May 5, 1964 G. L. EWING 3,131,898

RAIL AND LEG CONSTRUCTION FOR TABLES

Filed Jan. 30, 1962 2 Sheets-Sheet 1

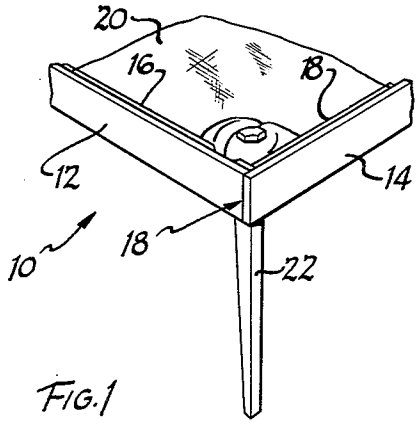


FIG. 1

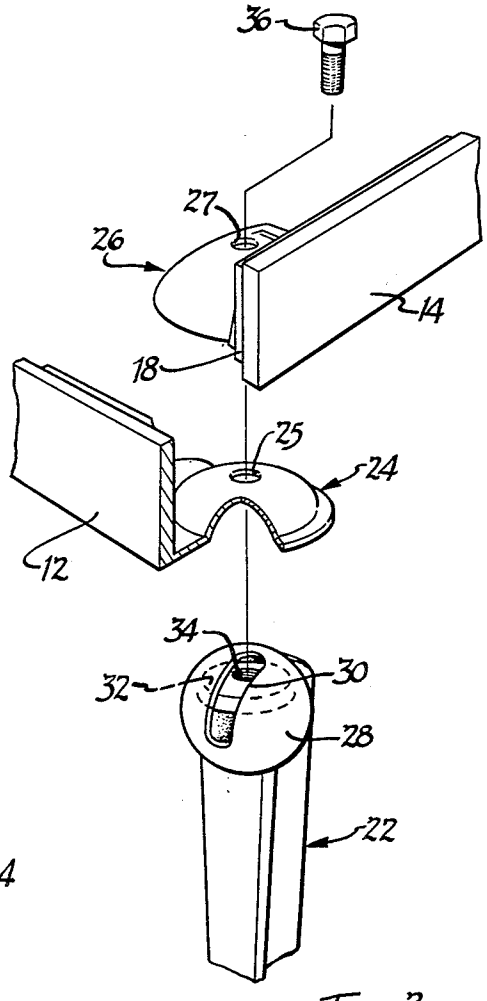


FIG. 2

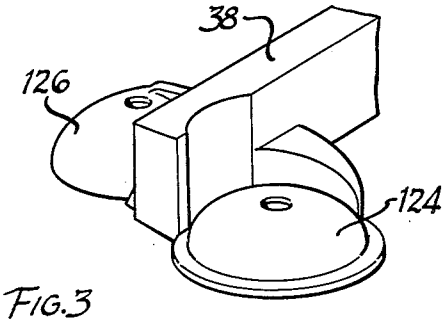


FIG. 3

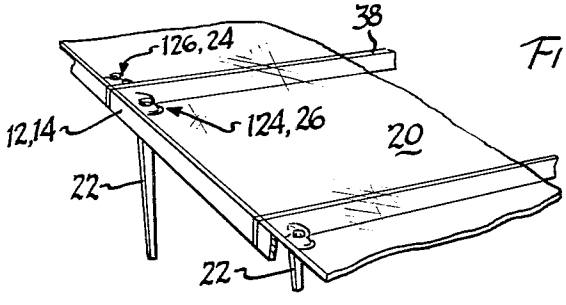


FIG. 4

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RAIL AND LEG CONSTRUCTION FOR TABLES

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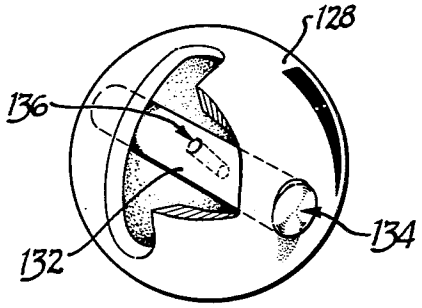


FIG. 7

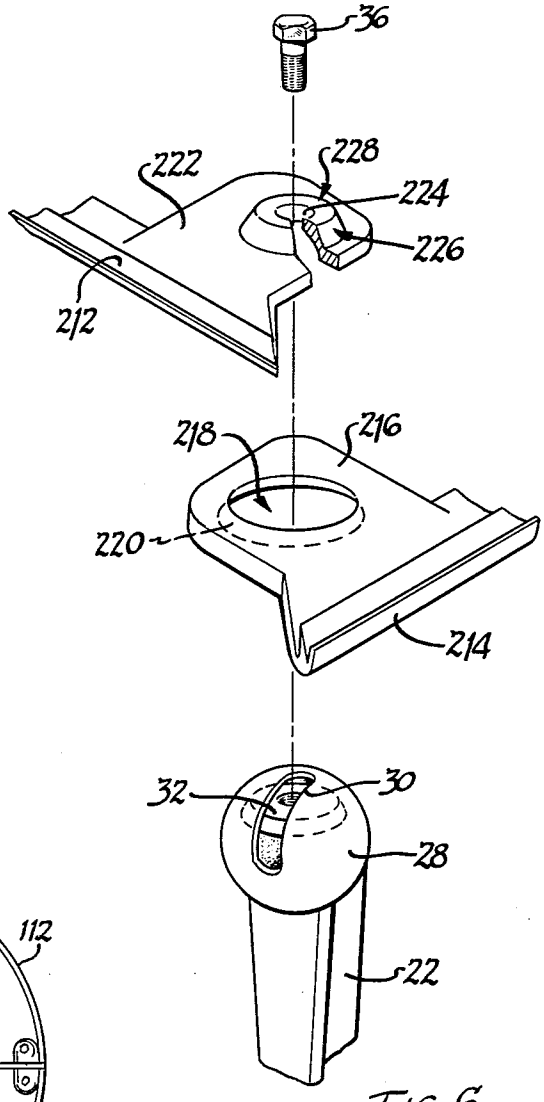
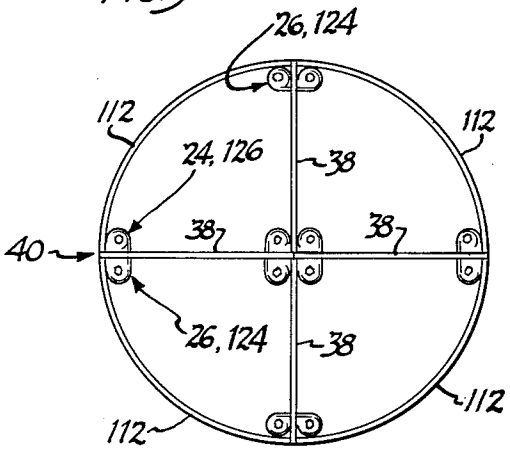


FIG. 6

FIG. 5



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RAIL AND LEG CONSTRUCTION FOR TABLES

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8 Claims. (Cl. 248—188)

This invention relates to a furniture construction and more particularly to a novel joint for connecting rails and legs of furniture components together to form a substantial variety of furniture pieces, including tables, chairs, sofas and the like.

One of the common problems confronting furniture manufacturers today is the adaptability of furniture to different arrangements within a room of a home or other structure. Thus, in a given situation, a piece of furniture may be desirably placed along a single wall; in another situation, however, the single wall may not be long enough to accommodate the piece and accordingly, placement in a corner would be desirable, thus using the shorter extent of two walls. Also, it is desirable in the manufacture of tables, sofas and the like to make them either elongated, round or of various square sizes. Still further, in the manufacture of tables, chairs, sofas and the like, it is often desirable for storage that the legs and frame be foldable or collapsible to reduce the cubic content of the furniture and thereby facilitate storage.

Accordingly, if a furniture construction could be provided wherein the unit could be readily assembled and disassembled, wherein the legs and frame could be folded, and wherein a minimum number of basic components were adapted to the production of elongated, square or round pieces, thus providing broad flexibility of arrangement, a substantial step forward in the art would be provided.

It is accordingly an important object of the present invention to provide a novel joint for connecting rails and legs of furniture pieces, such as tables, chairs, sofas and the like.

Another object is to provide a construction for connecting legs to rails of chairs and other furniture pieces wherein a ball joint of novel configuration is utilized to provide quick folding and quick assembly or disassembly.

A still further object is to provide a novel furniture construction, utilizing a unique ball joint connection, wherein a minimum number of basic pieces are adapted to the production of various sizes of square and rectangular shapes and are also adapted to the production of round and part-round pieces.

A still further object is to provide a ball joint furniture construction that is of quick assembly, thus facilitating the "do-it-yourself" art of assembling and disassembling furniture and at the same time providing broad adaptability to differing space arrangements.

Other objects of this invention will appear in the following description and appended claims, reference being had to the accompanying drawings forming a part of this specification wherein like reference characters designate corresponding parts in the several views.

In the drawings:

FIGURE 1 is an assembled perspective view of one form of furniture joint made in accordance with the present invention;

FIGURE 2 is an exploded perspective view of the joint of FIGURE 1;

FIGURE 3 is a perspective view of an intermediate rail made in accordance with the present invention, adapted to provide great flexibility of furniture configuration;

FIGURE 4 is a fragmentary perspective view illustrating the means in which an elongated rectangular furniture piece can be made utilizing the intermediate rail of FIGURE 3;

FIGURE 5 is a schematic plan view illustrating the manner in which a round table can be made in accordance with the invention;

FIGURE 6 is an exploded perspective view of a second embodiment of the novel joint of the invention; and

FIGURE 7 is a perspective view with hidden parts in dotted outline, illustrating an alternate embodiment of the ball of the joint of invention.

Before explaining the present invention in detail, it is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts illustrated in the accompanying drawings, since the invention is capable of other embodiments and of being practiced or carried out in various ways. Also, it is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation.

BRIEF PERSPECTIVE

Briefly, the present invention relates to a furniture construction, and more particularly to a novel joint for connecting rails and legs to furniture pieces such as tables, chairs, sofas and the like. It is a particularly important feature of the invention that a furniture joint is provided that can be quickly assembled and disassembled; that provides for folding of support legs and frame for convenient and compact storage of furniture items incorporating the construction; and wherein the structure employs a minimum number of simple parts yet provides great flexibility of arrangement.

THE INVENTION

As shown in FIGURE 1, the invention is illustrated as being applied to a table of the nature of a coffee table or the like that is designated by the number 10; such table includes runners 12 and 14 having ledges 16 and 18 respectively, formed along the inner top edges thereof that are adapted to support a top member such as a sheet of glass 20 or analogous material such as slab marble or the like. The table 10 also includes a leg 22, joined at the corner formed by abutment of the ends of the runners 12 and 14.

By referring to FIGURE 2, it will be noted that the runners 12 and 14 are provided at their right and left ends, respectively, with mating half sockets. Thus the runner 12 is provided at its right end with a half socket 24 and the left end of runner 14 is provided with a mating half socket 26. As regards half socket 24, it will be noted that its upper surface is adapted to mate with the underneath surface of the half socket 26 of runner 14 and its lower surface mates with the exterior of ball 28. Each half socket 24 and 26 is provided with apertures 25 and 27 that are alignable when the sockets are superimposed.

Also as shown in FIGURE 2, the ends of runners 12 and 14 are provided with mating miters for example of the 90° step variety as at 18 for alignment purposes, fitting to a corner as shown in FIGURE 2. Also 90° step or 45° miters could be used.

Referring now to FIGURE 2, it will be observed that the table leg 22 is provided at its top end with a hollow ball 28 having an arcuate slot 30 formed in the top half thereof. A washer 32 having a threaded hole 34 in the center thereof is slipped through the arcuate slot 30 to float within the ball 28. As illustrated at the top of FIGURE 2, a bolt 36 is passed through the hole 27 of half socket 26 of runner 14, the hole 25 of half socket 24 of runner 12, and on through the arcuate slot 30 of the ball 28 and into the threaded hole 34 of the washer 32 to join the parts in assembled relationship, it being noted that prior to inserting the bolt, the half socket 26 is superimposed on half socket 24. By tightening the bolt

36 a rigid frame assembly is thereby provided, as shown in FIGURE 1.

After forming the table frame by repeating the above steps to provide four legs and appropriate side rails, the sheet of glass 20 or slab of marble or equivalent is laid within the support ledges 16 and 18 to complete the structure.

It will be observed that when the bolt 36 is loosened slightly, the leg 22 and the side rails 12, 14 will be free to move and can be folded to provide a compact package for storage purposes.

THE EXTENDED TABLE CONSTRUCTION

By reference to FIGURE 3, there is illustrated the terminal end of a so-called intermediate rail whereby a table or sofa of elongated configuration and of any breadth can be provided, and having a suitable number of legs intermediate its length for support. Thus, the rail 38 is provided on one side at the end with a lower half socket 124 and on the other side with an upper half socket 126. When it is understood that one end of the runner 12 of FIGURES 1 and 2 is provided with a lower half socket 24 as shown in FIGURE 2, to mate with the upper half socket 126 of member 38, and the other end of an identical runner is provided with an upper half socket 26, as per the end of rail 14 of FIGURE 2, to mate with the lower half socket 124, it may be seen that an extended table or sofa of any length and width can be provided, having intermediate support, as illustrated in FIGURE 4.

It will be observed from the foregoing that by applying the above joint, leg and rail principle to chairs, sofas and the like, broad configurations of length and width can be provided by the use of only three basic pieces, including a front and side or end rail, an intermediate rail, and a leg.

ROUND STRUCTURES

As shown in FIGURE 5, the extensibility feature can be applied to the production or formation of round tables, chairs, sofas and the like. Thus, the peripheral rails 12, 14, as shown in FIGURES 1 and 2 and as utilized in FIGURE 3, instead of being straight would be made into a quarter circle as illustrated at 112 in FIGURE 5, with the same lower half socket 24 at one end and the upper half socket 26 at the other end, as illustrated by the arrow reference numerals. The rail 38, as illustrated in FIGURE 3 would therefore have the upper half socket 126 fitted over the lower half socket 24 of arcuate rail 112 and the lower half socket 124 fitted beneath the lower half socket 26 of adjacent arcuate rail 112 as illustrated schematically at 40 in FIGURE 5.

Thus, when four runners 38 of the double ball and socket configuration on either end, as in FIGURE 3, are joined together centrally in 90° spaced array, the sockets 124 and 126 cooperating with each other for such joinder, and with appropriate repetition at the periphery, of arcuate rails 112, a table of a full 360° circle is provided. It will also be observed that by using the novel rail structure 38 with the double half sockets 126 and 124 at each end, the table of FIGURE 4 could be extended to provide a table having round ends and a rectangular center section.

Of course, it will be understood that a suitable top material such as glass or the like is provided, or a suitable seating material such as one or more upholstered cushions is provided upon the so-constructed and fabricated support frame.

Thus, by applying the above joining principle to chairs, sofas and the like, various configurations of length and width can be provided by the use of a very few basic pieces.

A SECOND EMBODIMENT

As shown in FIGURE 6, a modification of the joint of invention is illustrated and this includes generally the same type of leg construction 22 with a hollow ball 28 at the top thereof, and having an arcuate slot 30, with a washer 32 and utilizing the bolt 36. It will be noted, however, that the rail configuration at the ends is somewhat different in that the rail 214 is formed with an end plate 216 having a circular hole 218 formed therein which has a beveled edge 220 formed on the lower side thereof. The runner 212 is also provided with a plate section 222 having a hole 224 that is appropriately smaller than the hole 218 of subjacent plate 216 of 214, and thus adapted to cooperate with the hole 218 of plate 216 to provide a substantial half socket for receiving the top of the ball 28 of the leg 22. It will be noted that the plate 222 of runner 212 is raised as at 226 to substantially complete the upper half of the socket and also provide an abutment 228 for the underside of the head of the bolt 36.

It will be understood that when the parts are assembled as shown and the bolt 36 inserted through the holes 224 and 218 of plates 222 and 216 and tightened into the washer 32, a secure assembly will be provided; which assembly also includes the function of permitting the leg and frame to be folded, by loosening the bolt, and also providing for quick assembly or disassembly, while utilizing a minimum of parts. This embodiment of the invention is also adapted to the extensibility and circular features previously described.

ALTERNATE CONSTRUCTION OF THE BALL ON TOP OF THE LEG

As shown in the sketch of FIGURE 7, the ball 128 can be made of modified construction, having a hollow interior as previously, but instead of the washer 32, a pin 132 is inserted through appropriately drilled holes 134 and is provided with a threaded hole 136 at its center to receive a previously mentioned bolt 36.

EXTENDED SCOPE OF INVENTION

While the foregoing description has related to the use of straight legs with a hollow ball atop the same, it is to be included within the broad scope of the invention to use other leg configurations, such as triangular or pyrimidal shapes with a ball at an apex. Also, square or rectangular panels could be employed with hollow balls formed along one edge at appropriate spacings to mate with the socket formations.

Also from the foregoing description, it may appear apparent that the invention necessarily includes rails completely around the perimeter of a furniture piece. However, it is believed that it will be obvious where a top member of sufficient structural strength is employed rails would only be required along each side, as of a square or rectangular piece. Thus, a rail and two legs along each of the two sides would provide adequate support—without end rails; and the top would in effect form the ends without any joinder between the ends of the rails, across the piece.

Also, the broad scope of invention would include the production of triangular pieces and of course multisided pieces in the form of pentagons, hexagons, and the like.

In the fabrication of strong yet light weight furniture in accordance with the present invention, cast or extruded aluminum can be employed; however, it is to be included within the broad scope of invention to use any castable metal, depending upon the weight of the unit desired. Also, it is to be included within the scope of the invention to use stampings as of ferrous and nonferrous metals. Also, the parts can be machined from metals or wood if desired. Plastics of suitable strength also can be used with appropriate fabrication techniques.

ADVANTAGES OF THE PRESENT INVENTION

As has been pointed out hereinbefore, tables and other items of furniture including sofas, chairs and the like of a wide range of configurations, that is, elongated with round ends, round, square, elongated rectangular, and the like can be produced; and all by using only a few basic pieces. Also, by reference to FIGURE 5, it will be understood that quarter circle, half circle and three-quarter circle units can be provided in addition to the full circle unit shown, as for fitting into corners, along walls or around corners, utilizing the quarter, half and three-quarter sections respectively.

Again it should be noted that a substantial advance to the "do-it-yourself" art has been provided, for simple and rapid assembly and disassembly—and also for compactness to facilitate off-season storage.

Having thus described my invention, I claim:

1. In a furniture construction,
a leg having an integrally formed hollow ball at its upper end,
a first rail having a female socket mating the surface of said ball and a male socket overlying said female socket,
a second rail having a female socket mating said male socket of said first rail,
all of said sockets being centrally apertured for passage of a connector therethrough,
and a connector passed through said apertures and engaged with said ball, joining said rails and leg in assembled relation.

2. In a furniture construction, a leg carrying a hollow ball at its upper end, a rail having a first socket formation thereon, said first socket formation having a surface mating the surface of said ball and a male socket surface adjacent said surface, a rail having a second socket formation thereon, said second socket formation being matingly superimposed upon said male socket surface, and means connecting said socket formations and said ball in assembled relation.

3. In a furniture construction, a leg carrying a hollow ball at its upper end, a rail having a first half socket thereon, said first half socket having a female surface mating a portion of the surface of said ball, a rail having a second half socket thereon, said second half socket being superimposed upon said first half socket in mating relation to a portion of the surface of said ball, said first and second half sockets being apertured to receive a bolt, an aperture in said ball, and a member within said ball threadably engaged with said bolt and securing said parts in assembled relation when said sockets are superimposed on said ball.

4. In a furniture construction, a leg carrying a hollow ball, a rail having a first half socket thereon, said first half socket having a surface mating the surface of said ball, a rail having a second half socket thereon, said second half socket being superimposed upon said first half socket in coacting relation to said ball, said first and second half sockets being apertured for passage of a bolt therethrough, a slot formed in said ball, a washer inserted through said slot into the interior of said ball, said washer having a threaded aperture, and a bolt passed through said first and second half sockets and engaged in said threaded aperture of said washer and securing said rails and said ball together.

5. In a furniture construction, a leg carrying a hollow ball, a rail having a socket formation thereon, said socket formation having a surface mating the surface of said ball, and means securing said socket to said ball.

6. In a furniture construction, a leg carrying a hollow ball, said ball having an upwardly disposed opening, a free-floating fastening element within said ball and accessible through said opening, a rail having a socket formation thereon, said socket formation having a surface mating the surface of said ball and having an aperture therethrough, and means insertable through said aperture of said socket and through said opening of said ball and into engagement with said fastening element securing said rail and leg in assembled relation.

7. In a furniture construction, a leg carrying a hollow ball at its upper end, a rail having a first aperture carrying plate thereon, said aperture of said first plate having a beveled edge to engage a first portion of the surface of said ball, a rail having a second aperture carrying plate thereon and superimposed upon said plate of said first rail, said aperture of said second plate having a beveled edge to engage a second portion of the surface of said ball, and means insertable through said plates and engaged with said ball to connect said plates and thus said rails and said ball in assembled relation.

8. In a furniture construction, a leg carrying a hollow ball at its upper end, a slot formed in said ball, a washer inserted through said slot into the interior of said ball, said washer having a threaded aperture, a rail having a first plate provided with an aperture, said aperture of said first plate having a peripheral surface engaging a first portion of the surface of said ball, a rail having a second plate provided with an aperture, said aperture of said second plate also having a peripheral surface engaging a second portion of the surface of said ball when said second plate is superimposed upon said first plate, and a bolt inserted through the apertures of said superimposed plates and engaged with said threaded aperture of said washer securing said rails and said ball together.

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