July 25, 1961 J. W. TATTER 2,993,675

ADJUSTABLE SEATS HAVING LAZY TONG SUPPORTS

Filed April 23, 1959 2 Sheets-Sheet 1

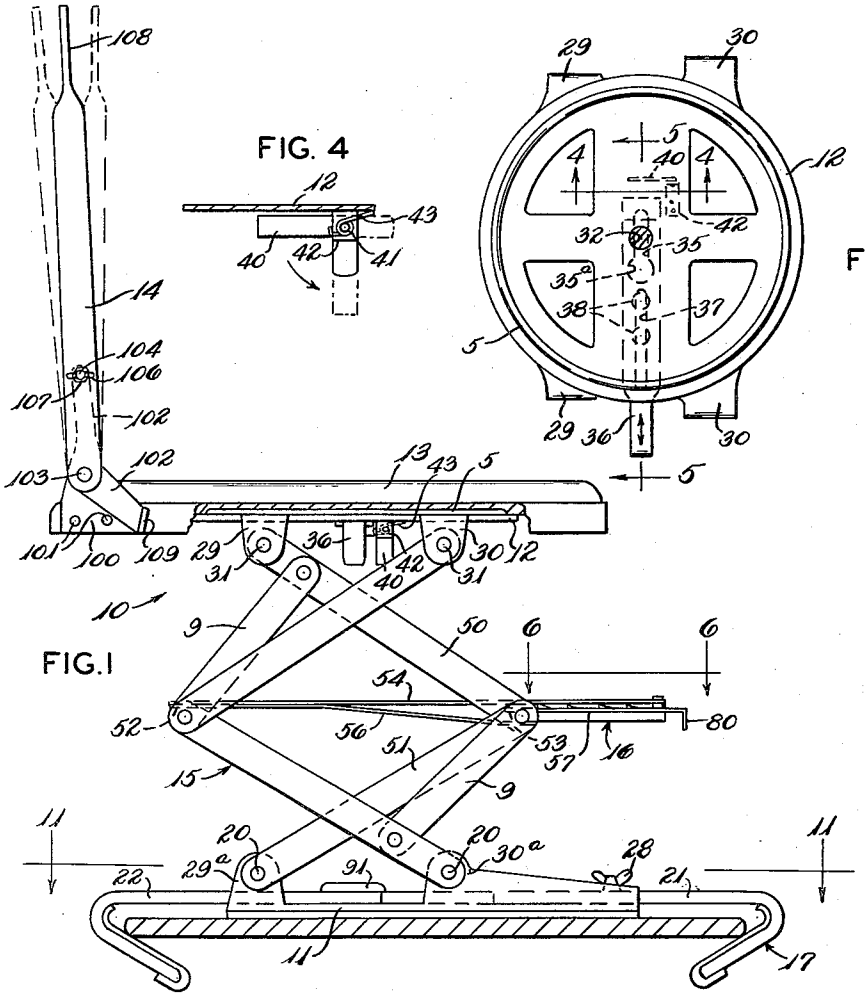


FIG. 1

FIG. 3

FIG. 4

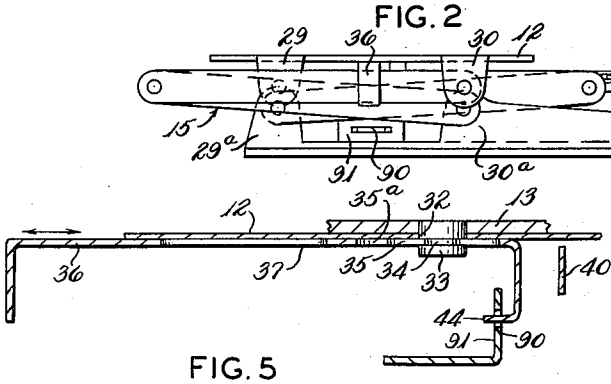


FIG. 5

FIG. 2

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ADJUSTABLE SEATS HAVING LAZY TONG SUPPORTS

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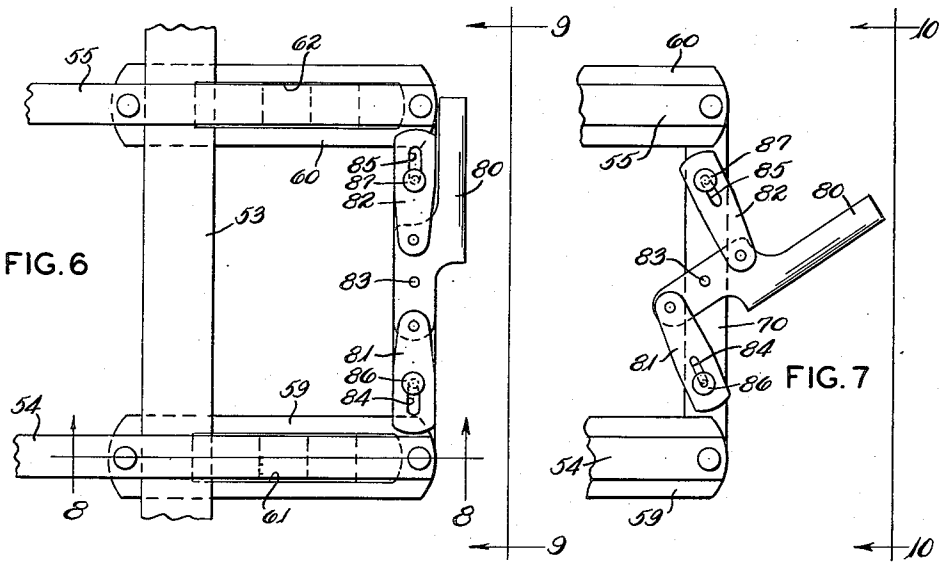


FIG. 6

FIG. 7

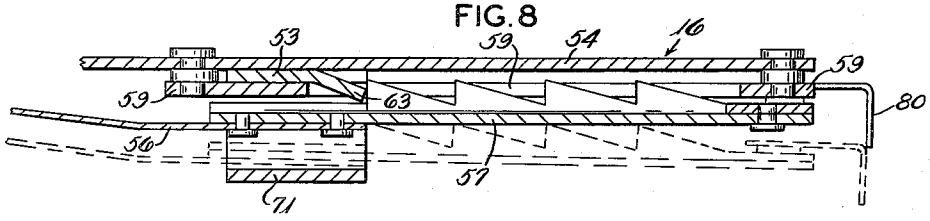


FIG. 8

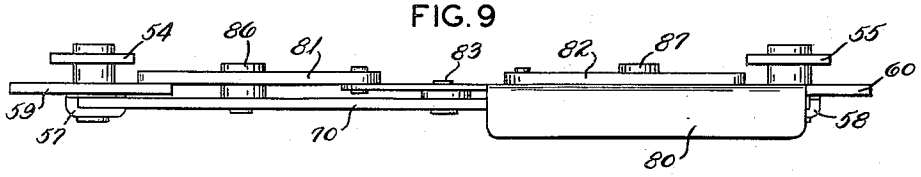


FIG. 9

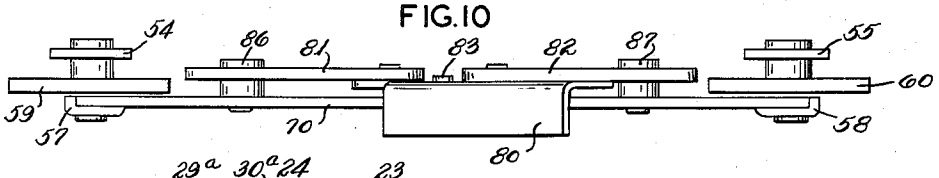


FIG. 10

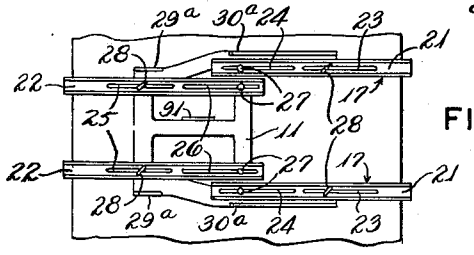


FIG. 11

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ADJUSTABLE SEATS HAVING LAZY TONG SUPPORTS

John W. Tatter, Akron 19, Ohio, assignor, by decree of distribution, to Marie W. Tatter and John Wilbur Tatter, in equal proportions

Filed Apr. 23, 1959, Ser. No. 808,485
3 Claims. (Cl. 248—421)

This invention relates to seats and more particularly to an adjustable seat adapted for assembly with a rowboat seat, picnic bench seat, stadium seat, a convention chair, and the like.

Some objects of the present invention are to provide a comfortable chair-type seat that is readily adjustable for height and forward or backward movement relative to the surface on which it is supported, will swivel, has locking means for selected adjusted positions, and has means for locking the seat in compact collapsed condition for convenience in transporting or storage.

Other objects are to provide a strong, rigid seat whose parts may be economically manufactured and assembled. Further objects and advantages will be manifest to those familiar with the art by reference to the following description and the drawings.

FIG. 1 is a side elevational view of the extended seat;

FIG. 2 is the same as FIG. 1 but on a reduced scale and shown collapsed with the folding seat and the clamping brackets removed;

FIG. 3 is a top plan view of FIG. 2;

FIG. 4 is a sectional view taken on line 4—4 of FIG. 3;

FIG. 5 is a sectional view taken on line 5—5 of FIG. 3;

FIG. 6 is a plan view taken on line 6—6 of FIG. 1;

FIG. 7 is the same as FIG. 6 except the locking mechanism is shown in its open position;

FIG. 8 is a sectional view along line 8—8 of FIG. 6 illustrating, in broken lines, the disengaged position of the locking mechanism as shown in FIG. 7;

FIG. 9 is an elevational view taken along 9—9 of FIG. 6;

FIG. 10 is an elevational view taken along line 10—10 of FIG. 7; and

FIG. 11 is a plan view taken along line 11—11 of FIG. 1.

The seat structure herein illustrated provides certain novel and improved elements to the seat structure described in my Patent Number 2,749,969.

By reference to the present drawings it will be seen that the seat embodying the present invention is referred to generically as 10 and comprises, a base 11; a support plate 12, a combined chair seat 13 and back 14 removably and rotatably mounted on plate 12; lazy tong means 15 connecting base 11 and support plate 12; locking means 16 for locking the lazy tong mechanism in predetermined selected positions; adjustable seat attachment means 17 for removable attachment of base 11 to a supporting surface; and means for retaining the seat 10 in its extreme collapsed condition.

Referring now to the drawings in more detail, base plate portion 11 is preferably a one piece stamping in somewhat grille-like form as shown. The forward and rear laterally outer edge portions of base 11 are turned upwardly and are provided with rivets 20 whose shank portion pivotally mount the lower ends of the lower links of the lazy tong. The adjustable seat attachment means 17 comprise a forward and a rear pair of bars 21 and 22 having forward hooked ends adapted to hook about the edges of a conventional rowboat seat, and the like. Bars 21 and 22 are provided with slots 23, 24 and 25, 26 respectively and are mounted on base 11 in sliding

relation therewith by means of rivets 27 and thumb screws 28 as will be understood by reference to FIGS. 1 and 11. It is to be noted that the slots in bars 21 and 22 terminate at one end in a widened portion through which the head of the rivets 27 for detachment of these bars from said base. The underside of base 11 is designed to contact the surface of a seat on which the present seat is to be mounted and the present invention contemplates covering the lower surface of the base with felt or rubber to provide protection to surfaces in which the base comes into contact.

The chair seat support plate 12 like said base is preferably a one piece stamping of generally circular form with two pairs of turned down ears 29 and 30 which are provided with rivets 31 whose shank portions pivotally mount the upper ends of the upper links of the lazy tong as will be seen by reference to the drawings. Support 12 has a centrally disposed circular hole 32 therethrough which receives a downwardly projecting stud 33 extending from the central area of chair seat 13. Stud 33 has annular groove 34 (FIG. 5) in which the edges of the narrow portion of a slot 35 in elongated bar 36 slides and locks the chair seat 13 rotatably to support 12. A raised rib 5 extends in a circle adjacent the outer edge of support 12 and cooperates with a complementary groove 4 in the bottom 13 to provide a contact surface between said support and bottom whereby localized strain on support 12 is avoided and lateral stability between the support plate and the chair bottom is provided. Groove 35 terminates at one end in an enlarged portion 35*a* through which stud 33 will pass for insertion and removal of the stud from slot 35. Plate 36 has a second slot 37 aligned with slot 35 and in which the shank of rivets 38 projecting from support 12 are disposed and permit plate 36 to slide in relation to the support, the heads of rivets 38 retaining plate 36 in its sliding relation relative to the support. To mount the chair seat the said enlarged portion of slot 35 is aligned with hole 32 of the support and stud 33 inserted through the aligned holes after which plate 36 is slid endwise bringing the lateral edges of the narrow portion and the edge of the end of slot 35 into the annular groove 34 of the stud. Means for positively locking the chair seat to the support include an angular arm 40 pivotally mounted at rivet 41 on a bracket 42 the latter being riveted to support 12.

Arm 40 is normally retained back of bar 36 by spring 43 as shown in FIGS. 1 and 4. As best shown in FIG. 5 the inboard end of bar 36 is turned downwardly at a 90° angle and then inwardly at a 90° angle forming a bolt portion 44 whose function will be explained as the description proceeds. To slide bar 36 to align enlarged portion 35*a* with hole 32, for installing the chair seat as explained above, the arm 40 is manually pivoted, out of the way, of the inboard end, of the bar and when the bar is slid back, into locking position relative to stud 33, arm 40 is released and is returned to and retained, in position, back of the end, of bar 36 where the arm blocks sliding movement, of the bar in one direction and the end of slot 35, against stud 33, blocks sliding movement, of the bar, in the opposite direction.

Said lazy tong means 15 connecting base plate 11 and support plate 12 comprise a pair of hinged arms 50 and 51 connecting each pair of ears 29—29*a* and 30—30*a* (see FIGS. 1 and 2). The pairs of arms connecting these plates on one side are identical to the pair of arms on the other side, and the pairs of arms on each side are oppositely angled (see FIG. 1) and the arms on one side are connected with the arms on the other side by means of cross bars 52 and 53 each of which are coaxially disposed with respect to the axes of the hinges connecting corresponding pairs of arms. The cross bars 52 and 53 are preferably rectangular in cross section. Means for lock-

ing the lazy tong mechanism in selected positions of extension will now be described. A pair of identical spaced parallel strap-like bars 54 and 55 have their rear ends riveted to rear cross bar 52 and extends forwardly over and beyond cross bar 53 in sliding contact relation with the top surface of the latter. Identical thin strips 56 and 56*a* of spring steel, only strip 56 being shown, have their rear end portions riveted to said rear cross bar 52 and these spring strips 56 and 56*a* extend forwardly underneath bars 54 and 55 respectively but terminate short of the forward ends of the latter bars. Ratchet bars 57 and 58 extend forwardly from the forward ends of strips 56 and 56*a* respectively, the rear ends of the ratchet bars being riveted to the front end of the spring strips (FIG. 8). The ratchet bars extend under cross bar 53 and terminate at their forward ends flush with the forward ends of bars 54 and 55 which they underlie.

A pair of bars 59 and 60 having longitudinal slots 61 and 62 are riveted to and underlie in spaced relation the forward reaches of bars 54 and 55 respectively, so that slots 61 and 62 expose the teeth of said ratchet bars to pawls 63 and 64 integral with bar 53, and formed by turning downwardly portions of the edge of bar 53 as will be seen by reference to FIGS. 6 and 8. It will now be seen that the ratchet bars are resiliently supported against said pawls by said spring steel strips.

A cross bar 70 is riveted, at its ends, to the forward ends, of the ratchet bars and it will further be seen that by manually pressing bar 70 downwardly the ratchet teeth will be disengaged from the pawls 63 and 64. A limit to the downward movement of the ratchet bars is provided by a stop bar 71 riveted to cross bar 53 and having its ends turned downwardly and longitudinally outwardly under the ratchet bars.

It will be noted that the lazy tong structure is confined to a straight path movement normal to the base plate 11 by reason of equalizing links 9 one of said links being hinged to bar 52 and to an intermediate portion of arm 50 of the front hinged pair of arms and the other of said arms 9 is hinged to bar 53 and to an intermediate portion of arm 51 of the rear hinged pair of arms. The pair of links 9 on each side of the seat structure are disposed in same vertical plane, and of much shorter length than the arms 50 and 51 and when the mechanism is collapsed, the links 9 clear each other. Referring to each lazy tong assembly, it will be observed that arms 50 and 51 are disposed in planes laterally offset to each side of the plane of links 9.

As the lazy tong means is fully extended, the pawls of bar 53 engage the last notch of the ratchet bar the cross bars 52 and 53 being as close together as possible. As the lazy tong is collapsed bars 52 and 53 are progressively moved apart with bar 52 sliding forwardly under bars 54 and 55 and over grooved bars 59, 60 and ratchet bars 57, 58. Of course, such sliding movement cannot occur where pawls 63 and 64 have been urged by springs 56 and 56*a*, into engagement with the ratchet teeth of the bars 57 and 58. Thus, in operation, to collapse the lazy tong bar 70 is manually pressed downwardly freeing the pawls from the ratchet teeth and permitting bar 53 to slide bringing the pawls over any selected notches, of the ratchet bar, when bar 70 is released the said springs raise the ratchet bar upwardly and the pawls engage the selected notches holding the lazy tong from further collapsing or so long as the pawls are so disposed relative to the ratchet bars.

An important feature of the invention is the provision of means for positive locking of pawls 63 and 64 in selected notches of the ratchet bar, whereby accidental collapse of the lazy tong cannot occur when the seat is occupied. Referring now to FIGS. 6 to 10 inclusive it will be seen that this latter referred to locking means comprises a toggle joint like arrangement of bars 80, 81 and 82 for actuating the locking mechanism. Bar 80 is a handle portion, pivotally attached to the center of bar 70, by rivet 83, and functions to move bolt bars 81 and 82 in locked position over the front edge portions of slotted bars 59 and 60 respectively as illustrated in FIGS. 6 and 9. Handle 80 is pivoted a distance outwardly from its inner end and is laterally offset so that when the locking mechanism is closed the outer reach of the handle is disposed out of the way as shown in FIG. 6. Bars 81 and 82 have slots 84 and 85 respectively to receive, in sliding relation fixed rivets 86 and 87 upstanding from bar 70. The inner ends of bars 81 and 82 are pivotally riveted to handle 80 on opposite sides of rivet 83 as best shown in FIG. 7. The arrangement is such that the movement of the outer end of the handle toward bar 70 rocks bars 81 and 82 endwise toward bars 59 and 60 respectively and when the outer portion of the handle comes into contact with bar 70 the free ends of links 81 and 82 are locked over bars 59 and 60, with bars 81 and 82 in alignment, as shown in FIG. 6, in which relative positions bar 70 cannot be pressed downwardly, and the pawls 63 and 64 are locked in contact, with teeth of the ratchet bar, which in turn, securely locks the lazy tong from collapsing or expansion. It will now be seen that the lazy tong can be freed for expansion or collapsing by manually swinging handle 80 to its opening position (see FIG. 7) and pressing bar 70 downwardly to free the pawls from the ratchet bar thereby freeing cross bars to move with the linkage of the lazy tong. The springs carrying the ratchet bars are particularly useful when raising the seat to a desired high position since only a free hand of the operator need be used to pull the top of seat upwardly and the pawls will automatically be snapped into the successive notches of the ratchet bar.

The means for retaining the seat in its collapsed condition will now be explained. Referring again to FIG. 5 the bolt portion 44 of the inboard end of bar 36 is adapted to slide into a slot 90 of ear 91 integral with base 11 and turned upwardly therefrom. When the lazy tong is in its maximum collapsed form bolt 44 is disposed in the plane of the slot 90 and may be moved into or out of this slot by manually pulling bar 36 outwardly to lock or inwardly to unlock the lazy tong. Such locking of the seat in collapsed condition facilitates carrying the seat to or from where it is to be used.

The removable chair seat portion includes means for limited adjustment of the back 14, relative to seat 13, which means comprise a pair of similar generally triangular plates 100, only one being shown, attached to each rear corner seat 13 by rivets 101. The forward edge 109 of plates 100 are turned outwardly to form the support for the back 14 through the medium of angular plates 102 pivotally bolted at 103 to the lower end portions of the frame 105 of back 14. Rivets 104 project laterally outwardly from the upper end of plates 102 and project through slots 106 for sliding movement therein. The free ends of rivets 104 are threaded and receive nuts 107 which are adapted to be tightened against the frame 105. The back 14 may be folded forwardly into the plane parallel with the plane of the seat 13 and to this end the axes of the bolts at 103 are aligned and are raised above the plane of the top surface of seat 13 a distance approximately equal to the width of the sides of frame 105. The lower end portions of plates 102 rock backwardly as the seat back is folded forwardly and frame 105, including its shoulder-rest 108, folds about seat 13, frame 105 coming to rest against the upper edge of portions 109 of plates 100. The design is such that the back 14 is free to move into operational position where it is supported by the lower end of plate 100 coming into contact with the said turned edge portions 109 of plates 100. A limited adjustment movement of the back 14 relative to plates 100 is provided by rivets 104 in slots 106. Back 14 may be rocked moving rivets 104 to selected positions in slots 106 when tightening of nuts 107 will anchor the back in that position. It will now be seen that the seat 10 may be collapsed as illustrated in FIG. 2 with the seat 13 and

back **14** in folded relation mounted on support **12** in which condition the assembled seat **10** is in convenient extremely compact form locked together for transportation or storage.

It will now be seen that the present invention provides a seat having many novel and useful features including, by way of example, the following:

(1) If the seat is to be used for a child at a dining table the bars **21** and **22** may be removed from base **11** and the base placed on a dining chair and the seat **13** raised to the desired height for the child.

(2) If the present seat is to be used on a picnic table bench hooked bars **21** and **22** not only anchor the seat to the bench but also provide means whereby the seat **11** can be moved toward or away from the picnic table as is often convenient. This is accomplished by the positions of bars **21**, **22** relative to base **11** selected and anchored by thumb-screws **28**. This adjustment is a useful feature when seat **10** is mounted on a boat seat, particularly if the occupant is fishing.

(3) The detachable feature of chair seat **13** is useful as the seat and back may be used on stadium seats and the like, it being understood that well known seat attachment means may be provided under the front edge of the seat bottom **13**. Usually such means are U shaped and retained out of the way flat against the under surface of the seat by springs when not hooked about the edge of a supporting seat.

(4) The means for positive locking the lazy tong against collapsing when in use is a safety feature of great value.

(5) The support of seat **13** on its support **12** by their contact along a circle of large diameter avoids rocking and wear between these parts.

(6) Means for adjusting the back **14** of the seat relative to seat bottom **13** is for the comfort of the seat occupant; and

(7) All elements of the seat, except rivets, springs, nuts etc., are metal stampings which makes the seat economical to manufacture and assemble.

The detailed description of the particular embodiment of the invention illustrated and described hereinabove is not to be construed as limiting the invention thereto. The invention includes all features of patentable novelty residing in the foregoing description and the accompanying drawings.

In the claims:

1. An adjustable seat of the character described comprising, lazy tong mechanism, a chair seat support plate mounted on the lazy tong mechanism, a chair seat, means for mounting the chair seat on said support plate in removable and rotatable relation therewtih; said means comprising a centrally disposed hole through the support plate, a round stud projecting downwardly from the central area of the chair seat, said stud projecting into said hole and a distance beyond the under surface of the support plate, an annular groove about that portion of the stud that projects beyond said under surface, a slotted bar attached to the under surface of the support plate in sliding relation, longitudinally of the bar, therewith; said stud projecting into said slot and said annular groove being disposed in the plane of the edges of said slot, said slot having a narrow portion with parallel sides and a width less than the diameter of the stud at the groove therein, said groove being adapted to receive in sliding relation the said parallel edges of the slot and thereby retain the chair seat attached to the support plate; said slot having a wide portion for reception or removal of the stud to or from the slot; means attached to the under surface of the support plate to lock the slotted bar against sliding movement when the edges of the slot are disposed in said groove; said support plate and chair seat having cooperating circular contact surfaces remote from the hole in the support plate and the stud in the chair bottom respectively.

2. An adjustable seat of the character described comprising, lazy tong mechanism, a chair seat support plate mounted on the lazy tong mechanism, a chair seat, means for mounting the chair seat on said support plate in removable and rotatable relation therewith; said means comprising a centrally disposed hole through the support plate, a stud projecting downwardly from the central area of the chair seat, said stud projecting into said hole and a distance beyond the under surface of the support plate, an annular groove about that portion of the stud that projects beyond said under surface, a slotted bar attached to the under surface of the support plate in sliding relation, longitudinally of the bar, therewith; said stud projecting into said slot and said annular groove being disposed in the plane of the edges of said slot, said slot having a narrow portion with parallel sides and a width less than the width of the stud at the groove therein, said groove being adapted to receive in sliding relation the said parallel edges of the slot and thereby retain the chair seat attached to the support plate; said slot having a wide portion for recepiton or removal of the stud to or from the slot; means attached to the under surface of the support plate to lock the slotted bar against sliding movement when the edges of the slot are disposed in said groove.

3. An adjustable seat of the character described comprising support mechanism, a chair seat support plate mounted on the support mechanism, a chair seat, means for mounting the chair seat on said support plate in removable and rotatable relation therewith; said means comprising a centrally disposed hole through the support plate, a stud projecting downwardly from the central area of the chair seat, said stud projecting into said hole and a distance beyond the under surface of the support plate, a groove in that portion of the stud that projects beyond said under surface, a slotted bar attached to the under surface of the support plate in sliding relation, longitudinally of the bar, therewith; said stud projecting into said slot and said groove being disposed in the plane of the edges of said slot, said slot having a narrow portion with parallel sides and a width less than the width of the stud at the groove therein, said grooved portion of the stud being adapted to receive in sliding relation the said parallel edges of the slot and thereby retain the chair seat attached to the support plate; said slot having a wide portion for reception or removal of the stud to or from the slot; and means attached to the support plate to lock the slotted bar against sliding movement when the edges of the slot are disposed in said groove.

References Cited in the file of this patent

UNITED STATES PATENTS

144,288	Rand	Nov. 4, 1873
2,152,014	Ashe et al.	Mar. 28, 1939
2,556,207	Mueller	June 12, 1951
2,689,601	Fredenburgh	Sept. 21, 1954
2,717,633	Hartmann	Sept. 13, 1955
2,749,969	Tatter	June 12, 1956
2,770,288	Peyton	Nov. 13, 1956

FOREIGN PATENTS

92,425	Norway	Sept. 8, 1958