

Sept. 18, 1962

V. MILITANO

3,054,643

CHAIRS WITH SNAP-ON SLATS AND SUCH SLATS

Filed July 18, 1960

2 Sheets-Sheet 1

FIG. 1

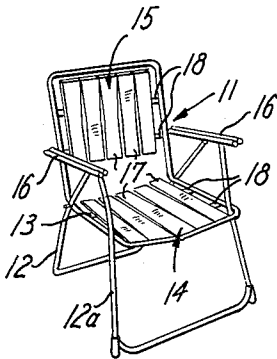


FIG. 2

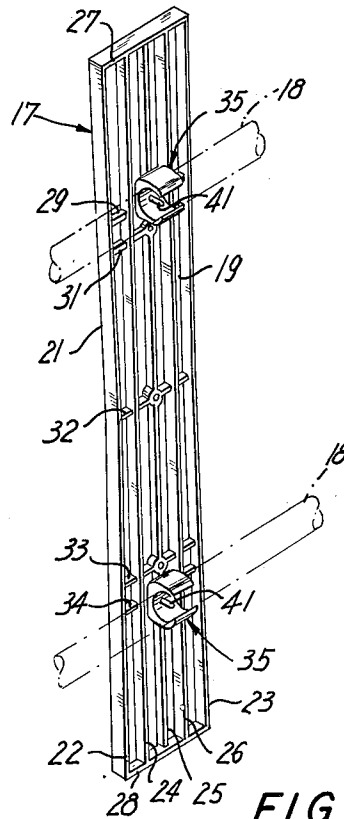


FIG. 4

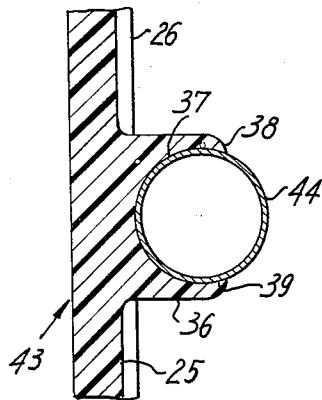
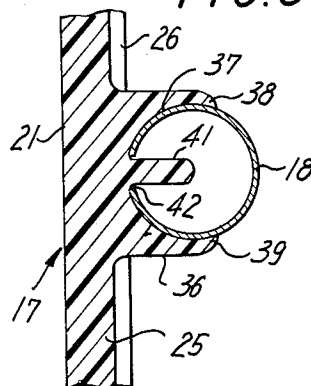


FIG. 3



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FIG. 5

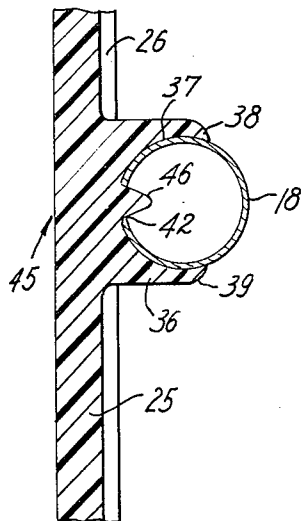


FIG. 6

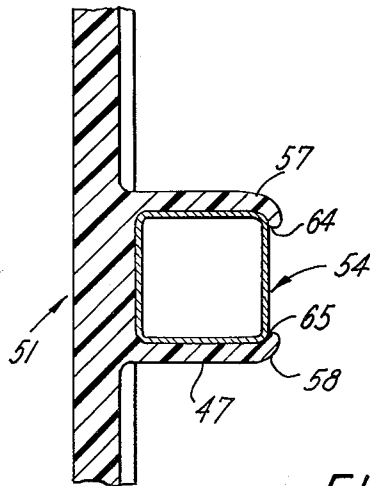
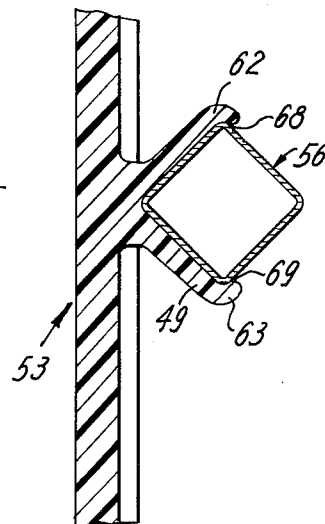
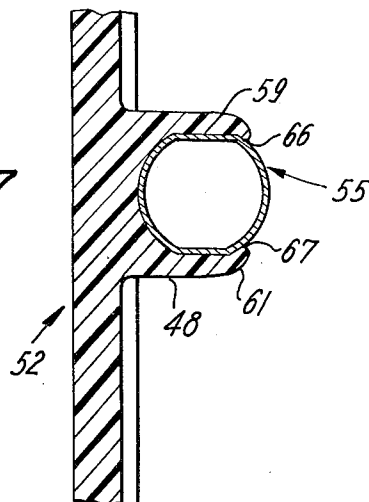


FIG. 8

FIG. 7



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CHAIRS WITH SNAP-ON SLATS AND SUCH SLATS

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5 Claims. (Cl. 297-440)

This invention relates to slatted chairs, chaise longues, and other slatted items of furniture, and to the slats employed in making such items.

The invention is applicable to chairs or chaises, particularly those intended for outdoor use having slatted frames such as seat, back or leg supporting frames as well as to other items of furniture having a slatted surface. In this specification, the term "chair" will be understood to include both chairs and chaises.

One familiar type of outdoor chair has wooden slats, frequently of redwood, secured by rivets or screws to metallic frame members. Such slats are permanently secured to their frames and thus provide chairs having predetermined colors and possessing fixed configurations. Such wooden slats are subject to weathering and tend to splinter, chip or crack with age.

It is among the objects of this invention to provide chairs and other items of furniture having plastic slatted surfaces, the slats of which can be supplied in a variety of shapes and hues and can be simply and firmly attached to the chairs or replaced therefrom in accordance with the purchaser's personal tastes.

An additional object of the invention is to provide such chairs, the molded slats of which are structurally strong, will not splinter or chip under normal handling, and will weather well.

Additional objects and advantages of the invention will be apparent from the following detailed description thereof.

The chair construction of the invention comprises a chair frame, a plurality of spaced apart supports on the frame, and a number of integrally molded, one piece, plastic slats secured to the supports and defining at least one chair surface, each of the slats being an elongated shallow tray having an outside planar decorative surface and having formed integrally therein spaced longitudinally extending bracing ribs, one of which is positioned with its longitudinal median on the longitudinal axis of the slat, and at least two spaced locking projections formed integrally with the last mentioned rib, each of the projections including a pair of integral flexible locking fingers capable of being snapped into removable engagement with one of the supports.

In the accompanying drawings forming a part of this specification and showing, for purposes of exemplification, preferred forms of this invention, without limiting the claimed invention to such illustrative forms:

FIGURE 1 is a slatted chair having a chair seat and back embodying the interlocking chair construction of the invention;

FIGURE 2 is a perspective view, enlarged relative to FIGURE 1, showing one of the slats of the chair depicted in FIGURE 1, with the supports for the slat indicated in broken line portion;

FIGURE 3 is a fragmentary section through the joint between one of the slat projections and an interlocking cylindrical support;

FIGURES 4 and 5 are sections similar to FIGURE 3, showing other modifications of the chair construction of the invention; and

FIGURES 6-8 are sections similar to FIGURE 3, showing chair constructions including interlocking pro-

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jections removably secured to slat supports having non-cylindrical cross sections.

Referring to FIGURES 1-3, a slatted chair 11 is shown having opposed U-shaped supporting legs 12 and 12a and an L-shaped frame 13 connected therewith. The frame 13 supports a slatted seat 14 and a slatted back 15. A pair of arm rests 16 are connected to the frame 13 and to the supporting legs 12 and 12a. The supporting legs, the frame, and the arm rests are desirably formed of a tubular material, preferably of a light weight metal such as aluminum. The chair shown in FIGURE 1 may be assembled as a fixed position chair or, alternatively, as a foldable chair to fold the supporting legs 12 and 12a, the arm rests 16, the slatted seat 14 and the slatted back 15 into closely spaced planes, all as well known in the chair art.

In the embodiment of FIGURE 1, the slatted seat 14 and slatted back 15 of the chair each comprises a number of slats 17 placed in side by side relationship and secured to a pair of cylindrical or tubular supports or cross bars 18. While two cross bars have been shown supporting the slats comprising each of the seat and back of the chair, it is within the scope of this invention to provide any greater number of cross bars 18 supporting the slats 17 in interlocking relationship. The slats employed for the footrest frame of a chaise, for example, are desirably supported by three spaced cross bars, preferably equally spaced along the length of the slat. The slats are secured to the supporting cross bars by a number of locking projections, which are snapped into engagement with the cross bars, as described more fully hereinafter.

Each of the slats 17, as shown in FIGURE 2, is an integrally molded plastic member forming an elongated shallow tray 19 having an outside surface 21 which comprises an exposed portion of either the slatted seat 14 or the slatted back 15. Desirably, the slats 17 are composed of a high impact polystyrene resin, having an average molecular weight of from 200,000 to 250,000, or a polypropylene resin, having an average molecular weight of from about 250,000 to 350,000, preferably about 300,000. Such materials exhibit excellent structural strength and provide durability when exposed to weathering influences for protracted periods of time. Additionally, such plastic materials can be readily pigmented or otherwise decorated to produce any desired color or decoration on the outside surface 21 of each slat, to thus facilitate the preparation of pleasing designs in the slatted seat 14 and back 15.

The length of the slats is slightly less than the depth of the back frame or the length of the seat frame determined by the L-shaped frame 13. A small clearance is thus provided between the ends of the slats and the frame in which they are disposed. The slats in one preferred embodiment of the chair shown in FIGURE 1 are each about 24 inches long and about 2½ to 3 inches wide.

The tray 19 has a pair of opposed longitudinal side walls 22 and 23 which, as shown in FIGURE 2, are slightly concave in shape for style effect. It will be noted that, while walls 22 and 23 are shown in concave configuration, they may be rectilinear or otherwise shaped to promote the esthetic beauty of the slatted seat 14 and back 15. Intermediate the side walls 22 and 23 are spaced longitudinally extending ribs 24, 25 and 26 for bracing and reinforcing the slat 17, while still providing a lightweight construction. Each of the ribs 24, 25 and 26 extends from one end wall 27 to an opposed end wall 28 of the tray 19 and is integral with such end walls. The side walls 22 and 23, the end walls 27 and 28, and the ribs 24 and 26 are of equal height, and determine the depth of the tray. The intermediate rib 25, on the other hand, which is positioned with its longitudinal median

coincident with the longitudinal axis of the slat, desirably is of slightly lesser height than the walls 22 and 23 and ribs 24 and 26. In a preferred embodiment, the side walls 22 and 23, the end walls 27 and 28, and the ribs 24, 25 and 26 are about ½ inch in height above the surface of the tray 19.

Desirably, but not necessarily, a number of spaced laterally extending ribs 29, 31, 32, 33 and 34 extend between the side walls 22 and 23 of the tray 19 for reinforcing the slat 17. These ribs are formed integrally with the side walls and the ribs 24, 25 and 26.

A pair of locking projections indicated generally at 35 are integrally molded to the tray 19 at the junctions between the laterally extending ribs 29 and 34 with the longitudinally extending rib 25 and are thus aligned with the longitudinal axis of the slat 17 at which the rib 25 is positioned. The locking projections are removably interlocked with the cross bars 18, as best shown in FIGURES 2 and 3.

Each locking projection 35 includes a generally horseshoe shaped clamp 36 having an interior surface 37 in the shape of a cylindrical segment terminating in a pair of integral flexible locking fingers 38 and 39. The plastic material, of which these fingers as well as the rest of the tray is composed, imparts inherent flexibility to the fingers, which are shaped as shown in the drawing to provide ends which are forced apart when the fingers are placed over the supporting cross bar and pressure applied to seat the slats, as more fully disclosed hereinafter. In the modification of FIGURE 3, in the center of the interior surface of the clamp 36 an upstanding, generally cylindrical, pin 41 is provided seating in and interlocking with a receiving aperture 42 therefor in the side wall of the cross bar 18.

The slat 17 bears against the supporting cross bar 18 in a common plane determined by the top surfaces of the tray side walls 22 and 23, the ribs 24 and 26, and the interior surfaces 37 of the locking clamps 36, adjacent the upstanding pins 41. By providing the intermediate rib 25 of lesser height than the adjacent ribs 24 and 26, and by forming the locking projection thereon with a thickness such that the bearing surface of the locking projection extends within the same plane as the tray side walls and the ribs 24 and 26, a maximum bearing surface is secured between the cross bar 18 and the slat 17. Thus, the slat is supported by the cross bar at five separate surfaces, viz., along the tray side walls and the ribs 24 and 26 and throughout the interior surface of the locking projection, and is thus securely mounted thereon.

The slat 17 is engaged with the pair of cross bars 18 defining either of the chair seat 14 or back 15 by placing the slat over the cross bars with the clamps 36 resting thereupon and the pins 41 aligned with the receiving apertures 42. Upon applying pressure to the slat from the outside surface 21 thereof, the flexible locking fingers 38 and 39 snap over the cross bars 18 and are engaged firmly therewith, thus preventing longitudinal motion of the slat relative to the cross bars to which it is secured. It will be noted that the flexible locking fingers engage the periphery of the cross bars 18 throughout a major portion thereof and extend over a portion of the converging side walls of the cross bars. The locking fingers 38 and 39 are thus firmly and yet removably secured to the cross bars 18. At the same time that the locking fingers engage the cross bars, the pins 41 seat within the receiving apertures 42 in the cross bars, thus preventing lateral motion of the slat relative to the cross bars.

It will be understood that an aperture 42 is provided in each of the cross bars 18 for receiving each upstanding pin 41 of the slat projections and thus seating the slats integral therewith. Five spaced apertures 42 are provided in each cross bar 18 for seating the five juxtaposed slats comprising the chair seat 14 between one pair of cross bars, and the five slats comprising the chair back 15 between the second pair of cross bars, of the chair of FIG-

URE 1. The juxtaposed outside decorated surfaces 21 of the slats 17 which comprise the slatted chair seat and back thus provide any desired over-all design for the completed chair.

The slats 17 may be removed from the chair 11 by simply pulling them away from the cross bars 18 to disengage the flexible fingers 38 and 39 from the cross bars and pull the pins 41 from their receiving apertures 42. Hence, slats of different colors and configurations can be simply secured to or removed from the chair frame and purchasers may choose any desired styling for purchase or replacement.

The modification shown in section in FIGURE 4, is provided with a slat 43 having a locking projection consisting of the horseshoe shaped clamp 36, i.e., the locking projection does not have the pin 41 of FIGURE 3, which clamp snaps on a cross bar 44. As a practical matter, when the slats 43 are assembled on the frame only slight lateral movement, if any, will take place with this construction.

In FIGURE 5, another embodiment is shown in which a slat 45 has a locking projection including the horseshoe shaped clamp 36 and an integral parabolic protuberance 46 which is seated in the receiving aperture 42 in the cross bar 18. The protuberance 46, like the pin 41 of the embodiment of FIGURE 3, prevents lateral motion of the slat relative to the cross bar.

In the embodiment of each of FIGURES 4 and 5, the clamp 36 includes the pair of flexible locking fingers 38 and 39 which engage the peripheries of the cross bars 44 and 18, respectively, and extend over a portion of the converging side walls of the cross bars. Thus, like the construction of FIGURE 3, the embodiments of FIGURES 4 and 5 provide firm and yet removable engagement between the chair supports and the molded plastic slats secured thereto.

In FIGURES 6-8, locking projections are provided which consist of clamps 47, 48 and 49 for securing slats 51, 52 and 53, respectively, to cross bars 54, 55 and 56. Each of the respective cross bars has a non-cylindrical shape, the cross bar 55 having a prismatic shape capped by opposed cylindrical segments and the cross bars 54 and 56 each being prismatic, but being oriented differently with respect to the slats 51 and 53 secured thereto. The clamps 47, 48 and 49 terminate in opposed pairs of integral flexible locking fingers 57 and 58, 59 and 61, and 62 and 63, respectively, which serve to snap into place about the edges of the cross bars to lock the slats into firm engagement therewith. The embodiments of FIGURES 6-8, like the embodiment of FIGURE 4, are locked against longitudinal movement of the slats relative to the cross bars but not with respect to lateral movement relative thereto, except as the assembly of slats within the confines of the chair frame prevents such lateral movement.

The slats are engaged with the cross bars by snapping the flexible locking fingers into place over the cross bars, the fingers extending over portions of the converging side walls of the cross bars. Thus in FIGURE 6, the fingers 57 and 58 engage wall portions 64 and 65, respectively; in FIGURE 7, the fingers 59 and 61 engage wall portions 66 and 67, respectively, and in FIGURE 8, the fingers 62 and 63 engage the wall portions 68 and 69. The locking fingers thus grip the converging surfaces of the cross bars firmly and yet are removably secured thereto.

The slats 51, 52 and 53 are removed from the cross bars 54, 55 and 56 by pulling the slats away from the cross bars, to the left viewing FIGURES 6-8, and thus disengaging the flexible locking fingers of the slats from the cross bars.

It will be noted that the chair construction of the present invention provides means affixing securely and yet removably a plurality of integrally molded plastic slats to chair supports. Such slats can be of a variety of con-

figurations and can be decorated as desired. Thus, the vendor need not maintain large inventories of slatted chairs in different colors and shapes but only the metal frames and separate compact slats which the consumer may choose to suit his individual taste.

Additionally, the chair construction of the invention provides a stable interlocking structure composed of strong plastic slats which are chip- and crack-resistant, are easy to clean and resist weathering influences.

Since different embodiments of the invention may be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. A chair construction comprising, in combination, a chair frame, a plurality of spaced apart supports on said frame and a number of integrally molded plastic slats secured to said supports and defining at least one chair surface, each of said slats being an elongated shallow tray having an outside planar decorative surface and having formed integrally therein a plurality of spaced longitudinally extending bracing ribs, one of which is positioned with its longitudinal median on the longitudinal axis of the slat, and at least two spaced locking projections formed integrally with said rib having its longitudinal median on said longitudinal axis, each of said projections including a pair of integral flexible locking fingers snapped into removable engagement with one of said supports.

2. A chair construction comprising, in combination, a chair frame, a plurality of spaced apart supports on said frame and a number of integrally molded plastic slats secured to said supports defining a chair seat and a chair back, said slats consisting essentially of a plastic material selected from the group consisting of polystyrene resins having molecular weights of from 200,000 to 250,000 and polypropylene resins having molecular weights of from 250,000 to 350,000 and each of said slats being an elongated shallow tray having an outside planar decorative surface and having formed integrally therein a plurality of spaced longitudinally extending bracing ribs, one of which is positioned with its longitudinal median on the longitudinal axis of the slat, and at least two spaced locking projections formed integrally with said rib having its longitudinal median on said longitudinal axis, each of said projections including a pair of integral flexible locking fingers snapped into removable engagement with one of said supports.

3. A chair construction comprising, in combination, a chair frame, a first set of at least two spaced apart tubular supports on said frame defining a chair seat, a second set of at least two spaced apart tubular supports on said frame defining a chair back, a first group of one-piece molded plastic slats secured to said first set of supports and a second group of one-piece molded plastic slats

secured to said second set of supports, each of said slats of said first group and said second group being an elongated shallow tray having an outside planar decorative surface and having formed integrally therein a plurality of spaced longitudinally extending bracing ribs, one of which is positioned with its longitudinal median on the longitudinal axis of the slat, and at least two spaced locking projections formed integrally with said rib having its longitudinal median on said longitudinal axis, each of said projections including a pair of integral flexible locking fingers snapped into firm gripping engagement with one of said supports and an integral upstanding pin seating within an aligned aperture in said one of said supports.

4. A chair construction comprising, in combination, a chair frame, a plurality of spaced apart supports on said frame and a number of one-piece molded plastic slats secured to said supports and defining at least one chair surface, each of said slats being an elongated shallow tray having an outside planar decorative surface and having formed integrally therein a group of spaced longitudinally extending bracing ribs having heights equal to the height of the tray walls and having edge bearing surfaces lying substantially in a single plane, an additional longitudinally extending bracing rib positioned with its longitudinal median on the longitudinal axis of the slat and at least two spaced locking projections formed integrally with said last mentioned rib, each of said projections including a pair of integral flexible locking fingers and having a bearing surface in substantially the same plane as said bearing surfaces of said group of bracing ribs for snapping into removable engagement with one of said supports.

5. A one-piece plastic slat comprising an elongated shallow tray having formed integrally therein a plurality of spaced longitudinally extending bracing ribs, one of which is positioned with its longitudinal median on the longitudinal axis of the slat and at least two spaced locking projections formed integrally with said rib having its longitudinal median on said longitudinal axis, each of said projections having integral flexible locking fingers for engagement with a support.

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