

[54] **INDEPENDENT SEAT RISE STACKING AND ROW CHAIR**

[75] Inventors: **Chester J. Barecki; William S. Lindberg**, both of Grand Rapids, Mich.

[73] Assignee: **American Seating Company**, Grand Rapids, Mich.

[22] Filed: **Jan. 22, 1971**

[21] Appl. No.: **108,885**

[52] U.S. Cl.297/239, 297/248, 297/335
 [51] Int. Cl.A47c 1/124, A47c 3/04
 [58] Field of Search.....297/239, 248, 160, 162, 335, 297/257, 444

[56] **References Cited**

UNITED STATES PATENTS

2,843,187	7/1958	Manne et al.....	297/248 X
3,402,963	9/1968	Fujioka et al.....	297/239 X
3,159,428	12/1964	Schier.....	297/239 X
2,256,893	9/1941	Cable	297/336 X

576,206	2/1897	Linn et al.	297/444 X
2,632,498	3/1953	Curtis.....	297/444 X
2,853,125	9/1958	Starke	297/444 X
3,300,246	1/1967	Bouche.....	297/257 X
981,232	1/1911	Wanner.....	297/257
3,246,928	4/1966	Haynes et al.....	297/239
3,194,600	7/1965	Junkune	297/248 X

FOREIGN PATENTS OR APPLICATIONS

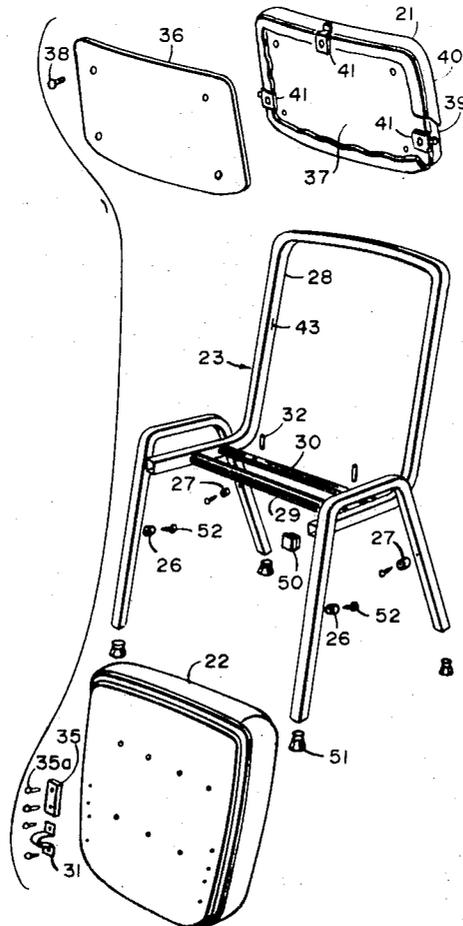
721,089	11/1965	Canada	297/248
---------	---------	--------------	---------

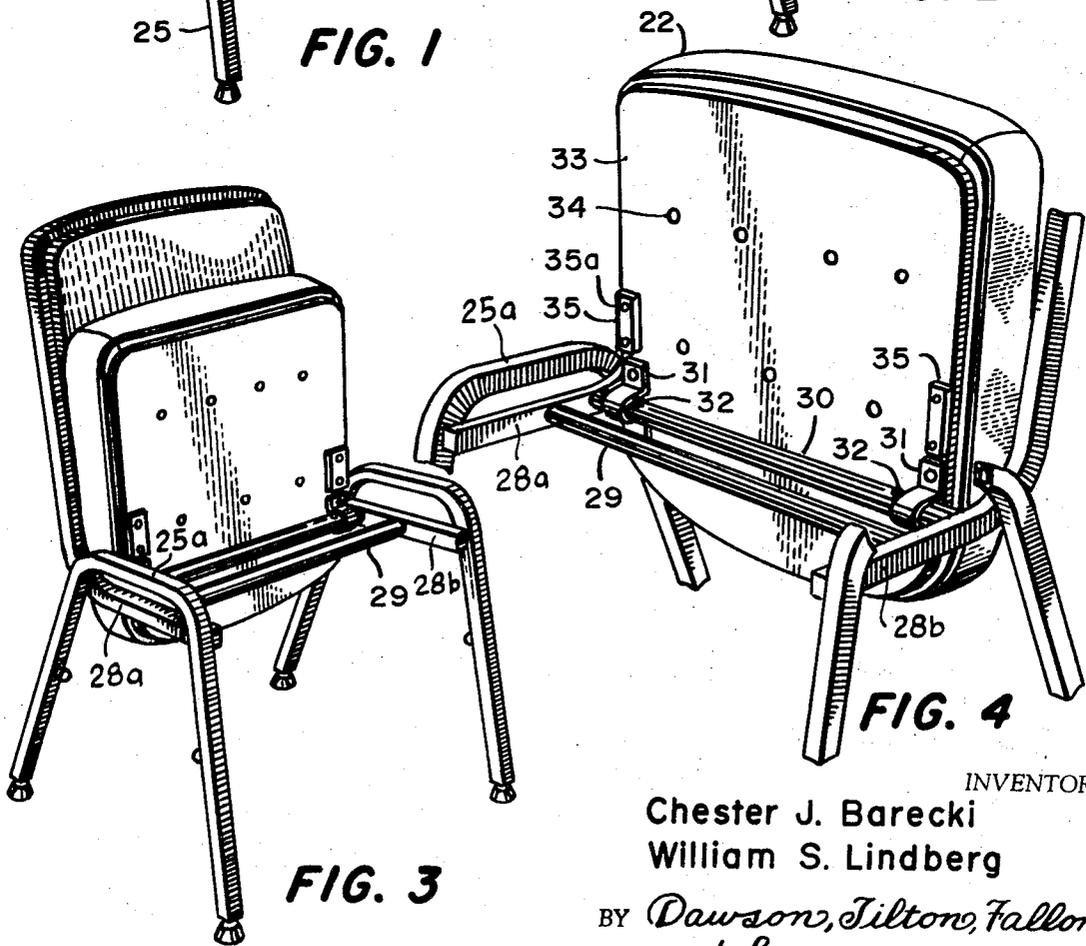
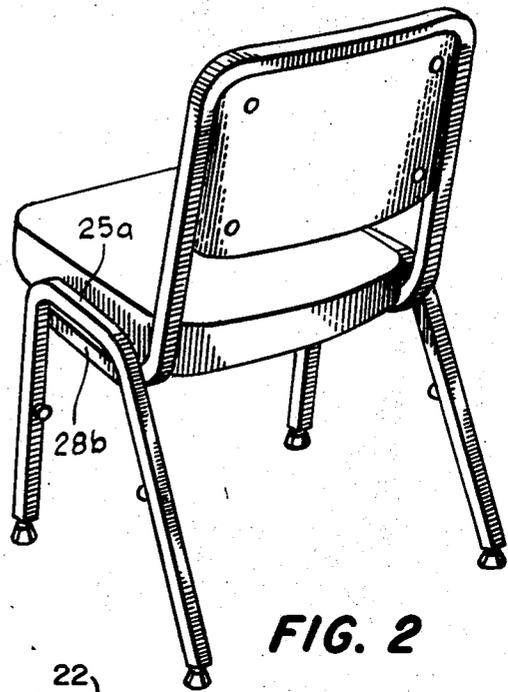
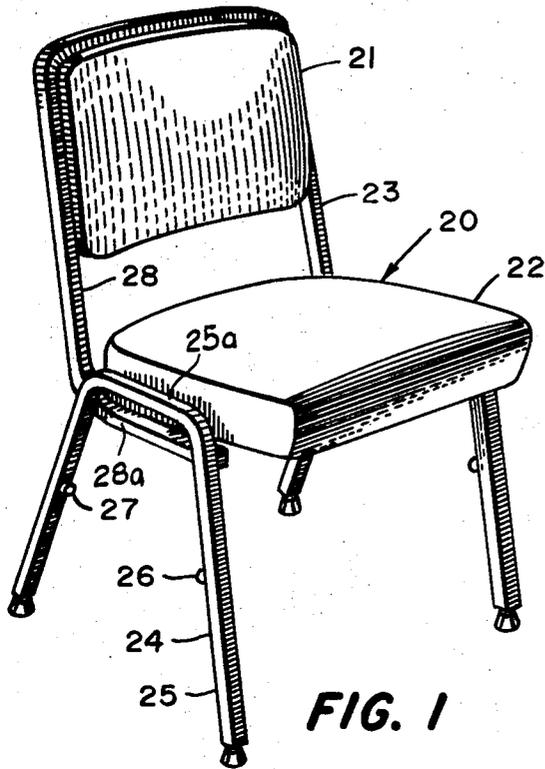
Primary Examiner—Francis K. Zugel
Attorney—Dawson, Tilton, Fallon & Lungmus

[57] **ABSTRACT**

A stacking and row-forming chair is equipped with arch sides connected by forwardly turned portions of an inverted U-shaped back frame, and spaced parallel tubes extend between said back frame portions, on the rearmost of which tubes is rotatably mounted the cushion-bearing seat of the chair. The chairs may be anchored in rows by detachable arm rest members.

6 Claims, 11 Drawing Figures





INVENTORS

Chester J. Barecki
William S. Lindberg

BY *Dawson, Tilton, Fallon
and Bungmus*
ATTORNEYS

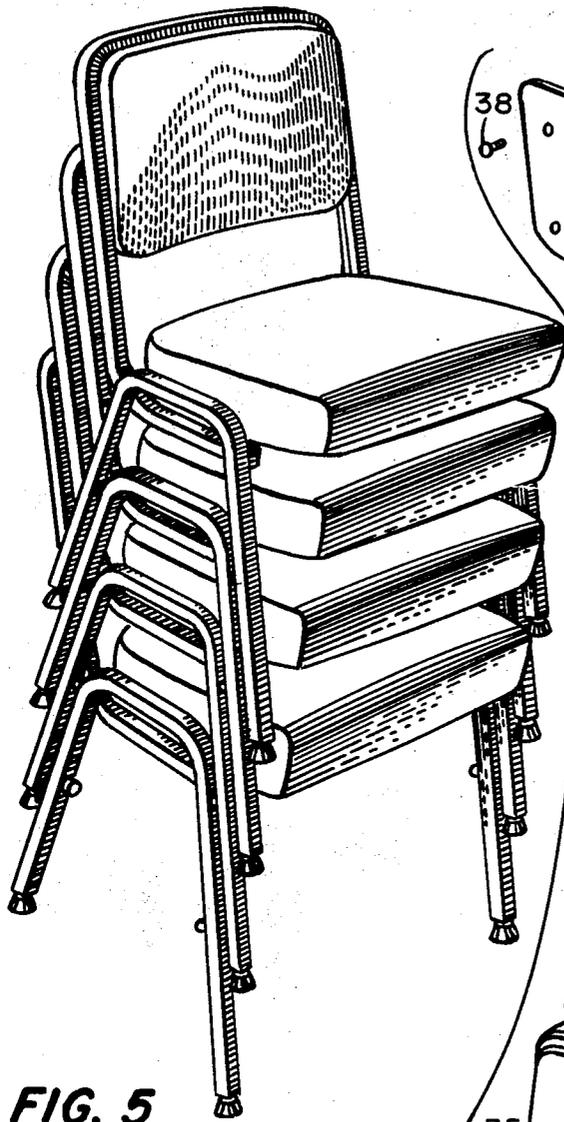


FIG. 5

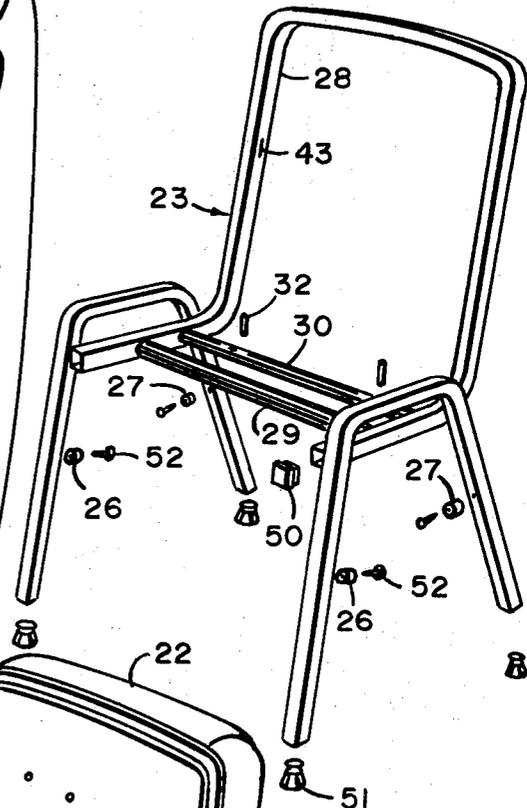
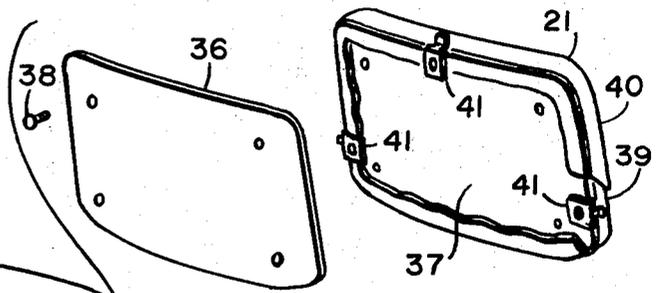


FIG. 6

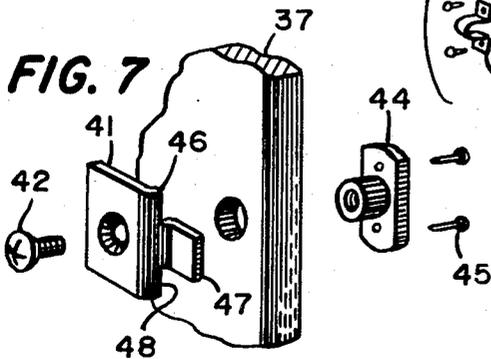


FIG. 7

Chester J. Barecki
William S. Lindberg

INVENTORS

BY Dawson, Tilton, Fallon
and Bungmus

ATTORNEYS

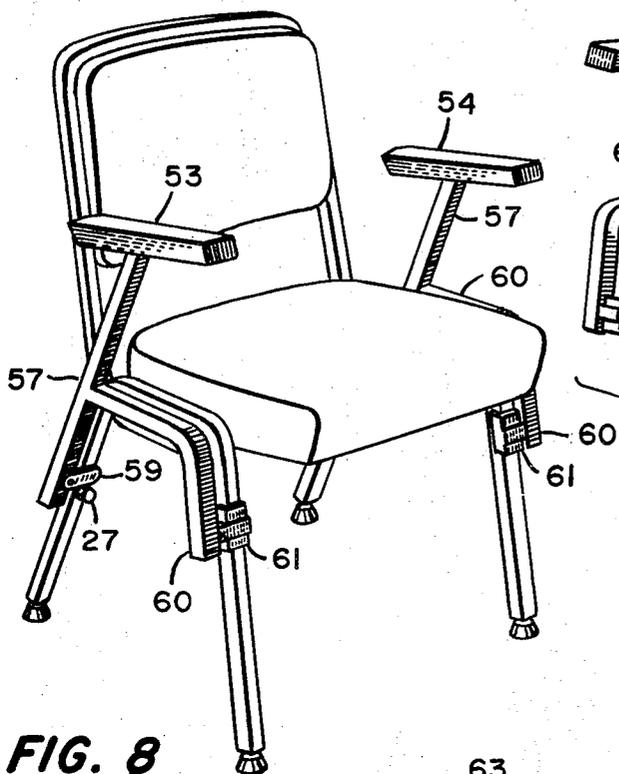


FIG. 8

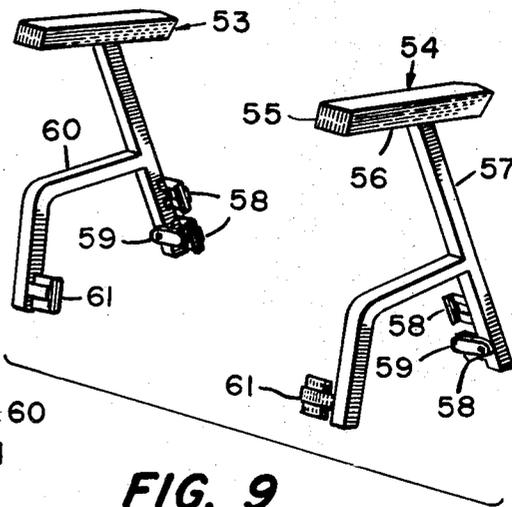


FIG. 9

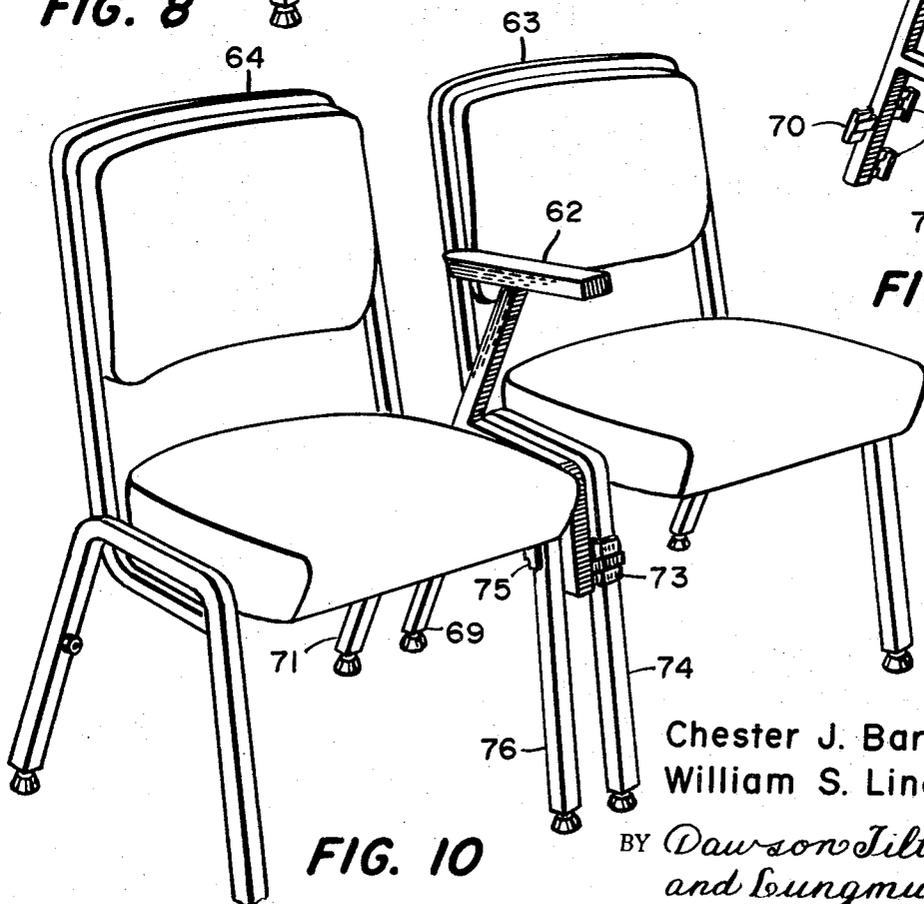


FIG. 10

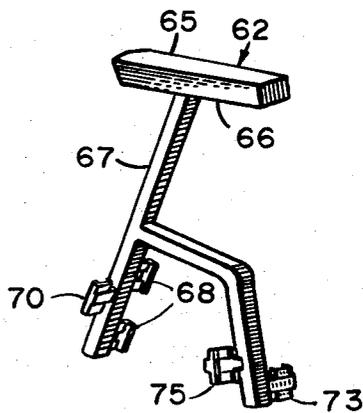


FIG. 11

INVENTORS
 Chester J. Barecki
 William S. Lindberg

BY *Dawson Tilton, Fallon
 and Lungmus*
 ATTORNEYS

INDEPENDENT SEAT RISE STACKING AND ROW CHAIR

BACKGROUND AND SUMMARY

Stacking chairs are in universal use, but they have limitations in comfort and use in row seating and the like because of the difficulty in allowing others to pass and requiring rather wide spacing between rows. We have discovered that it is possible to provide stacking chairs with independent rise seats which enable the occupant to stand back within the chair recess when the seat is raised and thus allowing others to pass in auditorium grouping. This allows closer row seating with the ease of passing desired in auditorium seating. Further, such structure does not interfere with the stacking of the chairs. Also, the chairs may be attached in rows by the use of gang-type arm rests which fit between the chairs, while at the same time permitting ready separation of the chairs for the stacking of the chairs when this is desired.

DRAWINGS

In the accompanying drawings,

FIG. 1 is a front perspective view of the chair with the seat in normal position;

FIG. 2, is a rear perspective view;

FIG. 3, a front perspective view with the seat raised;

FIG. 4, a broken perspective view of the seat portion of the chair showing the method of attachment of the seat;

FIG. 5, a group of the chairs in stacked relation;

FIG. 6, an exploded view of the chair showing the parts in separated relation, the inner and outer back panels being reversed to show their back sides;

FIG. 7, a fragmentary exploded perspective view of the clip attachment to the inner back panel;

FIG. 8, a perspective view of the chair with the individual arm rests attached;

FIG. 9, a perspective view of one set of right and left hand individual arm rests;

FIG. 10, a front perspective view of two chairs connected by a connector-type middle arm, and

FIG. 11, a perspective view of a connector-type middle arm

DETAILED DESCRIPTION

In the specific structure shown in the drawings, a stacking chair 20 has a back panel 21 supported for ready removal and a seat 22 which can be raised and lowered. For stacking of the chairs, as illustrated in FIG. 5, the frame 23 of the chair is constructed with the legs 24 slightly spread apart at their lower extremities 25 so that they may be stacked. The upper ends of each side pair of legs 24 are connected by means of a continuous horizontal upper connecting member 25a (see FIG. 3), to form arch-shaped frames. The leg tubes 24 may be provided with resilient bumpers 26 and 27 formed of rubber or the like and secured to the inside front and rear surfaces to protect the finish of the legs. The back support tube 28 projects rearwardly at an angle to permit the stacking of the chairs without interference by the upholstered back panel 21.

The cross tubes or members 29 and 30 are preferably round and are formed with smooth bottom surfaces so that they will not mark the upholstered seat cover on

which the chair rests when stacked. Further, the use of cross tubes which are round in cross section is better for the occupant because he will be less conscious of the tube when he backs against it while letting other pass. Also, it is important that the rear tube 30 be round instead of square because the seat 22 turns on it by means of the two brackets 31 which receive the tube. The seat is held against sliding sideways along the tube 30 by the roll pins 32 positioned against each bracket. The roll pins may be placed in the vertical position shown or, if desired, in a horizontal position where they are less likely to mark the seat cushion above.

The seat itself may be formed of any suitable materials, being preferably provided with a bottom board 33 which may be perforated in several places 34 to let the air escape at the seat is compressed by the occupant's weight on it. A resilient bumper pad 35 formed of rubber, plastic, or other suitable material is provided at each side of the seat board to protect the board and to prevent noise as the board strikes the front cross tube 29 when the seat is lowered. The bumpers 35 may be held in place by screws 35a placed on the seat bottom 33 so that the forward cross tube 29 will strike the central portion of the bumpers between the fastening screws 35a. The back panel 21, as shown best in FIG. 6, consists of an outer rear panel 36 held to the inner panel 37 by tamper-proof screws 38. Such screws require a special wrench for removal. The inner panel 37 is the support for the foam pad 39 and the fastening of the upholstery material 40 with upholstery tacks, staples or cement, etc.

The completed inner assembly is held in place inside of the back tube 28 by three or more clips 41 which are attached to the inner panel by screws 42 and fit into slots 43 along the inner surface of the U-shaped square tube 28. If the inner panel is rather thin, tee nuts 44 held in place by brads 45 may be used to prevent a loosening of the back panel during use. Such tee nuts may be omitted if a thicker piece of plywood is used. Further, if a metal inner panel is used, the tee nuts may be welded in place. Also, for thinner inner panels, the tamper-proof screws 38 may also be turned into tee nuts.

The clip 41 has an offset 46 that fits tightly against the edge of the inner panel so that the clip will not turn and work itself out of the slot 43 so as to cause the back panel to fall out of the chair. The tongue or nib 47 which fits into the slot 43 is reduced in width to provide shoulders 48.

As shown best in FIG. 6, the tubular frame 23 is preferably a welded unit, with square closures or plugs 50 closing the ends of the forwardly projecting arms 28a, 28b of the square U-shaped back tube, and the feet are provided with conventional chair glides 51. The resilient bumpers 26 and 27 may be held in place each by one screw 52.

We prefer to equip the chair with arm rests which may be secured to the chair when the chairs are not stacked. An individual arm rest fitting on the right side is indicated by the numeral 56 and on the left side by the numeral 54 for use on a single chair. Each arm rest consists of the rest portion 55 secured by an attaching plate 53 to the supporting tube 57 and with two leg-clutching brackets 58 at its lower end, the lower

bracket being preferably provided with a pivotally mounted swinging locking tab 59 which rests on the rear bumper 27 of the rear chair leg to lock the arm rest onto the chair. The arm rest member is provided also with a forwardly projecting tube 60 shaped to parallel the front leg of the chair and equipped with one leg-clutching channel bracket 61.

To connect two chairs in a row of chairs, we provide a chair connector-type of middle arm rest 62 which fits on the right side (occupant's right) of one chair 63 and then a second chair 64 is placed on it. This continues down the line until a whole row is completed, the assembly working always toward the occupant's right.

The connector rest 62 consists of a rest 65 secured by an attachment plate 66 upon the supporting tube 67, with two leg-clutching clutching brackets 68 gripping the outside of the rear right leg 69 of the left chair 63 and one leg-clutching bracket 70 gripping the inside of the rear left leg 71 of the right chair 64. The middle arm rest 62 has a forward projecting tube 72 that parallels the front legs and has one leg-clutching bracket 73 gripping the outside of the right front leg 74 of the left chair 63 and one leg-clutching bracket 75 gripping the underside of the left front leg 76 of the rear chair 64. The individual arm rests 53 and 54 can be used for the right and left end chair sides at the aisle to complete the arm rest setup.

To remove the row setup, the right chair (occupant's right) is raised and then the exposed connector arm is lifted out, and then the next chair and the connector arm in sequence down the row. Since the connector middle arms are not provided with locking tabs, no unlocking is required in disassembling the row of connected chairs.

We prefer to dip the lower portions of the arm rest units into a plastic solution to prevent metal-to-metal contact and to prevent scratching of the finish on the chair legs.

While in the foregoing specification we have set out the structure in considerable detail for the purpose of illustrating embodiments of the invention, it will be understood that such details may be varied widely by those skilled in the art without departing from the spirit of our invention.

We claim:

1. A stacking chair comprising: first and second side frame members each made from a continuous tube and having a front and a rear leg member and an upper horizontal connecting member, the lower ends of each pair of leg members being spread apart to permit stacking of chairs; a back support tube of general inverted U-shape and having a pair of side forwardly projecting arms attached respectively to said side frame members and providing a central opening to receive a seat in lowered position; a back secured to said back support tube; a forward and a rear horizontal cross member, each connected between said forwardly projecting arms of said back tube and located toward the rear of said arms; a seat rotatably mounted to said rear cross member for movement between a horizontal posi-

tion at which said seat is partially supported by said forward cross member and a raised position permitting an occupant to step backwardly into said opening between said forwardly projecting side arms of said back tube to facilitate passage of a person.

2. The apparatus of claim 1 further comprising a pair of hinge brackets mounted to the bottom of said seat and rotatably coupling said seat to said rear horizontal cross member.

3. The system of claim 1 characterized in that said first and second side frame members and said back tube are made from tubes of square cross section and said front and rear horizontal cross members are made from tubes of round cross section.

4. The apparatus of claim 1 wherein said back includes a cushion member, and said apparatus further includes clip members attached to the sides of said cushion member and having outwardly extending tongues received in spaced slots on the inside of the upper portion of said back support tube.

5. Apparatus for connecting adjacent chairs in a row comprising: a pair of chairs each having a pair of side arch-shaped frame members with downwardly extending spread legs; a tubular back frame generally in the shape of an inverted U having its lower portions turned forwardly to form arms, said arms being secured adjacent the tops of said side frames; a front and a rear cross tube connecting the rear portions of said arms of said back frame; a seat; hinge brackets connected to the bottom of said seat and rotatably received on the rear cross tube to permit said seat to be raised; said front cross tube being positioned to support said seat in a lowered position; and a connector assembly including an arm rest, an angularly extending support tube beneath said arm rest and adapted to be placed between and extend along the rear legs of two chairs placed side-by-side, a downwardly extending forward member connected to said support tube and paralleling the front legs of two such chairs, said connector assembly further including first leg-clutching bracket means on said angularly extending support tube of said connector and on said forward member thereof to slidably engage and couple with the outer surfaces respectively of the rear and front legs of one arch-shaped side frame member of one chair when said connector is lowered onto it, and second leg-clutching bracket means on said angularly extending support tube of said connector and said forward member thereof to slidably engage and couple with the inner surfaces respectively of the rear and front legs of the adjacent arch-shaped side frame member of the other chair when said other chair is lowered onto said connector after said connector is attached to said first-named chair.

6. The apparatus of claim 5 characterized in that arch-shaped side frame members are tubes having square cross sections and said first and second leg-clutching bracket means include channel-shaped brackets constructed to fit over the associated square section tube.

* * * * *