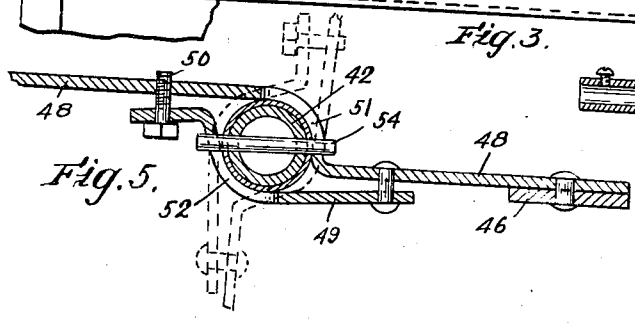


Fig. 5.

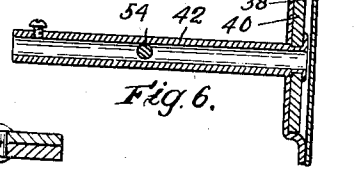


Fig. 6.

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Sept. 23, 1941. J. L. CABLE 2,256,893

CHAIN CONSTRUCTION

Filed Jan. 13, 1940 3 Sheets-Sheet 2

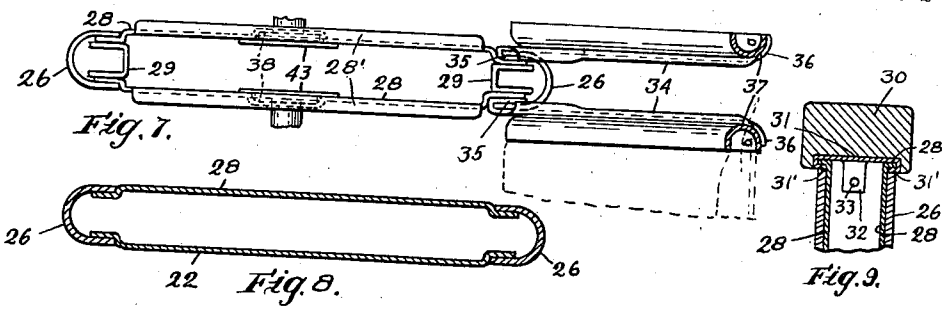


Fig. 7.

Fig. 8.

Fig. 9.

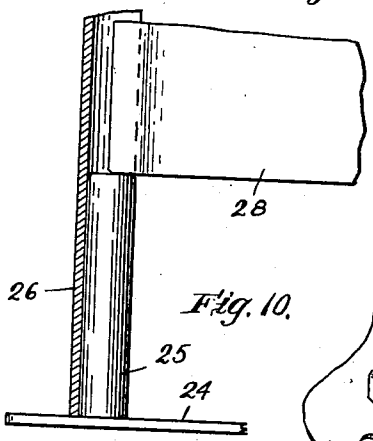


Fig. 10.

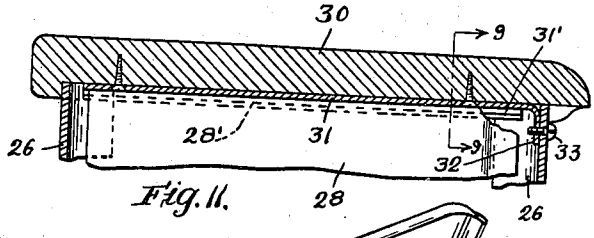


Fig. 11.

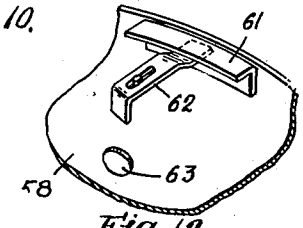


Fig. 12.

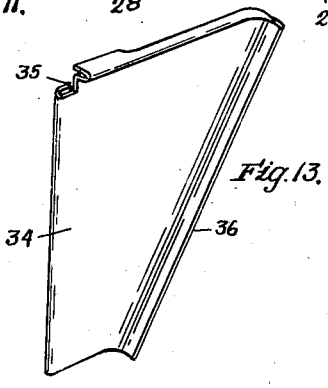


Fig. 13.

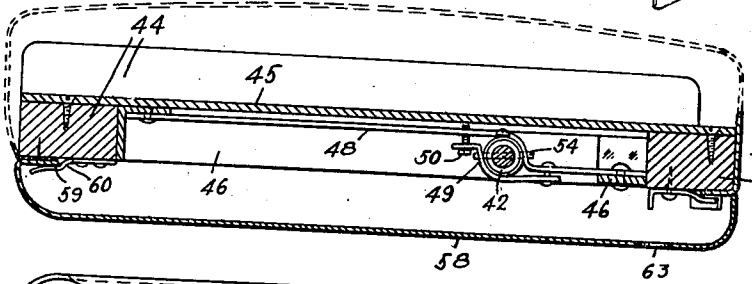


Fig. 14.

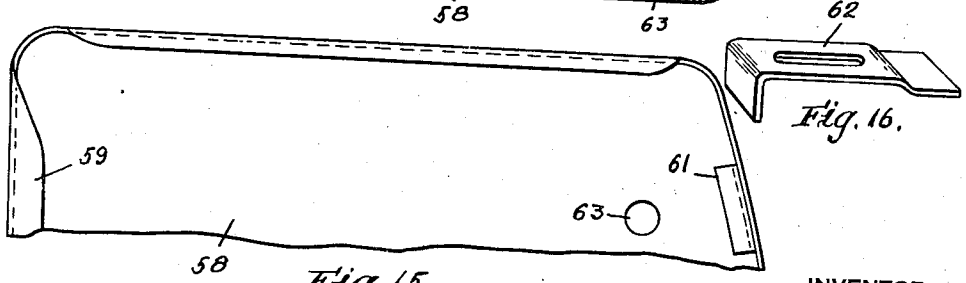


Fig. 16.

Fig. 15.

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Sept. 23, 1941. J. L. CABLE 2,256,893

CHAIN CONSTRUCTION

Filed Jan. 13, 1940 3 Sheets-Sheet 3

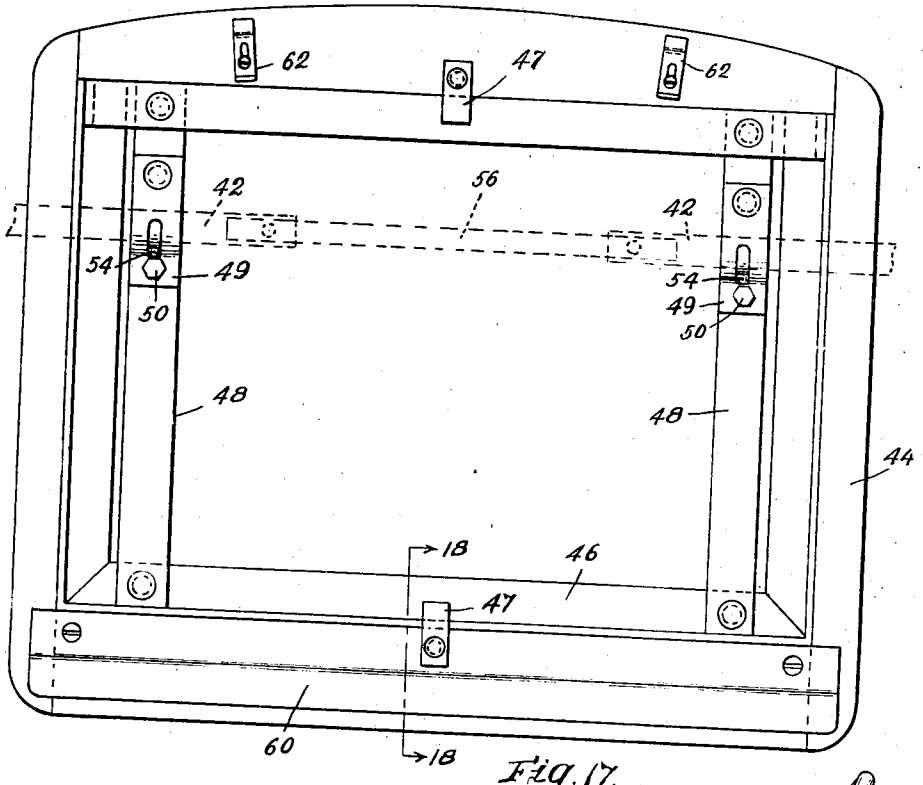


Fig. 17.

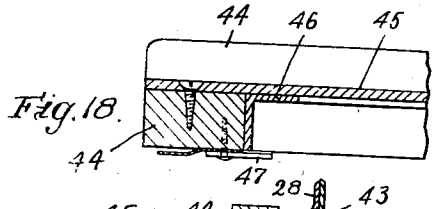


Fig. 18.

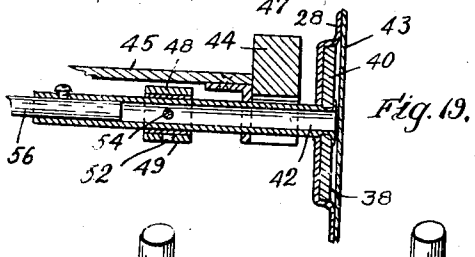


Fig. 19.

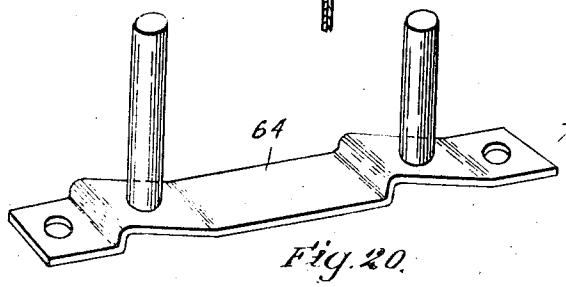


Fig. 20.

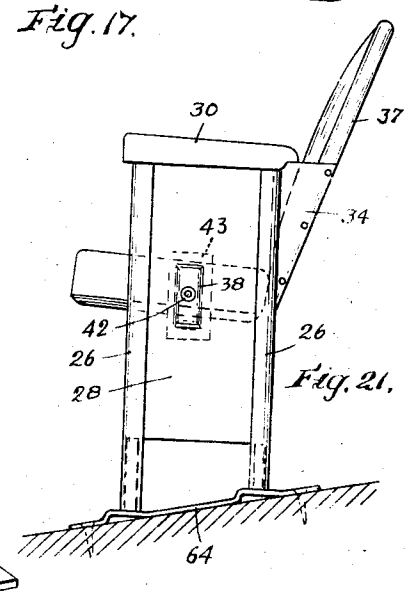


Fig. 21.

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Patented Sept. 23, 1941 2,256,893

UNITED STATES PATENT OFFICE

2,256,893

CHAIR CONSTRUCTION

Julius L. Cable, Dorchester, Mass.

Application January 13, 1940, Serial No. 313,723

6 Claims. (Cl. 155—86)

This invention primarily relates to chairs which are designed for installation in opera houses or theaters in which the chairs are secured to the floor and are arranged in rows side by side and in which the seat is pivoted to the rest of the structure so that it may be readily raised to an upright position or lowered to the position of use.

In installations of this character it is desirable that the work of installation may be quickly performed as this work frequently must be done during night time. Also that removal of the seat for repair, or renewal of the seat covering and cushion may be readily accomplished, or so that one seat may be substituted for another.

As it is necessary that the seats of chairs of this type be pivotally supported, so that they may be used to permit passage between the rows of chairs, a simple and durable form of pivotal support for the seats is desirable, and particularly one in which the seat will remain in any position to which it is raised, unless positively moved to its position of use.

Also in such installations various different conditions are likely to be encountered such as variations in floor inclinations from the horizontal and requirements that the chairs be installed in curved rows.

The objects of my invention are to provide an improved form of pivotal support for the seat, which is simple and durable and with which the seat will remain in raised position unless forced into its lowered position, also to provide a construction which enables chairs of the type referred to, to be installed rapidly, and at low expense, in curved or straight rows, and which enable them to be readily adapted to different floor inclinations, and which enables ready removal and replacement of the seats for the purpose of repair or renewal.

I accomplish these and other objects of my invention by means of the construction hereinafter described and illustrated in the accompanying drawings, in which:

Fig. 1 is a view in side elevation of the end chair of a series of chairs embodying my invention.

Fig. 2 is a front elevation of a plurality of said chairs.

Fig. 3 is a sectional plan view on a larger scale, taken at the line 3—3 of Fig. 1.

Fig. 4 is a detail sectional view at line 4—4 of Fig. 1.

Fig. 5 is a detail sectional view on an enlarged scale at line 5—5 of Fig. 3.

Fig. 6 is a detail sectional view at line 6—6 of Fig. 3.

Fig. 7 is a detail plan view of adjacent side panels with the arm rest removed.

Fig. 8 is a sectional view at line 8—8 of Fig. 2.

Fig. 9 is a detail sectional view at line 9—9 of Fig. 11.

Fig. 10 is a detail sectional view at line 10—10 of Fig. 2.

Fig. 11 is a detail sectional view at line 11—11 of Fig. 2.

Fig. 12 is a detail view of a bottom plate lock which I employ.

Fig. 13 is a detail view of a seat back support.

Fig. 14 is a section view at line 14—14 of Fig. 2.

Fig. 15 is a detail view of a portion of a bottom plate.

Fig. 16 is a detail view of a locking clip.

Fig. 17 is a plan view of the bottom side of a seat, with the bottom plate removed.

Fig. 18 is a detail sectional view at line 18—18 of Fig. 17.

Fig. 19 is a similar view at line 19—19 of Fig. 3.

Fig. 20 is a detail view of a modified form of leg base.

Fig. 21 is a side elevation of an intermediate chair, illustrating the use of the leg base shown in Fig. 20.

In Fig. 1 of the drawings a side view of an end chair of a row is illustrated which differs from the intermediate chairs of a row only in that the end panel 22 is plain and has an ornamental finish. Otherwise, a description of single chair will suffice, except that it will be understood that certain intermediate portions between adjacent chairs serve for both.

According to my invention leg posts are provided, such as shown in detail in Fig. 10, each of which comprises a base plate 24, which is adapted to be secured to the floor, and in which a cylindrical post 25 is rigidly mounted and extends vertically therefrom. A leg member 26, which consists of half round or channel metal, encloses the front and rear side of each post 25, each leg member thereby providing a pair of inwardly extending vertically disposed flanges within each of which the edge portions of a pair of sheet metal panels, such as the end panel 22 or the intermediate panels 23, extend, as shown in Figs. 7 and 8, the lower edges of which rest on the top ends of posts 25. Said panels are held against the inner sides of legs 26 by wedges, each of which preferably consists of a U-form metal channel 29, as shown in Fig. 7, which is forced between each pair of panels. The top edges of

each pair of panels have out turned flanges 28', see Figs. 7 and 9. A wood arm rest 30 is provided with a metal base 31, having inturned edges 31' (see Fig. 9) which are adapted slidably to engage the panel flanges 28', the arm rest being thereby adapted to be slid onto the top edges of the panels, as shown in Figs. 9 and 11, and being held in this position by a lug 32 on the inner end thereof, which is attached to the rear leg 26 by a screw 33 as in Fig. 11. The inner-most panel of each pair of panels has a back rest 34, shown in detail in Fig. 13, attached thereto by an edge flange 35, which is hooked on to the edge of a leg 26 as shown in Fig. 7, and extends rearwardly therefrom, said rest having an inturned supporting flange 36, to which one edge of a seat back 37 is secured by rivets or screws, as indicated in Figs. 1, 7 and 21. The seat back 37 merely consists of a frame of half round metal which encloses a back plate, the latter being upholstered in the manner disclosed in my prior Patent No. 1,700,022.

Each panel, except the end panel 22, has a rectangular shaped, or oblong recess 38 indented therein and a similarly shaped plate 40 is somewhat loosely fitted into said recess and has a shaft 42 rigidly secured thereto, said panel having an aperture formed in the middle of said recess through which the shaft passes as shown in Figs. 3, 19 and 21, the shafts of adjacent panels extending oppositely in alignment and forming pivotal supports for the seat as hereinafter described. A thin metal plate 43 may be welded to the panel over recess 38 is desired, so that plate 40, which is attached to shaft 42, may be permanently anchored in position.

The seat comprises a frame 44 having a bottom-piece 45 secured thereto to support the upholstery. A metal frame 46 is fitted within frame 44 from the under side thereof and is removably secured therein against bottom 45 by clips 47, as shown in Figs. 3, 17 and 18. Cross straps 48 are extended from front to rear of frame 46, as shown in Figs. 3, 14 and 17 and have a semi-circularly curved portion therein, shown in detail in Fig. 5, which are arranged in position to receive the shafts 42, the latter being held in position therein by a similarly curved clip 49 which is somewhat loosely riveted to the strap 48 at one end and connected at the opposite end thereto by bolt 50, the arrangement shown permitting adjustment of the clip 49, so that some frictional resistance will be provided between each shaft 42 and the bearing therefor provided by straps 48 and clips 49, which will make it necessary to use some force in turning the seat up or down, thereby causing the seat to be held against its weight in any raised position to which it may be adjusted. Slots 51 and 52 are formed longitudinally in the curved portions of straps 48 and clips 49, which form a bearing for shaft 42, and a stop pin 54, in each shaft passes through the slots and limits the rotation of the seat about the shafts to the extent of the slots. The ends of said slots act as abutments which are engaged by said pin 54 and thus limit the movement of the seat between the full line position of use shown in Figs. 1 and 21 and the dotted line position of Figs. 1 and 5, in which the seat is raised, the arrangement being such that the seat cannot be raised sufficiently to engage the back of the chair.

It is to be understood that this particular seat construction is not essential to the invention. When the seat bottom is strong enough, the straps 48 and clips 49 may be secured directly to the bottom piece, no particular framework being essential. When the seat supporting shafts are to be inserted in the recesses in the side panels subsequently to the installation of the panels, one integrally formed rod or shaft may be used in place of the two shafts connected by a rod.

In assembling the construction first described, the end panels will be set up and a shaft 42, which, as described, will project from the inner panel into the space to be occupied by the seat, will be passed into the bearing, as shown in Figs. 3, 5, 14 and 19, and the stop pin 54 is then driven through a hole in shaft 42 as shown in Fig. 5. The two panels at the opposite side of the seat are then set up and the shaft on the inner panel is passed through the bearing at the opposite side of the metal frame and the stop pin is inserted in like manner. Before placing the second shaft in position, a connecting rod 56 is inserted therein, the shafts being made of hollow tubing, and is passed into the other shaft when placed in position, and, when both are in position the shafts are locked together by rod 56 which is clamped therein by set screws as shown in Fig. 3. The seat is thus pivotally mounted between the panels.

The bottom of the seat is then, preferably, entirely enclosed by a dish shaped sheet metal plate 58, shown in detail in Fig. 15, and, to secure its position, so that it may be readily removed in case of necessity, it is provided with a reversely extending front flange 59 which is adapted to engage a bracket 60 mounted on the bottom side of frame 40 at its front, see Figs. 14, 17 and 18.

The plate 58 is provided at its rear end with a pair of flanges 61, and a pair of correspondingly arranged locking clips 62 are mounted on the bottom side of the frame 44 in position to be moved into engagement with flanges 61. As plate 58 must be placed in position before clips 62 are engaged with flanges 61, an aperture 63 is formed in plate 58 directly beneath each of said clips through which a tool may be inserted to move the clips.

In placing plate 58 in position, its flange 59 is first engaged with bracket 60, and then while plate 58 is held in position, a tool is inserted through each aperture 63 and the clips 62 are moved into engagement with flanges 61, as shown in Fig. 14. The plate 58 may obviously be removed by a reverse operation.

It will be apparent that, to permit removal of the seat for renewal or repair, it will be merely necessary to remove plate 58 and then turn the clips 47 and lift the seat from the metal frame 46.

Other chairs may be installed in like manner, the arm rests being placed in position after each pair of panels have been set up and the entire work of installation may thus be rapidly performed.

The slight looseness between the panels and the shafts 42, to which the heads or plates 40 are secured, will permit the chairs to be set up in a curved line.

In Figs. 20 and 21, a slight modification of the form floor plate is shown which is adapted for use when the floor is inclined. In this form a bottom plate 64 is provided, on which two posts 65 are mounted, which have the same function as the posts 25, the bottom plate being provided

with bent portions in which the posts are located, so that the posts extend vertically although the plate 64 is supported at an inclination on the floor. The rear post will be made somewhat shorter than the front post, to allow for this variation, and the rear leg 26 will be correspondingly shortened.

It will be understood that various novel features hereinbefore described are adapted for use advantageously in connection with a single folding chair, although the construction shown is primarily designed for use in connection with a row of chairs which are connected together.

I claim:

1. A chair comprising a pair of side panels each having a socket, a rod connecting the panels non-rotatably mounted in the sockets, a seat, a slotted member rotatably mounted on the rod and firmly mounted on the seat, and a pin extending from the rod through the slotted member to limit the rotation of said member to the extent predetermined by the length of the slot.

2. A chair comprising a pair of side panels each having a socket, a shaft non-rotatably mounted in said sockets, a seat pivotally mounted on the shaft, a slotted strap attached to the seat, and a pin in said shaft which passes through the slot and limits the rotation of the seat about the shaft to the extent of the slot.

3. A chair comprising a pair of side panels, a seat pivotally mounted on a shaft, recesses in the panels facing away from the seat, an aperture in the panels admitting the shaft to the recesses, a fastening within each of the recesses for preventing withdrawal and rotation of the shaft, a slotted bearing for the shaft mounted on the seat, a pin in the shaft which passes through the slotted bearing and limits the rotation of the seat about the shaft to the extent of the free movement of the pin within the slot.

4. A chair comprising a pair of side panels, a seat pivotally mounted on a shaft, recesses in the panels facing away from the seat, an aperture in the panels admitting the shaft to the recesses, a fastening within each of the recesses for preventing withdrawal and rotation of the shaft, slotted bearings for the shaft mounted on the seat, pins in the shaft which pass through the slotted bearings and limit the rotation of the seat about the shaft to the extent of the free movement of the pins within the slot.

5. A series of connected chairs, each comprising a pair of side panels each having a socket, a rod connecting the panels non-rotatably mounted in the sockets, a seat, a slotted member rotatably mounted on the rod and firmly mounted on the seat, and a pin extending from the rod through the slotted member to limit the rotation of said member to the extent predetermined by the length of the slot.

6. A series of connected chairs arranged side by side comprising a plurality of vertically disposed, adjacently and oppositely arranged metal panels having upwardly extending front and rear edges, channel form metal strips arranged to enclose the front and rear edge portions of each pair of panels, a sheet metal seat backrest for each panel, having a reversely bent edge portion engaged with the adjacent edge of each rear channel strip between the inner side of the strip of and the side of the adjacent panel enclosed thereby, and means for securing said parts in position, each back rest having its rear edge portion bent right angularly to provide a support for the back of the seat.

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