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3,227,487

PIN AND PLATE CONNECTORS FOR FOLDING CHAIR GANGS

Filed Oct. 23, 1964

2 Sheets-Sheet 1

FIG. 1

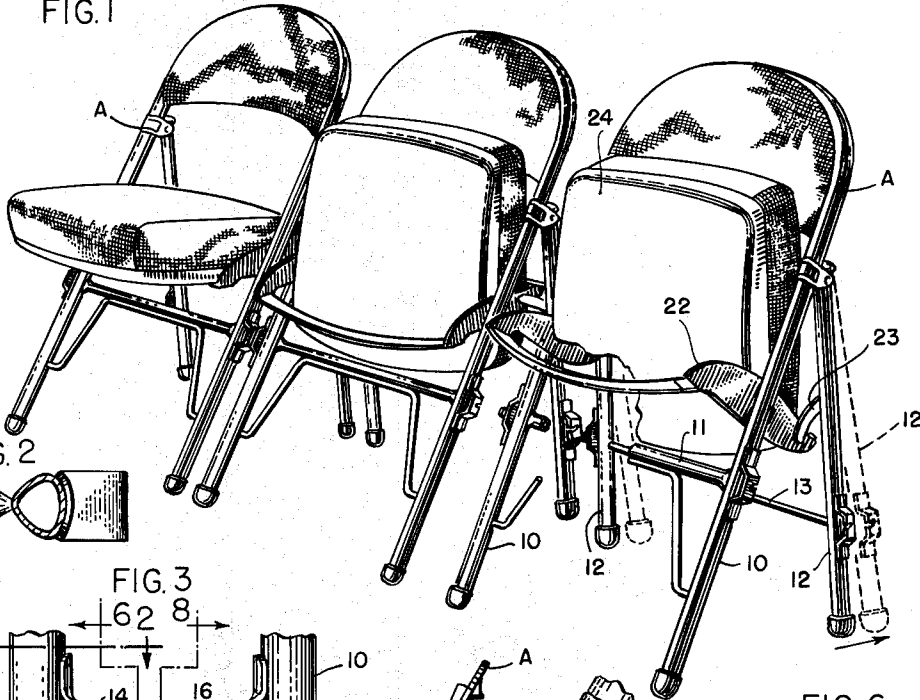


FIG. 2

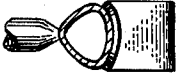


FIG. 3

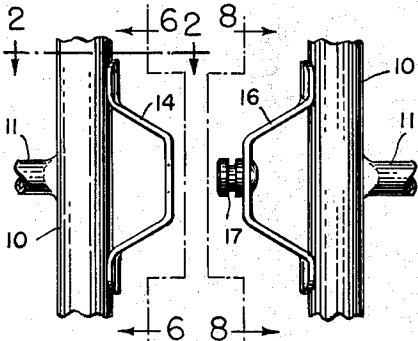


FIG. 5

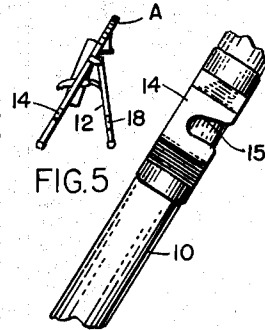


FIG. 6

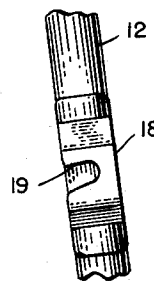


FIG. 4

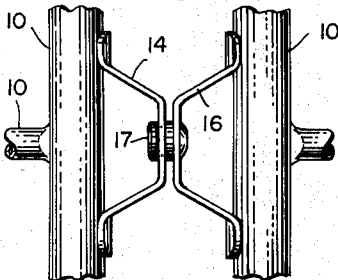


FIG. 7

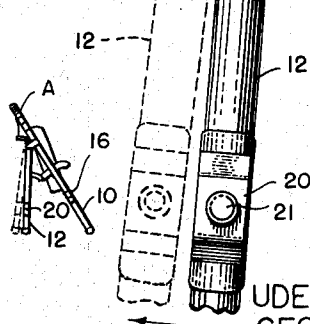
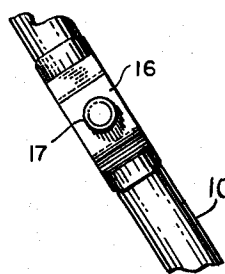


FIG. 8



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FIG. 9

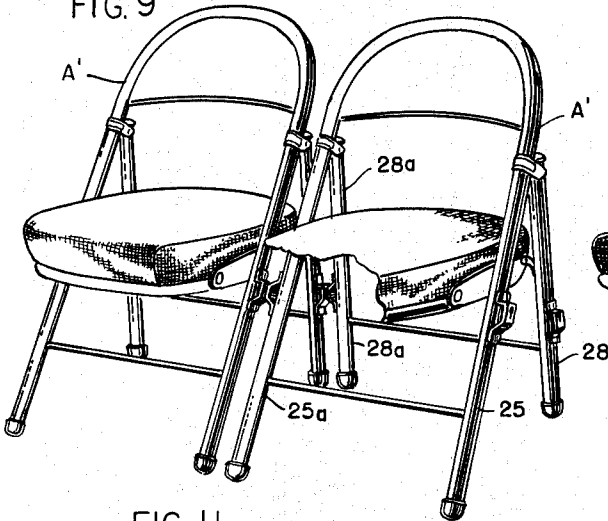


FIG. 10

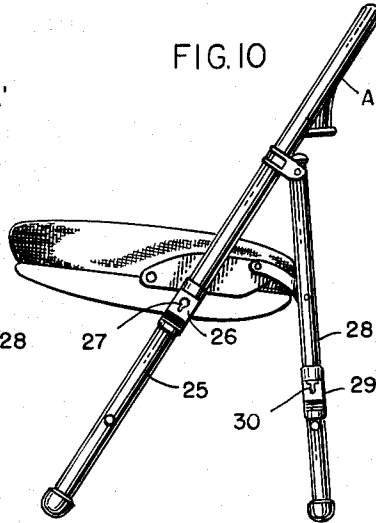


FIG. 11

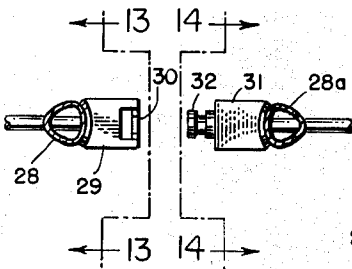


FIG. 12

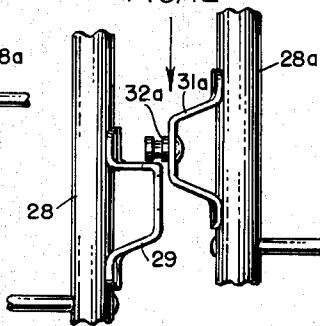


FIG. 13

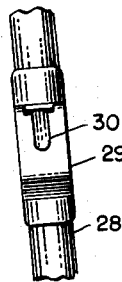


FIG. 14

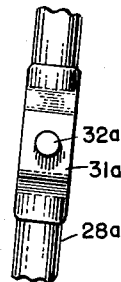


FIG. 15

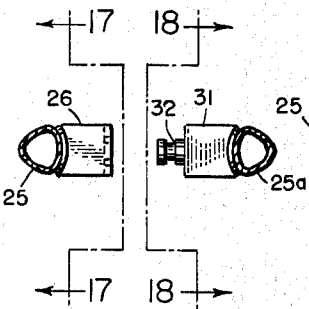


FIG. 16

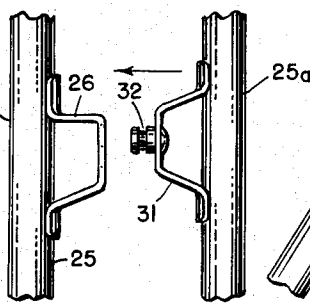


FIG. 17

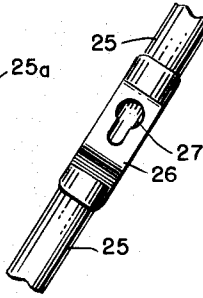


FIG. 18

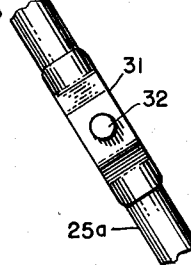
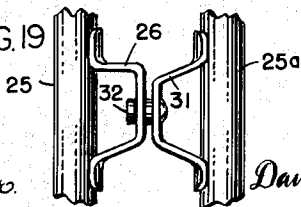


FIG. 19



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PIN AND PLATE CONNECTORS FOR FOLDING CHAIR GANGS

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3 Claims. (Cl. 297-248)

This invention relates to pin and plate connectors for folding chair gangs, and more particularly to folding chairs equipped with means for joining them in a row or gang arrangement while also permitting their ready separation.

An object of the invention is to provide folding chairs equipped with connector means for rigidly anchoring them in assembled relation while the chairs are in unfolded or occupied position, while also permitting ready disassembly of the chairs. A further object is to provide pin and plate connectors for folding chairs by which the chairs are held together in gang or row arrangement, resisting torsional stresses, while at the same time permitting the chairs by leg movement to be readily disassembled. Other specific objects and advantages will appear as the specification proceeds.

The invention is shown, in illustrative embodiments, by the accompanying drawings, in which—

FIGURE 1 is a perspective view of chairs embodying our invention; FIG. 2, a broken enlarged sectional view of a chair leg and attached plate, the section being taken as indicated at line 2—2 of FIG. 3; FIG. 3, an enlarged broken detail view showing means for attaching the front legs of adjacent chairs; FIG. 4, a view similar to FIG. 3 but showing the plates of the two chairs in fully-connected position; FIG. 5, a side view in elevation on a reduced scale of a chair showing a side of the chair equipped with slotted plates; FIG. 6, a broken detail view on an enlarged scale of the plate structure shown in FIG. 5, the view being taken as indicated at line 6—6 of FIG. 3; FIG. 7, a view similar to FIG. 5 but showing the opposite side of the chair equipped with pins; FIG. 8, a broken enlarged detail view showing the pin-equipped plates in the relation in which they appear in FIG. 7, the view being taken as indicated at line 8—8 of FIG. 3; FIG. 9, a broken perspective view of connected folding chairs illustrating a modified form of the invention; FIG. 10, a side view in elevation of a chair shown in FIG. 9; FIG. 11, an enlarged plan sectional view of the connectors on the rear leg of two adjacent chairs; FIG. 12, a view of one rear leg being raised to bring the pin and slot connectors into engagement; FIG. 13, a front view in elevation of a portion of the rear leg, the view being taken as indicated at line 13—13 of FIG. 11; FIG. 14, a view similar to FIG. 13 of the pin connector on the opposite leg, the view being taken as indicated at line 14—14 of FIG. 11; FIG. 15, a view similar to FIG. 11 but showing the connectors on the front legs of adjacent chairs; FIG. 16, a view similar to FIG. 12 showing one leg raised for engagement with the keyhole slot in the other leg; FIG. 17, a front view in elevation of the keyhole slot, the view being taken as indicated at line 17—17 of FIG. 15; FIG. 18, a view of the pin connector on the opposite leg, the view being taken as indicated at line 18—18 of FIG. 15; and FIG. 19, a broken view in side elevation showing the front legs of adjacent chairs connected.

In the illustration given in FIGS. 1 to 8 inclusive, A designates a chair. In FIG. 1, two chairs A are shown connected, and the third chair, on the right, is shown ready for connection.

The chairs A may be of any suitable construction. In

the illustration given, each chair has a pair of front legs 10 connected by a tubular member 11, and also a pair of rear legs 12 connected by a tubular member 13. The front legs 10 on one side are provided with raised plates or brackets 14 equipped with slots 15. On the other side, the front leg is provided with a raised plate or bracket 16 provided with a headed pin 17. Similarly, the rear leg on one side is provided with a raised plate or bracket 18 provided with a slot 19, and on the other side the rear leg is provided with a bracket 20 and a connector pin 21.

As will be observed best from FIG. 6, the slots 15 and 19 open inwardly and toward each other and are adapted to be automatically engaged by the headed pins 17 and 21 when the legs are extended in the unfolding operation of the chairs.

The folding chairs A may be of any suitable construction, but preferably include a seat member which automatically moves the legs of the chair. In the illustration given, the chair A is equipped with a cradle or seat support 22 which has pivotal connections through the lever 23 with the rear leg whereby movement of the seat support 22 downwardly into occupied position extends the rear leg rearwardly, as indicated in dotted lines in FIG. 1. In the specific illustration given, the cushion seat 24 is movable independently of the seat member 22, but it will be understood that the cushion may be a fixed part of the seat member 22 or may be a separately-movable member. Since such structure is well known, a further detailed description is believed unnecessary, it being sufficient to state that in the movement of the seat member 22 upwardly, there is an automatic collapsing of the legs toward each other to produce a folded chair, while when the seat member 22 is moved downwardly to the occupied position the legs of the chair are extended, as indicated by the arrow in FIG. 1.

In the operation of the structure shown in FIGS. 1 to 8 inclusive, the operator may bring the front pin 17 of one chair into adjacent relation with the slot 15 of another chair, and then upon depressing the seat member 22 the rear leg of the chair is automatically extended to bring the pin 21 of the rear leg into engagement with slot 19 of the bracket 18 on the adjacent chair. The legs of the two chairs are thus held firmly together while the seat member 22 is in lowered position, and a very sturdy locking of the chairs is brought about. When it is desired to separate the chairs, this may be accomplished by simply raising the seat member 22, thus automatically moving the connectors apart and permitting the chairs to be lifted away from each other.

In the modification shown in FIGS. 9 to 19 inclusive, the chairs are also held by pin and plate connectors which remain in interlocking engagement until movement of the legs is carried out for the separation of the parts. In this embodiment, the chairs are designated by the letter A'. The connectors are somewhat similar to the connectors employed in the first structure except that the slots on the front and rear legs are different in contour and arrangement. In the modification shown in FIGS. 9 to 19 inclusive, the front leg 25 is provided with a bracket 26 having a keyhole-shaped slot 27. The rear leg 28 is provided with a raised plate or bracket 29 having a T-shaped slot 30, the slot being open at the upper side of the bracket.

The front leg 25a on the opposite side of the chair is provided with a bracket 31 similar to the pin-bearing brackets of the first-described structure, and a headed pin 32 is carried by the bracket 31. On the left rear leg 28a is similarly mounted a bracket 31a provided with a headed pin 32a.

In the operation of the structure, the pin 32a may be inserted into the T-shaped slot 30 in the manner shown in

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FIG. 12, the leg 28a being slightly raised and the pin being dropped into the T-shaped slot, as shown in FIG. 12.

In connecting the front leg portions of the adjacent chairs, the pin 32 of the leg 25a may be brought into alignment with the enlarged portion of the keyhole slot 27 of bracket 26, as illustrated best in FIG. 16, and then leg 25a may be allowed to drop so that the pin is received within the narrow portion of the keyhole slot 27.

By the above-described structure, it is found that the chairs remain united firmly even though there is great torsional stress caused by the movement of the occupants on the chairs, and there is no tendency for the connections to come apart. The T-shaped slot permits ready insertion of the headed pin, while the keyhole slot prevents upward movement and disengagement of the pin. At the same time, the slot arrangements permit ready disassembly in that the pin 32a can be readily withdrawn from the T-slot 30 and thereupon the pin 32 can be raised and withdrawn from the keyhole slot 27.

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

We claim:

1. In combination, folding chairs, each having a plate equipped with a pin on the front and rear legs on one side of the chair and a slotted plate on the front and rear legs on the other side of the chair, the slots in said plates being generally horizontal and facing each other in horizontal alignment with the pins of an adjacent chair, the slotted plates of said chair being engaged and interlocked

with the pins of said adjacent chair when the legs of said chairs are extended in unfolded position, said pin and slot connectors being released for separation of the chairs when the legs of said chairs are moved toward each other.

2. In combination, at least a pair of folding chairs, one chair having its front and rear legs on one side thereof provided with headed pins, and the other chair having its front and rear legs each provided with a slotted plate, the slots in said plates being generally horizontal and facing each other in horizontal alignment with the pins of said first chair, the legs of said first chair being extended to bring them into engagement with the slots of the second chair.

3. The structure of claim 2 in which said first chair is provided with a seat member connected to said legs for extending said legs to unfolded position when said seat member is lowered whereby said pins are caused to automatically engage said slots.

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