MULTIFUNCTIONAL PEGGED FURNITURE

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Abstract

Pegged furniture is made out of flat frame members having slotted holes and flat bridging members having reduced ends to fit through the holes. The frame members may have extra slots so that you can make functionally different kinds of furniture. Special tapered pegs, which are made of slotted dowel stock having a tapered flat on one side, are pegged through angled holes in the bridging members to removably hold the furniture together to perform the desired function. Some particular items of furniture include (1) an alternate chair and step stool; (2) another step stool which doubles as a hamper; (3) a two-level table; (4) a chair and table; (5) a bench and chest; (6) a cradle which can also be converted into three other uses including benches and a table, a rocking bench, and a toy box.

17 Claims, 21 Drawing Figures
MULTIFUNCTIONAL PEGGED FURNITURE

BACKGROUND OF THE INVENTION

This invention relates to improvements in pegged furniture, and in multifunctional furniture. Various forms of pegged furniture and of multifunctional furniture have been proposed heretofore. Thus, for specific example we have all observed park benches made of cast concrete with boards secured through holes in the concrete to form the bench.

It has also been proposed to secure children's furniture together by pegs, and various types of multifunctional and pegged furniture which have been proposed heretofore are cited toward the end of the present specification.

However, this prior furniture has generally been subject to various difficulties. Some have been unduly complex so that they are very expensive; others are difficult to assemble; and other furniture of this type have been of poor mechanical design so that they are fragile and cannot take normal wear and tear.

OBJECTS OF THE INVENTION

Accordingly, the principal object of the present invention is to overcome these difficulties, and to provide multifunctional furniture which is simple and sturdy, and which may be easily assembled from the flat package in which it is shipped to various desired functional pieces of furniture.

The collateral object of reasonable cost is an outgrowth of the simplicity and low shipping costs of the flat disassembled components.

SUMMARY OF THE INVENTION

The present invention involves multifunctional furniture made of flat frame members which are provided with slots to receive the ends of flat bridging members; and the ends, which are of reduced cross-section, are pegged into position. In accordance with one aspect of the invention, the frame members are provided with extra slots so that at least two functionally different kinds of furniture may be constructed with different positioning of the bridging members.

Thus for example, a cradle may be converted into other types of furniture for a toddler, when the child outgrows the cradle. Specifically, the cradle may be converted into a combined table and benches, into a rocking bench, and even into a toy box.

Implementing such multifunctional furniture, the frame members are frequently provided with more slots than the member of bridging members which are provided, and these slots sometimes cross one another. As different functional pieces of furniture are implemented, the bridging members are shifted to fill different slots, while other slots in the frame members are open.

Other features of the invention include:

1. the use of generally rectangular bridging members with the corners cut away to provide end projections of considerable strength and of reduced width relative to the main portion of the bridging members.

2. the provision of holes in the ends of the bridging members immediately adjacent or just slightly covered by the frame members. The holes may be circular and may be angled slightly in passing through the bridging members.

3. the use of tapered slotted pegs which have a flat surface to engage the frame members as the pegs are mounted in the holes in the bridging members. The pegs may be made of dowel stock, and may be slotted perpendicular to the flat to provide resiliency.

Other ramifications of the invention include the selective use of pivoting bridging members which are mounted on each of the frame members at a single pivot point, and the rotation of the frame members to a different resting surface in the course of implementing functionally different types of furniture.

Particular forms of multifunctional furniture in addition to the cradle mentioned above, include a combined hamper and step stool, an alternate storage box or bench and storage shelf, a multilevel chair or step stool, and a multilevel table.

The advantages of the present invention are particularly applicable to modern living in which space is at a premium and in which mobility and change are the order of the day. Thus, the multifunctional furniture may be knocked down flat for storage when not in use or for moving or travelling. The bench or storage box can readily be converted for storage purposes when moving or when not required for use as a bench. And the cradle, as mentioned above, adapts to other uses as the child grows, and can serve the collateral useful function of constituting a learning toy for the child as the child changes it from one function to another.

Other objects, features and advantages of the invention will become apparent from a consideration of the following detailed specification and from the drawings, in which:

FIGS. 1 and 2 show an illustrative arrangement of the invention in which the same parts are employed in the chair of FIG. 1 as in the step stool of FIG. 2;

FIG. 3 shows one form of bridging member employed in the implementation of the invention;

FIGS. 4 through 7 show the peg used to hold the furniture together and a detail on its use;

FIGS. 8 through 11 show another embodiment of the invention in which many common parts are employed in implementing a cradle (FIG. 8), a bench and table (FIG. 9), a rocking bench (FIG. 10) and a toy box (FIG. 11);

FIGS. 12 and 13 show one of the pivoting bridging members used for the top of the toy box of FIG. 11;

FIG. 14 shows another cradle;

FIG. 15 shows a multiple height chair, and table;

FIG. 16 is a view of a multiple height table;

FIGS. 17 and 18 show an alternate hamper and step stool; and

FIGS. 19 through 21 show an alternate bench or chest, with one frame member being shown separately in FIG. 21.

Referring more particularly to the drawings, FIG. 1 shows a chair made of two frame members 21 and 23 and two bridging members 25 and 27. The form of the bridging members 25 and 27 is shown in FIG. 3 of the drawings.

As shown in FIG. 3, the bridging member is essentially rectangular in shape with corners cut away to form extensions 29 and 31 of reduced cross-section, or width, relative to the main portion of the bridging member.

The end portion 29 of bridging member 25 is provided with two holes 33 and 35 for receiving pegs 37.
and 39 which hold the bridging and frame members together.

The shape of one of the pegs 37 is shown in FIGS. 5, 6 and 7, in which FIG. 6 is a side view of the rounded side of one of the pins 37, and FIGS. 5 and 7 are views of the pin from its two ends. The pegs or pins may be made from cylindrical dowel stock, and may be provided with a slot 41 for increased resiliency. The flat surface 43 is oriented at an angle, such as 5°, relative to the axis of the pin, to match the small angle at which the holes 33, 35, etc., are drilled through the ends of the bridging members (see FIG. 4).

When the two pegs 37 are firmly pressed into the holes 33, 35 with the flats engaging the outer surface of frame member 21, the shoulders of bridging member 25 are brought firmly into engagement with the inner surface of frame member 21. This provides a sturdy assembly which may still be easily taken apart.

Returning to FIG. 1, it may be observed that a child's chair is formed by the bridging member 27 forming a back, and member 25 forming a seat. Additional pairs of slots 45, 47 and 49, 51 are also provided for altering the function to be performed by the piece of furniture. For example, by moving the seat 25 to the slots 49, 51, a higher chair may be constructed.

Further, in FIG. 2, bridging member 27 has been shifted to slots 45, 47, thus forming a step stool. Slots 53, 55 which formerly held bridging member 27 are now vacant or unfilled.

The arrangements of FIGS. 1 and 2, in which some slots are unfilled, and in which there are more pairs of slots than bridging members, are typical of many of the multifunctional furniture assemblies disclosed in this specification. It may also be noted that many of the frame and bridging members are identical. Thus, the frame members 21 and 23, are identical, and the bridging members 25 and 27 are also identical. As developed below, many of the bridging members may be used with other types of frame members. This commonality of parts is shown throughout the present drawings by the use of the same letter designation on all parts which are identical, as indicated by the use of letters A and B in FIGS. 1 and 2, for example.

In FIGS. 8 through 10, two new types of parts designated C and D are introduced. The end pieces C have a curved rocking edge 57 and a flat edge 59. They may be about a foot and one-half in width, and may be about 2 feet, 8 inches in length. The D bridging members may be about 37 inches long, with full width of about 11 or 11% inches for approximately 32 inches, and with central end extensions approximately 9 inches wide extending for about 2½ inches.

FIG. 8 is a cradle. FIG. 9 shows the C members inverted with flat surface 59 on the floor, and the two D members 61 and 63 shifted, to form a table and two benches. FIG. 10 shows a rocking bench with seat 65 and a back 67. The D bridging member 69 can be used to lean on, or as a writing or work surface.

FIG. 11 shows a toy box which is essentially the cradle of FIG. 8 with the addition of two pivoted bridging members 71 and 73 forming a cover for the toy box. The toy box is somewhat unusual in that it rocks, but this, of course, does not detract from its storage function.

The form of the pivoting members E of FIG. 11 is shown in detail in FIGS. 12 and 13, in which the bridging member 73 is shown disassembled from the toy box.

At the four corners of bridging member 73 are the extensions 75, 77, 79 and 81. The top 73 pivots about extensions 75 and 77, with extensions 79 and 81 forming stops for the movement of the top 73, and fitting into recess 83 when the top is in the closed position.

In the detail of FIG. 13, the structure adjacent pivot extension 75 is shown in detail. Specifically, the main portion of the bridging member 73 is extended to provide a surface 85 which engages the inner surface of the frame member C, and prevents any substantial longitudinal movement of the pivoted member 73. This serves to provide a space between the pivoted top members and the frame members so that children's fingers are not caught as the top is swung closed.

In passing, attention is also directed to holes 76, 78 and 80 in the C members. These may be employed to receive the other extensions such as 79 and 81 of the E members, to store or otherwise prevent the rotation of one or both of them.

In FIG. 14, three D bridging members 87, 89 and 91 are pegged to E end frame members 93 and 95 to form a crib or cradle.

FIG. 15 shows a B member 97 and an H bridging member 99 assembled with two G frame members 101 and 103 to form a multilevel chair. With the assembly resting on edges 105, a chair is formed which is somewhat higher than that produced when the chair is resting on edges, or surfaces 107, and the panel 99 forms the seat. Similarly, when the assembly rests on surfaces or edges 109, it becomes a children's table, with panel 99 providing the working surface.

FIG. 16 shows a two-level table with the alternate elevation being provided by shifting the D bridging members to the open slots 111 and 113, and inverting the assembly to rest on edges 115 and 117 of the I frame members.

FIGS. 17 and 18 show alternate arrangements of B and H bridging members with J type frame members to switch from a hamper (FIG. 17) to a step stool, or bookcase and step stool for a library (FIG. 18).

It may be noted in passing that the H style bridging members are similar in construction to the B members shown in FIG. 3, with the exception that the extensions are symmetrically located, and the H members are eleven inches wide. The central extensions, in the case of the B members, are 5 inches in width.

FIG. 19 shows a storage chest using three D bridging members and two K frame members. A hinged L assembly is made up of a narrow bridging member 119 and a broader member 121, secured to 119 by friction hinges 123 and 125. When it is desired to convert the storage chest of FIG. 19 to the bench with a backrest shown in FIG. 20, the D bridging member 127 is shifted to slot 129 in the two K frame members. Of course, all of the pegs must be removed at one end adjacent one of the K members to make the shift.

The hinged member 121 is then rotated relative to the narrow bridging member 119 into engagement with the surface 131 and 133 to form the bench of FIG. 20. The lower D member 135 then provides shelf or bookcase space. Slots 137 and 139 in frame members K are then open or unfilled.

FIG. 21 shows one of the K members, with the relative positions of the slots clearly set forth. In addition to slots 129 and 137 previously mentioned, slots 141 and 143 serve to locate the two D bridging members which retain their location in the chest and in the bench.
arrangements. Slot 145 receives the ends of the narrow bridging member 119 forming part of the hinged assembly.

In reviewing the features of the invention and particularly those not discussed in the introduction of this specification, it is considered that the sturdiness of the multifunctional furniture described herein is due at least in part to the substantial size of the extensions which are secured through the slots. These are in some cases more than half the width of the member being secured in place, and in other cases more than one-third the width of the member, thus readily permitting double pegging.

As mentioned above, multifunctional furniture is not new, as indicated by U.S. Pat. No. 3,570,418, U.S. Design Pat. No. 218,420, and U.S. Pat. No. 3,527,497. Similarly, pegged furniture is known as shown in the last mentioned patent cited above, and U.S. Pat. Nos. 747,562 and 1,086,951. Another example of knock down furniture is shown in U.S. Pat. No. 2,720,255.

However, as noted above, none of these prior arrangements has the sturdiness necessary to stand normal hard usage, and the simplicity of design and structure required to reach the market place at a competitive price.

In conclusion, it is to be understood that, while the foregoing description is illustrative of the principles of the invention, various departures from the specific disclosure may be made without departing from the spirit of the invention. By way of example and not of limitation, the bench back of FIG. 20 could be pivotally mounted as shown for the toy box top of FIG. 11, or vice versa; the frame members could be made of plastic while the bridging members are made of wood or particle board, or both parts could be made by plastic injection molding; longer assemblies utilizing an additional intermediate frame member could be used; and the frame members of FIG. 16 could be provided with four sets of double holes to receive the E members of FIG. 11 as the higher and lower table tops, with the central D bridging member of FIG. 16 providing the necessary structural rigidity.

What is claimed is:

1. In a multifunctional article of pegged furniture; two frame members each having a predetermined number of elongated generally rectangular openings of substantially the same size, the number of said openings being at least equal to three; means including a lesser predetermined number of bridging members having ends of reduced cross-section substantially the same shape as said openings to fit through selected ones of said openings for forming a selected one of a plurality of articles of furniture, the number of bridging members being at least equal to two, and said bridging members having holes partly covered by said frame members when the ends of said bridging members are inserted in said frame members, said holes having peg engaging surfaces which are slightly angled from perpendicularity with said bridging members; the total number of bridging members being less than the number of rectangular openings in each frame member, and means including pegs extending through said holes for providing surface-to-surface engagement with bridging member and surface-to-surface engagement with said frame members on both sides of said bridging member to firmly hold said bridging members in place, said pegs being provided with a tapered flat having an angle with respect to the axis of said pegs matching the angle of said peg engaging surfaces of said holes; and whereby each arrangement of said bridging members in said openings at least one opening in each frame member is not filled with the end of a bridging member.

2. An article of pegged furniture as defined in claim 1 wherein the ends of said bridging members are of substantially the same thickness as the rest of the bridging member, and are at least one-third as wide as said bridging member.

3. An article of pegged furniture as defined in claim 1 wherein the ends of said bridging members are of substantially the same thickness as the rest of the bridging member, and are least one-half as wide as said bridging member.

4. An article of pegged furniture as defined in claim 1 wherein said ends are offset with respect to the longitudinal centerline of said bridging members.

5. An article of pegged furniture as defined in claim 1 wherein at least two of said rectangular openings intersect one-another to form a closed X-shaped aperture, and wherein the length of each opening is substantially equal to the width of the end of the bridging members, and wherein a bridging member is mounted in one of said openings, and the intersecting opening is not filled.

6. An article of pegged furniture as defined in claim 1 wherein said bridging members are generally rectangular in shape.

7. An article of pegged furniture as defined in claim 1 wherein at least one additional pivoting bridging member is provided, said pivoting bridging member being provided with a pivot extension on each end, and wherein said frame members are provided with aligned matching openings for receiving said pivot extensions, whereby when said first mentioned bridging members are pegged into place, said pivoting bridging members are rotatably secured in position.

8. An article of pegged furniture as defined in claim 1 wherein said frame members are provided with a plurality of resting surfaces, whereby with different arrangements of said bridging members and orientation on different resting surfaces, a different function is achieved.

9. An article of pegged furniture as defined in claim 1 wherein the filled and vacant openings extend in different directions, whereby functionally different types of furniture can be more readily formed.

10. An article of pegged furniture as defined in claim 1 wherein three generally parallel openings and one substantially perpendicular openings, and two bridging members are provided, whereby a chair of different seat levels or a step stool may be constructed.

11. An article of pegged furniture as defined in claim 1 wherein said holes are circular and said pegs are slotted dowels having a tapered flat on one side with the remaining outer surface of said pegs being of substantially right cylindrical form, and wherein said holes are angled to match the taper of said pegs.

12. An article of pegged furniture as defined in claim 1 wherein said frame members are provided with means including a curved edge on one side and a gener-
ally flat edge on the other and with pairs of angularly oriented openings at each end, for implementing a crib, and a bench and table.

13. In an article of pegged furniture; two frame members each having at least two slots; means including at least two bridging members having broad ends of reduced cross-section for fitting said slots; at least one additional pivoting bridging member having pivoting extensions on each end, said frame members being provided with matching aligned holes to receive said extensions; and means including pegs extending through said holes to hold said first mentioned bridging members securely in place and to secure said pivoting bridging member against longitudinal movement, whereby it is freely pivotable about said extensions.

14. In an article of pegged furniture; two frame members each having at least two openings of generally rectangular configuration; means including two substantially flat bridging members having ends of reduced cross-section for engaging said openings to form said article of furniture, and said bridging members having holes partly covered by said frame members when the ends of said bridging members are inserted in said frame members; and means including resilient slotted dowel pins having a tapered flat on one side for surface engagement both with said holes and also with said frame members on both sides of said bridging members to hold said bridging members firmly in place, said tapered pins being formed of dowel stock and having a substantially constant diameter throughout their length.

15. An article of pegged furniture as defined in claim 14 wherein said frame members are provided with a plurality of resting surfaces, whereby with different arrangements of said bridging members and orientation or different resting surfaces, a different function is achieved.

16. An article of pegged furniture as defined in claim 14 wherein said holes are angled relative to perpendicularity with said bridging members to match the taper of said dowel pins.

17. An article of pegged furniture as defined in claim 14 wherein an additional bridging member is hinged to one of said flat bridging members, and means are provided for holding it against normal rotation in two different positions.

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