United States Patent [19]

Spitz

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[54] **CONNECTING DEVICE FOR ADJUSTABLE BEDFRAME**

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[52] **U.S. Cl.** **5/201,** 5/181, 5/285

[51] **Int. Cl.** **A47c 19/02**

[58] **Field of Search** ..... 5/175, 176 R, 176 B, 5/177, 202, 181, 185, 184, 201, 285, 286; 287/20.924, 20.927, 189.35

[56] **References Cited**

UNITED STATES PATENTS

3,100,304	8/1963	Brandlin et al.	5/202
2,544,274	3/1951	Moeller	5/185
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[57] **ABSTRACT**

A bedframe in which side rails are interconnected by adjustable end crossbars, each crossbar comprising a pair of elongate angle sections connected with the side rails and having nested overlapped adjacent end portions manually interconnectible at a plurality of selectable positions to provide a plurality of different standard bed widths, the connecting means comprising permanently affixed pin and spring clip members which are manually operable without the necessity of using supplemental tools.

5 Claims, 4 Drawing Figures

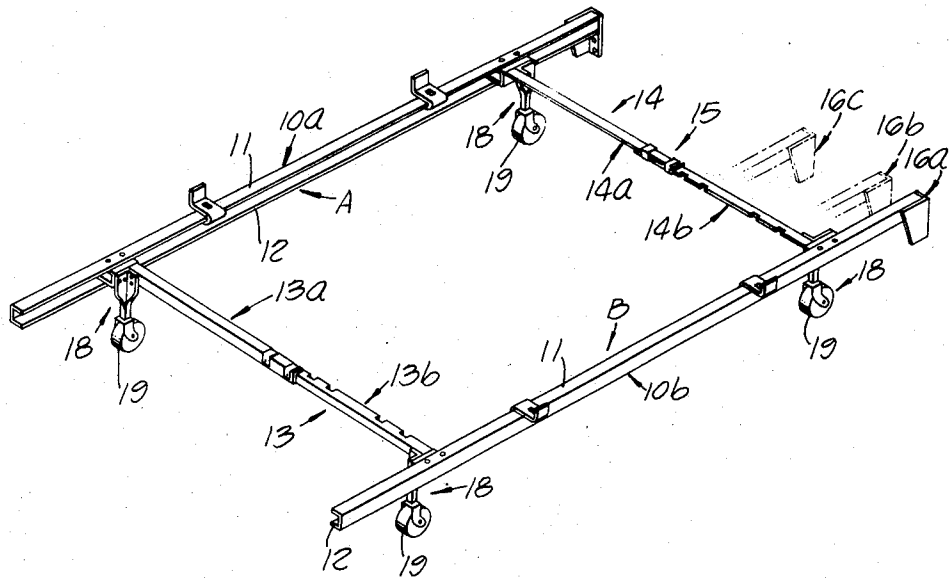


FIG. 1.

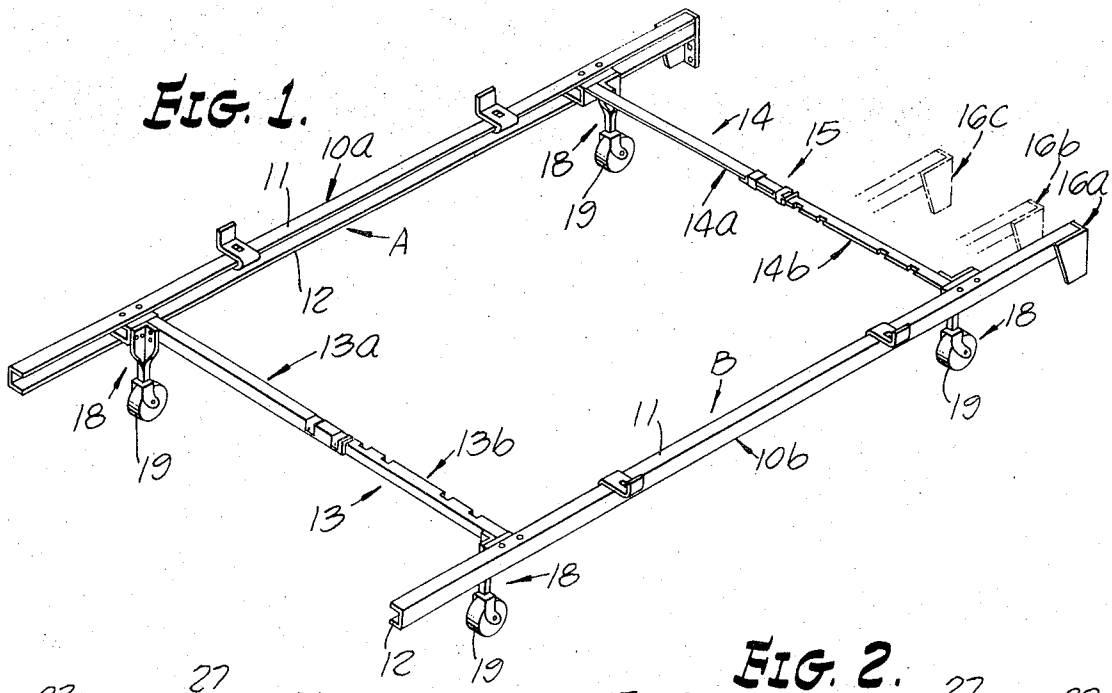


FIG. 2.

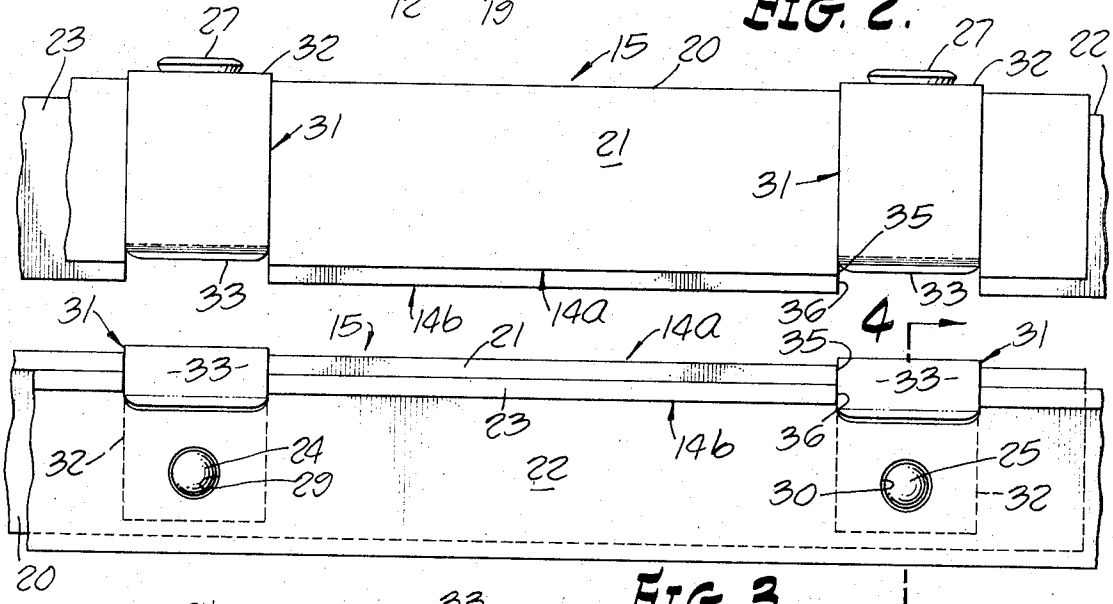


FIG. 3.

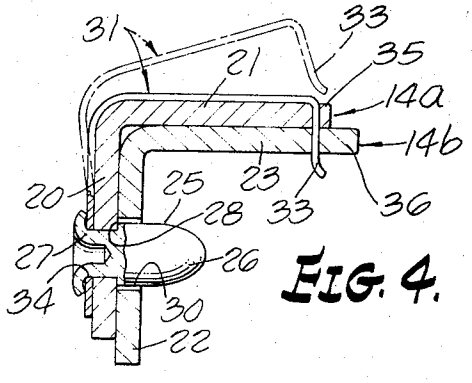


FIG. 4.

CONNECTING DEVICE FOR ADJUSTABLE BEDFRAME

BACKGROUND OF THE INVENTION

The present invention relates generally to a bedframe construction.

It has heretofore been known for many years to produce bedframes in sections, usually foldable, in order to facilitate compact packaging for facilitating practical storage, shipping and handling. A wide variety of connecting devices and arrangements have been utilized to fasten these sections together, and, in the main, have usually involved the inter-nesting of cross-members clamped together by means of bolts and nuts, clamps with thumbscrews, and the like, which are easily misplaced or lost.

Such structural arrangements are exemplified in U. S. Pat. No. 3,510,887, issued May 12, 1970. In this patent, the flexibility of width adjustment is obtained by utilizing angle sections in the crossbars, which are secured in overlapping nested relation by means of a clamp and thumbscrew arrangement. The clamp and thumbscrew of this patent are easily displaced and upon separation from the connected sections may easily be misplaced or lost. Moreover, the thumbscrew in order to be most effective should be tightened by an appropriate hand-tool. The present invention proposes to overcome the inherent objections of this type of fastening device.

It will be appreciated that a major purpose of the inter-nesting cross-members has been to afford width adjustability, whereby the bedframe can be assembled to accommodate more than one size of boxspring and mattress. Commonly, bedframes are designed in such manner to fit either twin bedding (approximately 38 inches wide), full-size bedding (approximately 53 inches wide), and queen size bedding (approximately 60 inches wide). In addition to a width adjustability, it is desirable that the best design should meet the objective of rigidity and strength, as well as speed and ease of assembly. For the latter, it is most desirable that there be no "loose parts" required, such as bolts and nuts or separate clamps, and that there be no necessity for using supplemental handtools in the assembling process.

The present invention embodies an improvement which results in the obtainment of such objectives in a most facile and desirable manner.

SUMMARY OF THE INVENTION

The present invention relates generally to bedframe structures, and is more particularly concerned with improved connecting means for releasably adjusting the bedframe to a plurality of standard bed widths.

It is an important object and feature of the present invention to provide an adjustable width bedframe having unusually high strength and rigidity, in which the side rails are interconnected by nested overlapped crossbar sections susceptible of adjustment to provide a plurality of selectable bed widths, which may be secured at the selected width by means devoid of loose parts or components such as bolts, nuts, separate clamps, etc., and which do not require handtools or supplemental means for effecting the width adjustment.

A further object is to provide in an adjustable bed structure a "built in" easily operable pin and spring clip securing means arranged for releasably interconnecting the crossbar sections of an adjustable bedframe structure in order to accommodate the bedframe to different standard bed widths.

Another object is to provide improved and unique manually operable connecting means for overlapped angle or otherwise shaped bar sections in which two stud-pins are permanently attached to the vertical flange of one section and which are received through appropriate holes provided in the vertical flange of the associated nested section in order to provide the required "shear" resistance against the weight of bedding and bed occupants, and wherein a resilient retaining clip extends over the horizontal flanges of the nested sections to lock them together in the nested position, with little or no loading pressures applied thereto.

Further objects of the invention will be brought out in the following part of the specification, wherein detailed description is for the purpose of fully disclosing the invention without placing limitations thereon.

BRIEF DESCRIPTION OF THE DRAWINGS

Referring to the accompanying drawings, which are for illustrative purposes only:

FIG. **1** is a perspective view of a bedframe structure embodying the features of the present invention;

FIG. **2** is an enlarged fragmentary top plan view showing details of the overlapped crossbar sections and associated retaining clips;

FIG. **3** is an enlarged fragmentary elevational view of the same; and

FIG. **4** is a transverse section taken substantially on line **4—4** of FIG. **3.**

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now specifically to the drawings, for illustrative purposes, a bedframe embodying the present invention is disclosed in FIG. **1** as comprising left and right assemblies as indicated generally at A and B. These assemblies are constructed as separate units and arranged to be interconnected to form a complete bedframe structure.

The assemblies when interconnected cooperate to provide a pair of spaced side rails **10***a* and **10***b* of generally U-shaped channel cross-section, each having an upper flange **11** and lower flange **12.** The side rails are arranged in confronting relation with the channels opening towards each other, and are interconnected by end crossbars **13** and **14** which are fabricated from angle members. Each crossbar is composed of a pair of interconnected sections which are respectively associated with the left and right assemblies. For example, the crossbar **13** includes a section **13***a* which is pivotally connected to the side rail **10***a* of assembly A and a section **13***b* which is pivotally connected to the side rail **10***b* of assembly B. In the same manner, crossbar **14** is composed of sections **14***a* and **14***b* which are respectively pivotally connected with the side rails.

The two sections of each crossbar are arranged to be adjustably secured together by interconnecting devices as generally indicated at **15,** and which form the subject matter of the present invention and permit adjustment of the bedframe width so as to selectively provide a queen size as shown in full lines at **16***a*, a full size as indicated in phantom lines at **16***b*, or a twin size as shown in phantom lines at **16***c*.

The bedframe structure as thus formed by the connected assemblies A and B is supported in elevated position by means of similarly constructed supporting leg assemblies **18** which are positioned generally at the corners of the bedframe structure, and may, if desired, include in each case, an appropriate caster **19.** The leg assemblies may be associated with the respective sections of the crossbars, as shown, or may be mounted directly upon the adjacent side rail end portions.

The interconnecting device **15** for the crossbar sections will now be described in detail, reference being had primarily to FIGS. **2, 3** and **4** of the drawings. As applied, for example, to the sections **14***a* and **14***b*, these sections are illustrated in FIG. **2** as having nested end portions in overlapped relation. As shown in FIG. **4,** the section **14***a* overlies the section **14***b* so that the vertical flange **20** and horizontal flange **21** of the section **14***a* will nestingly engage the vertical flange **22** and horizontal flange **23** of the section **14***b*. As thus nested, it will be seen that the edges of the flanges of the section **14***b* project outwardly slightly beyond the corresponding flange edges of section **14***a*.

The outer end of the section **14***a* is provided with a pair of spaced stud pins **24** and **25** which are secured in spaced apart relation to the vertical flange **20** so as to project into the V between the section flanges. As best shown in FIG. **4,** the stud pin is fabricated to provide a bullet-nose end **26** with a rearwardly extending tubular shank portion **27** of reduced diameter so as to form an annular abutment shoulder as shown at **28** for engaging the inner surface of the vertical flange **20.** The stud pins **24** and **25** are arranged to extend through appropriately spaced pairs of openings **29** and **30** at each bed width selectable position. Thus, when the crossbar sections are in nested relation, these stud pins anchor the nested sections against longitudinal movement, and also provide spaced rigid bearing points for taking the load forces applied to the bedframe between the side rails **10***a* and **10***b*.

In order to retain the nested crossbar sections against movement to a non-nested relationship, there is provided at each stud pin location a spring retaining clip **31.** This clip is constructed from a strip of suitable spring material and is shaped to conform to a generally U-shaped configuration in which one leg, in this case the leg **32,** is of greater length than the other leg, namely the leg **33.** As shown in FIG. **4,** the spring retaining clip has its long leg **32** positioned to extend along the outer surface of the vertical flange **20** and is provided with an opening **34** arranged to slide over the outer end of the tubular shank portion **27** of the stud pin, which is then peened over to secure the spring clip to the adjacent flange. At each bed width position, the outer edges of the horizontal flanges of sections **14***a* and **14***b* are provided with registered notches **35** and **36,** respectively, for receiving the leg portion **33** therein, when the clip is moved to a latching position, as shown in full lines in FIG. **4,** to retain the nested crossbar sections against disassembly.

As described above, it will be readily apparent that the spring retaining clips serve primarily to retain the crossbar sections in nested connected relation, and need not be constructed of heavy materials, since little or no load forces are applied thereto. In order to disconnect the nested sections, it is only necessary to manually flip the end **33** of the clip so as to disengage and move it from the full line position shown in FIG. **4** to the phantom line position, whereupon the nested crossbar sections may be separated and moved to unnested relationship in which the stud pins will be withdrawn from the associated openings **29** and **30.**

It is an important feature of this connecting means that there are no loose components to become displaced or lost, and no supplementary tools are required in order to connect and disconnect the crossbar sections.

From the foregoing description and drawings, it will be clearly evident that the delineated objects and features of the invention will be accomplished.

Various modifications may suggest themselves to those skilled in the art without departing from the spirit of my invention, and, hence, I do not wish to be restricted to the specific forms shown or uses mentioned, except to the extent indicated in the appended claims.

I claim:

1. In a bedframe having side rails, interconnected by end crossbars respectively having a pair of sections manually releasably interconnectable in nested relation at a plurality of selectable positions to provide a plurality of standard bed widths, comprising:

a. connecting means on one of the sections of each end crossbar operable to engage a portion of the other section of the end crossbar at each selectable bed width position, and at the selected bed width position to anchor the connected sections against axial relative movement; and

b. manually releasable latch means carried by one of said sections including a spring clip for retaining the sections in connected nested relation at the selected bed width.

2. A bedframe according to claim **1,** wherein the spring clip is generally U-shaped and has a long leg and a short leg, the outer end of the long leg being secured to said one of said sections, and the short leg being adapted to resiliently snap over adjacent edges of the nested sections and retain the same against un-nesting.

3. A bedframe according to claim **2,** in which the adjacent edges are provided with registered notches for receiving said short leg therein.

4. A bedframe according to claim **1,** wherein the connecting means on said one of the sections comprises a projecting pin, and securing means for said pin which serves to secure the spring clip to said one of said sections.

5. In a bedframe having side rails interconnected by end crossbars respectively having a pair of sections manually releasably interconnectable in nested relation at a plurality of selectable positions to provide a plurality of standard bed widths, comprising:

a. connecting means on one of the sections of each end crossbar including a plurality of spaced pins receivable in openings provided in the other section of the end crossbar at each selectable bed width position, and operable at the selected bed width position to anchor the connected sections against axial relative movement; and

b. manually releasable latch means carried by one of said sections including a spring clip associated with each of said pins for retaining the sections in connected nested relation at the selected bed width.

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Notice of Adverse Decision in Interference

In Interference No. 98,751, involving Patent No. 3,781,930, M. P. Spitz, CONNECTING DEVICE FOR ADJUSTABLE BEDFRAME, final judgment adverse to the patentee was rendered Feb. 5, 1975, as to claims 1, 4, and 5.

[*Official Gazette July 8, 1975.*]

Disclaimer

3,781,930.—*Melvin P. Spitz*, Beverly Hills, Calif. CONNECTING DEVICE FOR ADJUSTABLE BEDFRAME. Patent dated Dec. 25, 1973. Disclaimer filed May 19, 1975, by the inventor.

Hereby enters this disclaimer to claims 1, 4 and 5 of said patent.

[*Official Gazette February 10, 1976.*]