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NESTING FURNITURE STRUCTURE

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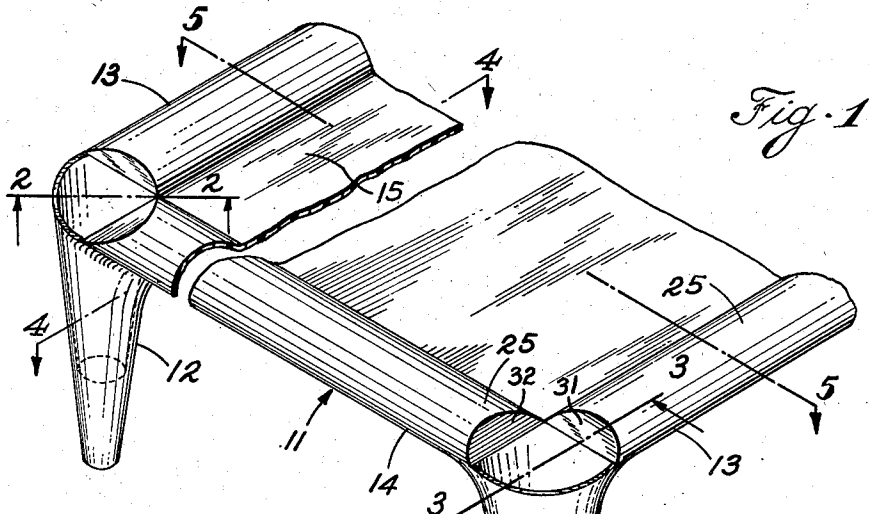


Fig. 1

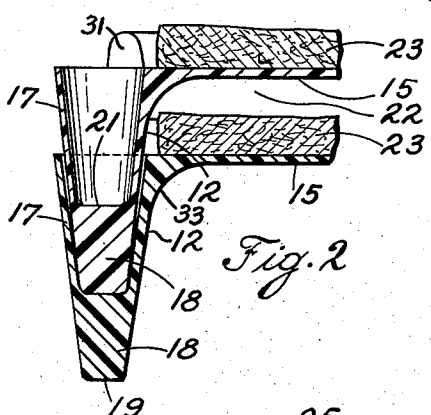


Fig. 2

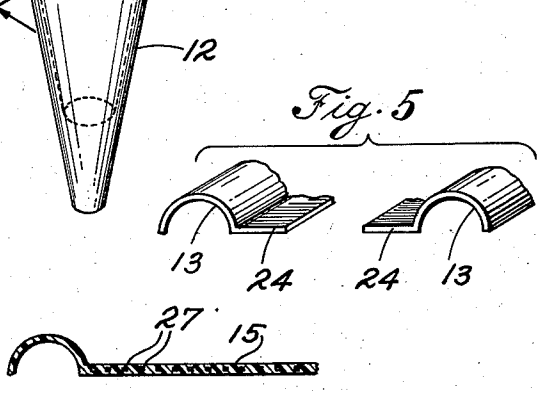


Fig. 5

Fig. 4

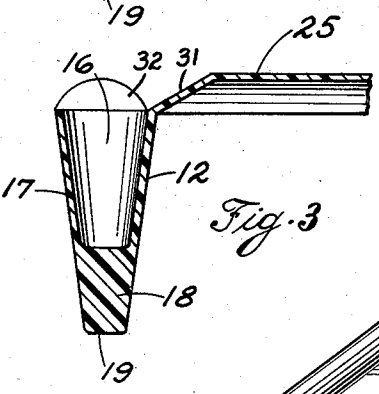


Fig. 3

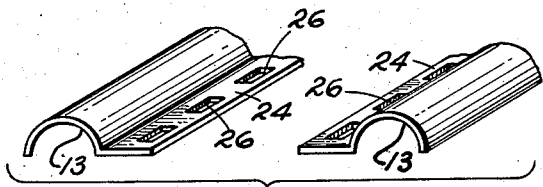


Fig. 6

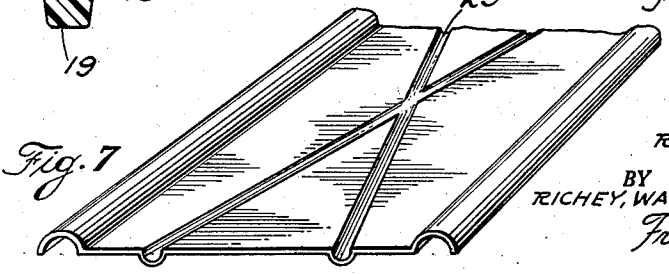


Fig. 7

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1

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NESTING FURNITURE STRUCTURE

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2 Claims. (Cl. 5—8)

This invention relates to furniture construction and concerns particularly an improved construction for articles of furniture such as beds and cots which may be nested by stacking one upon another for conserving space.

It is an object of my invention to provide means for efficiently, compactly and easily storing such articles of furniture as beds, cots, stools and chairs in such a way that the space may be conserved in apartments, camps, hotels, small homes and the like when the articles of furniture are not in use.

A further object of the invention is to provide adequate sleeping accommodations in small homes and apartments which will not encroach upon the available living space while permitting the required beds for sleeping accommodations to be lifted out of daytime storage position quickly and easily when needed for providing sleeping accommodations.

A still further object of the invention is to provide a nesting bed structure in which the beds may be fully made up preparatory for sleeping before being nested to free floor space during the day and may be stored in the made-up form to permit immediate use when sleeping accommodations are removed from storage position.

Other and further objects, features and advantages of the invention will become apparent as the description proceeds.

In carrying out the invention in a preferred form thereof I utilize a structure for beds or other nestable articles of furniture such as stools in which the members are essentially of hollow form for lightness and to permit compact nesting. In the case of beds or cots 4 or 6 hollow legs are provided which are preferably integral with joining end rails and side rails. The rails also are preferably in the form which combines lightness and strength such as channel or half-tubular form for example. The legs are tapered with dimensions decreasing from a portion joining the rails to the foot and the inner surfaces of the hollow legs are likewise tapered so that one unit may be placed upon another with the leg portion of each unit resting in the well formed by the hollow portion of the leg in the unit below it. In order to prevent binding and permit units to be nested and unnested quickly and easily, the lateral dimension of the outer surface of each portion of the tapered part of the leg is made less than the corresponding lateral dimension of the well of the leg in which the nested leg rests.

The lower, or foot portion, of each leg is solid so that the lower end of the well is spaced from the bottom of each leg so that, in stacking or nesting beds one upon another, the weight of the units above will be carried by the bottom of the well in the lower units rather than by the rail joints. The dimension between the bottom of the well and the bottom of the leg is preferably made sufficient so that the mattress and bedding may be left in place on each bed when it is nested and there will be a slight clearance for ventilation between the successive mattresses.

Although the invention is not limited to specific di-

2

mensions it has been found that satisfactory results may be obtained by making the dimension between the bottom of the leg and the bottom of the well formed therein approximately $\frac{1}{3}$ the vertical dimension of the complete leg.

The structures may be formed of relatively light material such as light metal alloy comprising aluminum, magnesium or the like, or molded of plastic material such as a phenolic condensation product, a polyglycol resin, a vinyl plastic, or the like, which may be reinforced with a suitable binder such as textile fibers, cellulose products, glass thread or the like.

A better understanding of the invention will be afforded by the following detailed description considered in conjunction with the accompanying drawings in which Fig. 1 is a perspective, fragmentary view of an embodiment of the invention serving as a light, readily portable, storable and nestable bed.

Fig. 2 is a fragmentary sectional view of the portion of the apparatus of Fig. 1 represented as cut by a vertical plane extending diagonally through one of the legs as indicated by the line 2—2 of Fig. 1, together with a corresponding view of a second unit nested in the first.

Fig. 3 is a vertical sectional view represented as cut by a vertical plane 3—3 shown as extending lengthwise through one of the legs and side rails of the bed of Fig. 1 parallel to one of the edges thereof.

Fig. 4 is a fragmentary cross-sectional view of a portion of the bed of Fig. 1 represented as cut by a plane 4—4, illustrating a manner of reinforcing a mattress supporting web or sheet in one embodiment of the invention.

Fig. 5 is a fragmentary perspective view of the side rails which may be employed in an alternative embodiment in which ledges are provided to support slats or self-supporting springs instead of a web or sheet integral with the side rails for supporting the mattress as in Fig. 1.

Fig. 6 is a view corresponding to Fig. 5, illustrating another embodiment of the invention in which the side rails are provided with openings for cross-lacing to support the mattress.

Fig. 7 is a fragmentary perspective view of still another embodiment of the invention in which the mattress-supporting web is reinforced by intersecting, diagonal semi-cylindrical ribs.

Like reference characters are utilized throughout the drawings to designate like parts.

As shown in Fig. 1, in order that a plurality of beds or similar articles of furniture may be stored one above another by nesting them, each leg of a bed above resting within a leg of a bed below, each bed 11 is provided with hollow legs 12. Although satisfactory results are obtained by utilizing four legs, one in each corner, is desired for the sake of obtaining greater rigidity with increased lightness of side rails, six or more legs may be employed.

Although the invention is not limited thereto, as shown the legs 12 are integral with side rails 13 and end rails 14, as well as with the mattress supporting surface portion or web 15. As illustrated more clearly in Fig. 2 and Fig. 3, each hollow leg 12 has a well 16 therein with relatively thin sidewalls 17 and a solid foot portion 18. Moreover both the inner and outer surfaces of the sidewalls 17 are tapered so that the well 16 is of suitable conformation to receive the outer surface of a similarly shaped leg of a bed nested within the one below as illustrated in Fig. 2.

The vertical dimension of the solid foot 18 or the distance between the lower end 19 of the leg 12 and the bottom 21 of the well 16 is such in relation to the taper of the sidewalls 17 that there is ample clearance within the well 16 to receive the nested leg and any possibility of binding is avoided. Although the invention is not limited to specific dimensions, I have found that when this

vertical dimension of the solid foot portion 18 is one-third the total height of each bed, ample clearance may be readily obtained to avoid binding of the nested legs and also to provide adequate ventilation space 22 as shown in Fig. 2 between the top of the mattress 23 with the other bedding of the lower bed and the lower surface of the mattress supporting web 15 of the bed above.

In this manner a plurality of beds may be made up, ready for sleeping but stored in a closet or alcove for an apartment or small home in order to provide the maximum living space during the day and yet afford the availability of ample sleeping accommodations. The construction is such that great lightness is obtained and the bed may be readily nested or removed from nested position without undue physical exertion. For the sake of obtaining maximum lightness, strong light material such as aluminum or magnesium alloy of semi-tubular or channel form may be employed or molded plastic material may be employed, strength and rigidity being obtained from the frusto-conical shape of the legs and the inverted channel or semi-cylindrical shape of the end rails 14 and the side rails 13, as illustrated. As illustrated in the drawings particularly in Fig. 3, the material forming the leg 12 slopes upward substantially along planes 31 and 32 forming junctions with the side rail 13 and the end rail 14. As shown particularly in Fig. 2 a fillet 33 is formed at the upper end of the leg 12 at the junction of the leg with both side and end rails in the corner between an end rail and a side rail at the under edges thereof. The fillet 33 forms a curving, strain-relieving junction of the leg with the web 15.

Although the structure has been illustrated as consisting of a single unitary piece in Fig. 1, which may be cast or may be formed in a suitable mold if plastic materials are used, the invention is not limited thereto. An open center construction may be employed with the web center eliminated to leave ledges 24 formed on the side rails 13 (and also, if desired, on the end or cross-rails 14), as shown in Fig. 5, to support slats or for directly supporting a self-supporting spring and mattress. If desired, this structure may be fabricated from a plurality of similar parts in order to avoid the use of large molds by utilizing a single mold to form identical legs with extending arm portions 25 adapted to be riveted or otherwise joined to the side and end rails 13 and 14, which may in this case be separately molded.

If it is desired to use a network of laced thongs to provide a resilient mattress support, the ledge portions 24 of the structure Fig. 5 may be provided with suitable thong-receiving openings 26, so as to provide the advantages of compactness and nestability in a light bed construction with the comfort and "springiness" adjustability of a peg and twine bedstead of colonial times.

In the case of bedsteads of wide construction for multiple occupancy or in case use by heavier persons is desired with the maximum safety factor, a reinforced construction may be employed such as is illustrated in Fig. 4. Here metallic reinforcing bars 27 are molded into the mattress supporting web portion 15 and extend cross-wise of the bedstead. Alternatively for the sake of rigidity of the web 15, diagonal channels 29 may also be formed with the web 15 as illustrated in Fig. 7.

Certain embodiments of the invention and certain features embraced therein have been shown and par-

ticularly described for the purpose of explaining the principle of operation of the invention and showing its application, but it will be obvious to those skilled in the art that many modifications and variations are possible without departing from the spirit of the invention, the scope of which is set forth in the annexed claims.

I claim:

1. A bed assembly comprising a plurality of vertically stacked individual bed units, each unit comprising a raised peripheral rail enclosing a bed-supporting surface and a plurality of depending legs integrally formed with said peripheral rail to project only downwardly therefrom and joined thereto at the upper leg extremities only, said legs having unobstructed exterior surfaces tapering from said rail to reduced exterior lower support surfaces, each of said legs having therein an open-topped, coaxial tapered bore extending interiorly and downwardly therein to terminate in a reduced interior support surface disposed interiorly of said leg above the exterior lower support surface of said legs, said tapered bore being of the same general contour as said tapered exterior of said legs, the assembly being effected by superimposing the bed units with each of the legs of the upper units inserted into the bores of the registering legs, respectively, of the next lower units with the exterior lower surfaces of the upper units contacting only the interior surfaces of the next lower unit and with the rails of the superimposed units in vertical registry, the overall height of the assembly being equal to the height of one unit plus the total distances of the interior support surfaces from the exterior support surfaces of the legs.

2. A bed unit comprising a raised peripheral rail enclosing a bed-supporting surface and a plurality of depending legs integrally formed with said peripheral rail to project only downwardly therefrom and joined thereto at the upper leg extremities only, said legs having unobstructed exterior surfaces tapering from said rail to reduced exterior lower support surfaces, each of said legs having an open-topped, coaxial tapered bore extending interiorly and downwardly therein to terminate in a reduced interior support surface disposed interiorly of said leg above the exterior lower support surface of said legs, said tapered bore being of the same general contour as the tapered exterior of said legs, the insertion of an identical leg into the tapered bore of any one of said legs effecting supporting contact between superimposed beds only at said interior and exterior support surfaces, respectively, to maintain the rails in vertical registry, whereby a plurality of identical such furniture articles can be vertically stacked without binding to one another and with the overall vertical dimension being equal to the height of one such article plus the total distances of the interior support surfaces from the exterior support surfaces of the legs of said such articles.

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