ABSTRACT: An adjustable furniture construction having an apertured horizontal member and a vertical columnar member, said vertical member being receivable through the aperture of said horizontal member. An adjustable wedge, whose sides can be made more divergent, is inserted between the horizontal and vertical members to hold them in fixed relation to each other.
ADJUSTABLE FURNITURE CONSTRUCTION

This application is a continuation-in-part of application Ser. No. 656,939 filed July 28, 1967 by the same inventor, now U.S. Pat. No. 3,437,060.

The present invention relates generally to modular furniture and more particularly to furniture of improved construction which will enable expedient, convenient and accurate assembly thereof.

The aspect of having furniture adjustable is a most desirable one, but means for accomplishing this end have been most unsatisfactory in the prior art and have necessitated the use of fastening means such as nails, screws, glue, pegs or dowels, or the use of special tools. These methods of construction did not permit economical manufacture of attractive and high quality furniture of modern style. The prior art had the further disadvantage of not permitting construction of furniture which could be easily stored and shipped in knock-down condition and which could be quickly and easily reassembled into sturdy and attractive pieces.

The present invention offers considerable improvement over the prior art devices by effectively overcoming their many disadvantages in that it provides a new and unique means wherewith the various horizontal and vertical components of furniture may be readily separated and reassembled without the use of complicated fastening devices or the use of special tools.

Furniture which can be readily assembled and disassembled in the manner possible using the joint construction of the present invention is of great utility, particularly for people who frequently move from place to place, such as armed forces personnel, and also for people who live in mobile homes and other places where space is at a premium.

Further, the invention relates to a novel adjustable wedge described herein which can be used in the adjustable furniture construction described and which can also be used wherever a adjustable wedge is desirable.

Accordingly, an object of the present invention is the provision of an adjustable furniture construction wherein horizontal and vertical members may be readily connected and disconnected.

Another object of the invention is the provision of furniture components which include means enabling the convenient adjustment of the relative spacing between these components.

A further object of the invention is the provision of an adjustable furniture construction which includes gripping means adapted to afford accurate positioning of the structural components and to afford positive connection therebetween.

Still another object of the invention is to provide a novel adjustable wedge structure which may be readily adjusted to increase and decrease its wedging action.

Still another object is the provision of an adjustable furniture construction wherein the components can be readily assembled in a minimum amount of time.

Still another object of the present invention is the provision of a device of the foregoing character which will be simple in structure, economical of manufacture, easily and quickly assembled, aesthetic in appearance, and highly effective in use.

Other and further advantages and novel features of the invention will become apparent from the following detailed description of the invention when considered in conjunction with the accompanying drawings wherein:

FIG. 1 shown shows an elevation view, partly in section, of the wedge expanded to hold horizontal and vertical members together;

FIG. 2 is a plan view showing wedges on either side of the vertical member;

FIG. 3 shows a side view of the invention;

FIG. 4 shows an elevation view of the wedge alone, in an unexpanded position;

FIG. 5 is a plan view of the invention;

FIG. 6 is an elevation view of the wedge expanded;

FIG. 7 is a plan view of the wedge expanded;

FIGS. 8 and 9 show the two halves of the wedge.

Referring now to the drawings there is shown in FIG. 1 a horizontal member 10 which may be any portion of furniture that is to be rigidly joined to another piece of furniture. In this case, for example, it may be a horizontal shelf as in a bookcase or cabinet that is to be joined to a vertical member 11. Vertical member 11 has a channel 12 cut into each of its narrow sides and extending along its full length, the bottom, or innermost face of channels 12 may be serrated to form a row of ridges 13, the use of which will be more fully explained hereinafter.

As can be better seen in FIG. 2, horizontal member 10 has a cutout portion 14 which is the same dimensions as vertical member 11 so that vertical member 11 will slidingly fit into the cutout 14 and still leave a smooth unbroken surface at the outer edge of the member 10. Also formed in each narrow side of cutout 14 there is a groove 15, and from a perusal of FIG. 2 it will be obvious that grooves 15 exactly mate with the channels 12 in vertical member 11.

In order to rigidly secure horizontal member 10, at any desired height, to vertical member 11, there is utilized an expandable wedge 16, shown in detail in FIGS. 4 through 9, to lodge the two parts together. Wedge 16 consists of two halves 17 and 18 which are free to move about a pivot point 20 when the halves are forced apart by a set screw 21. Screw 21 is threaded into half 17, see FIG. 8, and when it is turned, its end presses against half 18 causing it to move about pivot point 20 so that the bottom part of the wedge is separated thereby forming a taper with respect to the upper part. The long side of half 18 has a series of serrations 22 which have the same spacing as ridges 13 on vertical member 11. In the unexpanded position, as shown in FIG. 4, all outer surfaces of the wedges are substantially parallel. In the expanded position, as shown in FIG. 6, the opposite surfaces 17 and 22 form a taper, however the opposite wider surfaces 27 and 28 remain substantially parallel.

In order to add stability to the horizontal member 10, should it be necessary to put a lot of weight on the shelf, there is provided a triangular metal brace 23 which is located below the shelf 10. An elongated end 24, integral with the metal brace 23 extends between the horizontal and vertical members in a narrow channel 25 cut into horizontal member 10, and terminating in a bentover hook arrangement 26. By this construction it is obvious that the metal brace 23 is rigidly held in place by the bentover hook arrangement 26 gripping the top edge of the horizontal member 10 and by the fact that elongated end 24 is compressed between the horizontal and vertical members when they are fastened together.

It may be noted here, after reference to FIG. 1, that the structure of the present invention makes it particularly easy to insert additional horizontal members after others are already locked in place. This advantage results from the fact that the cutout portion 14, in the horizontal member 10, extends from the edge of the member inward for a distance sufficient to encompass the vertical member 11. Some prior art devices have the hole for passage of the vertical set back a distance from the edge of the horizontal member so that additional horizontal members must be threaded on the vertical, from the top, like beads, with the previous shelves being moved down. This procedure is not necessary with the present invention, since additional shelves may be inserted, where desired, without disturbing previous shelves, by merely placing the new shelf against the vertical so that the vertical goes into cutout portion 14.

Turning now to a study of the operation of the invention it can be clearly understood that when it is desirable to assemble the furniture parts, or other components on which the invention is practiced, as with a bookcase, for example, the horizontal member 10 is positioned so that vertical member 11 is encompassed within cutout portion 14 of member 10. It should be noted that in this position channels 12 in the vertical member mate with grooves 15 in the horizontal member. Also, at this point, if the metal brace 23 is to be used, it has been placed below the horizontal member, with its elongated end
24 located in narrow channel 25 and the bentover hook arrangement 26 engaging the top edge of the shelf.

When the shelf has been raised to a convenient height, wedges 16 are placed on either side of the vertical member 11, within the hollow space caused by the mating of channels 12 and grooves 15. The wedges are inserted in their unexpanded configuration (FIG. 4), with the setscrew 21 in its withdrawn position, and with the setscrew below horizontal 10, as in FIG. 1. In its unexpanded configuration the vertical sides of the wedge are substantially parallel. With a slight amount of movement of the wedges, it is easy to cause the serrations 22, on the long vertical side of the wedges, to mate and lock with ridges 13 cut into the bottom of channel 12, in vertical member 11, so as to hold the wedges in place and keep them from falling out.

Now the setscrew 21, shown here as an Allen screw, but any other kind will suffice, is advanced with an Allen wrench so that its inner end presses against wedge half 18. Continued advancement of the screw will force wedge halves 17 and 18 to rotate slightly about pivot point 20 until the wedge assumes a cone-shaped configuration as seen in FIGS. 1 and 6, wherein the vertical sides of the wedge are at an angle to one another. Thus the wedges in their expanded position have securely locked the various components together to form a rigid and stable structure.

From the above description of the structure and operation of the invention, it is obvious that the concept offers numerous improvements over prior art systems. The invention, therefore, provides an adjustable furniture construction wherein the various components may be readily connected and disconnected, in a minimum of time, and wherein the novel gripping means enables convenient adjustment of the relative spacing between components while affording accurate positioning of the structural components and positive connection therebetween.

Obviously many modifications and variations of the present invention are possible in the light of the above teachings. It is therefore to be understood, that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described.

I claim:

1. An adjustable furniture construction comprising:
a vertically extending columnar support member having a generally uniformly outer peripheral cross section along its length;
a longitudinal vertical groove extending from the outer periphery of said vertical support member toward the interior thereof, said groove having uniform vertical side walls and an inner wall provided with a plurality of gripping protrusions extending outwardly from said inner wall;
a wedge partially and adjustably disposed within the vertical groove of said vertical support member, said wedge having side walls complimentary to said vertical groove side walls and a wedge inner wall having gripping extensions complimentary to said vertical groove gripping protrusions, said gripping protrusions and said gripping extensions interlocking to maintain said wedge at a given vertical position along said columnar support, said wedge having a vertically inclined wall projecting outwardly from said vertical groove and sloping to provide a minimum width at the top of said wedge and a maximum width at the bottom of said wedge; and

a horizontal tablelike member supported on said inclined wall of the wedge, said horizontal member having upper and lower surfaces and a peripheral edge defining the extremities thereof and a passage extending between said upper and lower surfaces, said passage being complimentary about most of its surface to the uniform outer periphery of said vertical columnar support which passes therethrough, said passage having a groove extending between said upper and lower surfaces of said horizontal member, said groove receiving said vertically inclined wall of said wedge in complementary relationship thereto.

2. The construction of claim 1, wherein there is a plurality of longitudinal vertical grooves in the vertical support member.

3. The construction of claim 2, wherein there is a plurality of wedges, with one located in each of the longitudinal vertical grooves.

4. The construction of claim 3, wherein the wedges are made up of two halves, movable relative to each other, about a pivot point located between the halves.

5. The construction of claim 4, further including a screw located horizontally through the bottom of one wedge half and pressing against the other wedge half, so that as the screw is advanced the bottoms of the two wedge halves are forced apart to thereby increase the maximum width at the bottom of the wedge.

6. The construction of claim 5, further including a triangular shaped brace for giving additional support to the horizontal member.

7. The construction of claim 6, wherein the brace has a narrow extended inner edge which projects from beneath the horizontal member through the passage in the horizontal member and engages the upper surface of the horizontal member.